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(Autonomous)
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102.A compressed string matching algorithm for face recognition with partial occlusion

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REGULAR PAPER

A compressed string matching algorithm for face recognition with partial occlusion

Krishnaveni Bommidi[1] · Sridhar Sundaramurthy[1]

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Abstract
There has been less attention towards the research on face recognition with partial occlusion. Facial accessories such as masks, sunglasses, and caps, etc., cause partial occlusion which results in a significant performance drop of the face recognition system. In this paper, a novel compressed string matching algorithm based on run-length encoding (CSM-RL) is proposed to solve the partial occlusion problem. In this, the face image is represented by a string sequence that is then compressed using run-length encoding. The proposed CSM-RL algorithm performs string matching between query face and gallery face string sequences by computing the edit distance between string sequences, finally, classifies query face based on the minimum edit distance. The proposed method does not require a classifier and has less time complexity, thus it is more suitable for real-world face recognition applications. The proposed method performs better than the state-of-the-art methods even limited sample images per person are available in the gallery. Extensive experimental results on benchmark face datasets such as AR and Extended Yale-B prove that the proposed algorithm exhibits significant performance improvement both in terms of speed and recognition accuracy for the recognition of partially occluded faces.

Keywords Biometrics · Face recognition · Occlusion · Compressed string · Run-length encoding · Edit distance

1 Introduction

The biometric system face recognition is capable of identifying human beings by physiological features. In image analysis and understanding, face recognition technology has received greater attention towards various real-time applications such as law enforcement, security, access control, surveillance, and smart cars, etc. Recognition without occlusion is easy. Recognition of partially occluded faces is an important and challenging problem. Partial occlusion which causes the appearance change of a face part may occur for various reasons [1]. The changes in facial appearance may cause great trouble to the security system based on face recognition, and are less investigated in the literature.

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✉ Krishnaveni Bommidi
krishnaveni@auist.net

Sridhar Sundaramurthy
sridhar@auist.net

[1] Information Science and Technology Department, Anna University, Chennai, India

In practical scenarios, faces can be occluded by various objects such as scarves, masks, hats, sunglasses, and body parts (hand, and hair) in several ways. The problem of face recognition is difficult in certain scenarios such as security and crime, since people occlude their faces by wearing a mask, hat, sunglasses, or scarf, to prevent their faces from being recognized.

The research towards the partially occluded faces recognition is essential since occlusion handling is necessary for security, safety, intelligence, and law enforcement face recognition purposes. Figure 1 shows the sample faces containing partial occlusion. It is important to address the problem of partial occlusion for developing an efficient, robust, and secure face recognition system. Face recognition with occlusions can be performed in two different ways, one is by detecting occluded part [2] and another is by restoring the occluded part [3, 4]. In [5], face recognition with occlusion is performed using prior information about an occlusion, but this method requires both test and training sets which complicate the task of recognition. Many real-time applications require direct recognition of faces with occlusions.

The proposed work lies in developing a new framework based on compressed string matching. String matching is

103.Simulated Annealing based Optimal Controller Placement in Software Defned Networks with Capacity Constraint and Failure Awareness

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Simulated annealing based optimal controller placement in software defined networks with capacity constraint and failure awareness

P. Aravind [a,*], G.P. Saradhi Varma [b], P.V.G.D. Prasad Reddy [c]

[a] Department of Computer Science and Engineering, Gayatri Vidya Parishad College of Engineering (Autonomous), Visakhapatnam, Andhra Pradesh 530048, India
[b] Department of Computer Science and Engineering, Chaitanya Bharathi Institute of Technology (Autonomous), Hyderabad, Telangana 500075, India
[c] Department of Computer Science and Systems Engineering, Andhra University, Visakhapatnam, Andhra Pradesh 530003, India

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ABSTRACT

Software Defined Networking is an evolving network model wherein the control plane is decoupled from data plane. It has become a fascinating problem to decide the number of controllers and their positions, and to allocate switches to them. Each switch must be assigned to a backup controller so that if a controller encounters failure then the switches which are assigned to it can be immediately connected to their backup controllers. An existing method attempts to solve this problem by employing mixed integer linear programming; but it suffers from huge increase in execution time for larger networks. In order to reduce the execution time, this paper proposes a simulated annealing-based heuristic which aims to minimize the maximum of latencies from all switches to the respective backup controllers. The proposed algorithm is evaluated on seven real networks of varying sizes from Internet Topology Zoo and its performance is compared with the existing model. The results show that the proposed model achieves an average speed-up of 2.5 over the existing model (for the smallest network) and an average speed-up of 280 over the existing model (for the largest network). And at the same time, the proposed model produces near optimal solution.

1. Introduction

Software Defined Networking (SDN) is an evolving network architecture which splits the control plane and data plane. The control plane establishes guidelines about how the packets have to travel across the network and the data plane actually forwards the packets from one point to another. The entire network intelligence is thus incorporated into the programmable control plane running as software on a server enabling automated network management, quick and easy implementation of innovations in the network, and efficient network monitoring. Although the SDN technology is apparently new, the concepts behind it have evolved through the past two and half decades.

Currently, lot of research is going on in the area of software defined networking, spreading through different fields such as network virtualization, controller placement, load balancing in a multi controller SDN, energy efficiency, role of SDN in Internet of Things, wireless SDN, security in SDN, etc. In this article, the focus is on controller placement.

In theoretical terms, one controller suffices to manage the entire network. But this arrangement might result in increased propagation delays on part of the switches that are located at distant positions from the controller. Therefore, it is common practice to install multiple controllers especially in a larger network. The question now is how many controllers need to be used and where to deploy them in the network. This prevailing problem is called Controller Placement Problem (CPP) in the literature and it has attracted the attention of many researchers in the recent times. For example, the authors in [Singh and Srivastava, 2018; Lu et al., 2019; Killi and Rao, 2019; Das et al., 2020; Kumari and Sairam, 2021] conducted an excellent and thorough survey on CPP.

The authors in [Heller et al., 2012] started the study of CPP and proposed a solution which minimizes two objectives independently, namely, average and worst-case node to controller latencies. But they did not take into account the capacities and failure

* Corresponding author.
E-mail address: aravind537120@gvpce.ac.in (P. Aravind).
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104.Optimized convolutional neural network model for plant species identifcation from leaf images using computer vision

Optimized convolutional neural network model for plant species identification from leaf images using computer vision

Satti R. G. Reddy[1] · G. P. Saradhi Varma[2] · Rajya Lakshmi Davuluri[3]

Received: 5 December 2020 / Accepted: 4 April 2021

Abstract
In recent works of computer science, especially in the fields of image processing and pattern recognition techniques with machine learning, considerable focus is given to plant taxonomy which enhances the abilities of people to recognize plant species. This paper presents a method that analyzes color images of leaves using a type of Convolutional Neural Network to recognize plant species. The proposed Neural Network consists of four convolutional layers followed by two Fully-Connected layers and a final soft-max layer to offer a feature representation for different plant species. Four max-pooling layers are performed over a 2 x 2 pixel window with stride 2. Results on five plant datasets viz. Leaf snap (52 plant species), UCI leaf (40 plant species), PlantVillage (38 plant species), Flavia (32 plant species) and Swedish (15 plant species) are tabulated that demonstrate the remarkable performance of the proposed deep neural network when compared to the state of art methods.

Keywords Plant species identification · Convolutional Neural Network · Leaf snap · UCI · Plant village · Flavia · Swedish

1 Introduction

Plants are the backbone of life on earth, as they provide food and oxygen to humans and many other creatures. Plants provide a lot including balance of ecological system, used in production of drugs, causing rain fall etc. Hence, there is a need to identify plant species that requires understanding of plants and their species. Identifying plant species will be useful to drug industry to invent new drugs and improve the quality of existing ones. Inventing plant species also improves the balance in the ecosystem and agricultural productivity and sustainability. Botanists are much concerned about the variations of leaf characteristics as it enables them to carry out a comparative analysis on plants (Manasa et al., 2019; Turkoglu & Hanbay, 2019; Zhu et al., 2019).

Recognition of plant species from leaf images is a challenging computer vision task (Manasa et al., 2019; Turkoglu & Hanbay, 2019; Zhu et al., 2019). The major challenge in plant identification is due to many parts of the plant are diverse in nature with high intra class and few inter class variations. The recent research works on automatic plant species identification has given good results, yet to necessity of good models are required to build. The traditional classification models preprocess the data to eliminate complex background and they suffer from problems like degradation and vanishing gradient. Hence, an approach that overcome the pitfalls of the state-of-the-art models need to be proposed.

The rest of the paper is organized as follows. Section 2 presents a review of related work. The details of feature extraction and CNN used are described in Sect. 3. The datasets used are discussed in Sect. 4. Experimental results are reported in Sect. 5. Finally, a conclusion is drawn in Sect. 6.

2 Literature survey

This section presents a brief review of recent progress in the area of plant identification. Plant recognition is usually done based on different organs of plant species.

✉ Satti R. G. Reddy
sramagopalareddy@gmail.com

G. P. Saradhi Varma
gpsvarma@gmail.com

Rajya Lakshmi Davuluri
jrajyalakshmi@gmail.com

[1] CSE Department, JNTUK, Kakinada, AP 533003, India

[2] Department of CSE, CBIT, Hyderabad, TS, India

[3] Department of CSE, JNTUK UCEN, Narasaraopet, AP, India

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Solving Twisty Puzzles Using Parallel Q-learning

Kavish Hukmani, Sucheta Kolekar*, *Member, IAENG,* Sreekumar Vobugari

***Abstract*—There has been a recent trend of teaching agents to solve puzzles and play games using Deep Reinforcement Learning (DRL) which was brought by the success of AlphaGo. While this method has given some truly groundbreaking results and it is very computationally intensive. This paper evaluates the feasibility of solving Combinatorial Optimization Problems such as Twisty Puzzles using Parallel Q-Learning (PQL). We propose a method using Constant Share-Reinforcement Learning (CS-RL) as a more resource optimized approach and measure the impact of sub- goals built using human knowledge. We attempt to solve three puzzles, the 2x2x2 Pocket Rubik's Cube, the Skewb and the Pyraminx with and without sub-goals based on popular solving methods used by humans and compare their results. Our agents are able to solve these puzzles with a 100% success rate by just a few hours of training, much better than previous DRL based agents that require large computational time. Further, the proposed approach is compared with Deep Learning based solution for 2x2x2 Rubik's Cube and observed higher success rate.**

***Index Terms*—Parallel Programming ; Q-learning ; Reinforcement Learning ; Twisty Puzzles ; Rubik's Cube ; Agent-based Programming**

I. Introduction

A twisty puzzle is a 3D puzzle made up of a set of pieces that can be arranged in a large number of states using a small number of actions in the form of twists. The Rubik's Cube is the most popular twisty puzzle and has over $4.3x10^{19}$ possible states which can be manipulated through a combination of six fundamental actions. Performing the same action on a particular state always gives the same result. This property allows us to represent the puzzles as Markov Decision Processes (MDPs), thereby making them suitable to be solved via Reinforcement Learning (RL). Reinforcement Learning has lot of applications domains to improve the performance of the system [1] [2] [3]. There have been a lot of advancements in the field of Deep Reinforcement Learning (DRL) recently which can be seen through the success of AlphaGo[4] and OpenAI Five[5]. These DRL models require large amounts of computation power and time to achieve good results. The aim of this paper is to reduce the computation by providing the agent with some human knowledge and using a more traditional RL approach. This is done by using sub-goals to reward certain intermediate states based on various methods used by humans to solve these puzzles.

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Kavish Hukmani, Student, Dept. of Information and Communication Technology, Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal, Karantaka, India, 576104, e-mail: (khukmani@gmail.com)

Sucheta Kolekar, Assistant Professor, Dept. of Information and Communication Technology, Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal, Karantaka, India, 576104, e-mail: (kolekar.sucheta@gmail.com)

Sreekumar Vobugari, Group Manager, Infosys Limited, Hyderabad, India, 500088, email (tcs.vobugari@gmail.com)

*Corresponding Author email: kolekar.sucheta@gmail.com

There is an ever growing community of twisty puzzle solvers worldwide. The World Cubing Association (WCA) conducts hundreds of speed-cubing events all around the world every year. This competition and inquisitiveness has lead to the creation of various methods to solve these puzzles, each with their own advantages and unique approaches. We aim to use these methods to create sub-goals for the agent to help it learn about these puzzle quicker. We compare a few common methods for each of the puzzles used.

The results of these experiments will help in determine the viability of using sub-goals in combination with CS-RL to emulate human behaviour for similar highly sequential problems which can be represented by MDPs. Some of these highly sequential problems are Supply Chain Optimization (SCO), DNA folding and Vehicle Routing.

The particulars of the experiment can be found in three sections; Twisty Puzzles (Section III), Methodology (Section IV) and Results (Section V). The twisty puzzles section contains background information about each of the puzzles including their structure and complexity. The methodology section has details about the environment used. It also contains information about the techniques and algorithms used to train the agents. Lastly, it describes the testing methodology used. The results section consists of various graphs and tables of multiple parameters that are used to measure the success of the agents. It also explains various trends seen and discusses possible reasons for the same. These results are summarized as a conclusion in Section VI along with the scope of similar experiments in the future.

II. Related Work

This section describes some of the contributions and research which have led to the solve twisty puzzles using Parallel Q-Learning. AlphaGo Zero [4] started a boom in the usage of DRL as a means to solve puzzles and play games. It used a combination of MCTS and self-play RL. It was a major breakthrough and a variant of the same system defeated the reigning Go World Champion Lee Sedol. It was trained using sixty-four GPU, nineteen and four TPU workers and servers for inference which costed approximately $25 Million[6].

Another popular breakthrough was the OpenAI Five [5], a collection of five individual agents that defeated reigning champions in a 5v5 game of Dota 2. It is one of the most popular games on Steam, a popular PC game store[7]. The Five used a scaled up version of Proximal Policy Optimization(PPO) in combination with a separate LSTM for each hero in the game[8]. It was trained on 256 GPUs and 128,000 CPU cores for a total of 180 years of gameplay[8].

DeepMind's AlphaStar [9] achieved a similar feat by becoming better at StarCraft II than 99.8% of players. The AI also beat various pro players in the 1v1 game mode. It was trained using a combination of supervised learning on

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Research Article

CNN-Based Brain Tumor Detection Model Using Local Binary Pattern and Multilayered SVM Classifier

Morarjee Kolla,[1] Rupesh Kumar Mishra,[1] S Zahoor ul Huq,[2] Y. Vijayalata,[3] M Venu Gopalachari,[4] and KazyNoor-e-Alam Siddiquee[5]

[1]*Department of Computer Science and Engineering, Chaitanya Bharthi Institute of Technology, Hyderabad, Telangana, India*
[2]*Department of Computer Science and Engineering, G. Pulla Reddy Engineering College, Kurnool, Andhra Pradesh, India*
[3]*Department of Computer Science and Engineering, Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad, Telangana, India*
[4]*Department of Information Technology, Chaitanya Bharthi Institute of Technology, Hyderabad, Telangana, India*
[5]*Department of Computer Science and Engineering, University of Science & Technology, Chattogram, Bangladesh*

Correspondence should be addressed to KazyNoor-e-Alam Siddiquee; knas11@gmail.com

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In this paper, an autonomous brain tumor segmentation and detection model is developed utilizing a convolutional neural network technique that included a local binary pattern and a multilayered support vector machine. The detection and classification of brain tumors are a key feature in order to aid physicians; an intelligent system must be designed with less manual work and more automated operations in mind. The collected images are then processed using image filtering techniques, followed by image intensity normalization, before proceeding to the patch extraction stage, which results in patch extracted images. During feature extraction, the RGB image is converted to a binary image by grayscale conversion via the colormap process, and this process is then completed by the local binary pattern (LBP). To extract feature information, a convolutional network can be utilized, while to detect objects, a multilayered support vector machine (ML-SVM) can be employed. CNN is a popular deep learning algorithm that is utilized in a wide variety of engineering applications. Finally, the classification approach used in this work aids in determining the presence or absence of a brain tumor. To conduct the comparison, the entire work is tested against existing procedures and the proposed approach using critical metrics such as dice similarity coefficient (DSC), Jaccard similarity index (JSI), sensitivity (SE), accuracy (ACC), specificity (SP), and precision (PR).

1. Introduction

Brain tumors develop as a result of unregulated and fast cell proliferation. It can be fatal if not addressed in the early stages. Machine learning techniques are used to assist clinicians in detecting brain tumors and making judgments. The progression in the deep learning procedures involving the best classifiers impacted a significant advance in medical image processing in recent years. A brain tumor develops when brain tissues develop abnormally. The malignant tissues outgrow the healthy cells, resulting in a mass of cells that eventually transform into tumors [1]. Magnetic resonance imaging (MRI) has been the gold standard for noninvasive brain tumor identification in the last few decades due to its improved soft tissue contrast [2, 3]. MRIs have a considerable impact on medical image processing and analysis due to their ability to provide high-resolution information about brain structure and abnormalities [4–6]. A malignant brain tumor grows significantly more quickly than a benign tumor and is more prone to spread to other parts of the brain. Primary malignant brain tumors have poor prognoses and greatly affect cognitive abilities as well as quality of life [7]. The analysis of medical images is critical in assisting people in diagnosing various disorders. The advanced medical imaging modalities are commonly used methods for analyzing anomalies in brain tissues, which can

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Research Article

Design and Implementation of Brain Tumor Segmentation and Detection Using a Novel Woelfel Filter and Morphological Segmentation

M Venu Gopalachari,[1] Morarjee Kolla,[2] Rupesh Kumar Mishra,[2] and Zarin Tasneem[3]

[1]*Department of Information Technology, Chaitanya Bharathi Institute of Technology, Hyderabad, Telangana, India*
[2]*Department of Computer Science and Engineering, Chaitanya Bharathi Institute of Technology, Hyderabad, Telangana, India*
[3]*Department of Computer Science and Engineering, University of Science and Technology, Chattogram, Bangladesh*

Correspondence should be addressed to Zarin Tasneem; hodcse@ustc.ac.bd

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Neuroimaging is critical in the diagnosis and treatment of brain cancers; however, the first detection of tumors is a challenge. Detection techniques like image segmentation are heavily reliant on the segmented image's resolution. Magnetic resonance imaging (MRI) tumor segmentation has emerged as a new study area in the medical imaging field. This spongy and delicate mass of tissue is the brain. Stable conditions allow for patterns to enter and interact with each other. To put it simply, a tumor is a mass of tissue that has grown unchecked by the natural mechanisms that keep it under control. When cells divide uncontrollably, they create a cancerous tumor. Brain tumors can be detected and segmented using a variety of methods. A new method for detecting brain tumors using MRI images is presented in this research. An innovative Woelfel filter is used for enhancement, and morphological segmentation approaches combined with anisotropic diffusion are used for segmentation. Segmentation of brain tumors can be accomplished using thresholding and morphological techniques, which are both effective. The tumor will be located and identified using morphological image processing. Image denoising refers to the process of removing artefacts such as noise and aliasing from digital images. Here MATLAB programming language is utilised as it incorporates all the toolboxes required for the application involved in the work.

1. Introduction

Medical imaging research has resulted in the development of diagnostic techniques such as computed tomography (CT), magnetic resonance imaging (MRI), and ultrasound. Each has its own set of pros and disadvantages. Medical imaging is the technique of creating images of the inside of the body in order to aid in the diagnosis of a medical condition. It not only aids in the treatment and identification of sickness but also allows for the discovery of inner structures that lay beneath the surface of the skin and bones, which is quite useful. It identifies abnormalities by comparing them to a database of normal anatomy and physiology. The segmentation of brain tumors is a crucial topic in the field of magnetic resonance imaging (MRI). Image segmentation is the process of breaking down a complex image into smaller, more manageable segments for simpler analysis [1]. An MRI scan of the brain is one of the most regularly used diagnostic procedures for the detection of brain tumors. The magnetic resonance imaging (MRI) machine operates in the same way. During scanning by a radio transmitter, an antenna (coil) captures a radio wave generated by the patient's body. The radio transmitter then delivers a radio wave through the patient's body, shaking the protons in the process, which then generates a new radio wave. When the new radio wave is received, it is processed by a computer algorithm, which results in the creation of the magnetic resonance image (MRI). Tumors can be classified into two categories: primary tumors and secondary tumors [2]. Malignant tumors, on the other hand, are cancerous tumors that spread over a

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Enabling effective location-based services for road networks using spatial mining

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G Kiran Kumar
Assistant Professor, CSE Department, Chaitanya Bharathi Institute of Technology, Hyderabad, India

M Venu Gopalachari
mvenugopalachari_it@cbit.ac.in
Associate Professor, IT Department, Chaitanya Bharathi Institute of Technology, Hyderabad, India

Rupesh Mishra
Assistant Professor, CSE Department, Chaitanya Bharathi Institute of Technology, Hyderabad, India

D Jayaram
Assistant Professor, IT Department, Chaitanya Bharathi Institute of Technology, Hyderabad, India

S Rakesh
Assistant Professor, IT Department, Chaitanya Bharathi Institute of Technology, Hyderabad, India

D. Malathi Rani
Assistant Professor, ECE Department, Mamil Laxman Reddy Institute of Technology and Management, Hyderabad, India

Keywords: Spatial Data, Co-Location Patterns, Road Network Distance, Decision Making, SVM, Decision Tree, Random Forest, Naïve Bayes

ABSTRACT

A co-location pattern represents a subset of Boolean spatial attributes whose instances are located in a close geographic space. These patterns are important for location-based services. There are many methods for co-location pattern mining where the distance between the events in close geographic proximity is calculated using a straight-line distance called Euclidean distance. Since most of the real-time tasks are bounded to the road networks, the results

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Research Article

A Novel Blood Group Detection Using Deep Learning

D. Jayaram,
Assistant Professor,
Dept. Of MCA,
Chaitanya Bharathi Institute of Technology (A),
Hyderabad -500075.
mail: jayaramcbit1974@gmail.com

J Shiva Sai
Assistant Professor,
Dept. Of CSE,
Chaitanya Bharathi Institute of Technology (A),
Hyderabad -500075.
mail: shiva.jakkuva@gmail.com

ABSTRACT

Division and tallying of platelets are considered as a significant advance that assists with separating highlights to analyze some particular ailments. The manual tallying of RBCsin minuscule pictures is an amazingly dreary, tedious, and off base procedure. Programmed investigation will permit hematologist specialists to perform quicker and more precisely. Examination of blood classification plays an imperative gathering in the restorative field for any treatment. False transfusion of blood will prompt numerous issues. This framework gives simple and quick methods for distinguishing proof of blood classifications and Rhesus factor none obtrusively. Our structure is tried on a few genuine informational collections of numerous individual images of human finger-tip images. Blood classification is grouped dependent on the nearness and nonappearance of certain organic substances called antibodies and furthermore dependent on the nearness or nonattendance of acquired antigenic protein substances on the surfaces of the erythrocytes in the body. Along these lines by utilizing the optical properties of the antigens and the rhesus calculate present the blood, the blood gatherings can be ordered.

INTRODUCTION

Blood group identification is the key step to ensure blood transfusion safety. In the case of emergency blood transfusion, rapid identification of the type of blood is essential, directly related to the survival of the patient. Blood Typing system is basically used to determine the blood group that the person possesses. Blood Detection is most important and essential activity. The differences in the blood group of individuals are due to presence or absence of certain protein molecule named as antigens or antibodies. The antigen is any foreign substance that causes an immune response either alone or it forms a complex with a large protein molecule. Antibodies are the proteins produced by the immune system to defend against the foreign substances that may cause harm to our body; therefore, they are the guards of our body. The ABO blood group system is found and identified as the first human blood group system by Austria Rand Steiner in early nineteenth Century. There are 4 major blood groups based on presence or absence of antigen on the surface of RBC (Red Blood Corpuscles) . Blood groups are divided into four types i.e. A, B, AB and O. ABO blood group detection follows the agglutination method and then it goes for machine recognition. The agglutinationreaction means that occurred reaction between the antibody and the antigen, indicating the presence of the antigen. Group A has only the A Antigen on the blood cells

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Intelligent Liver Disease Prediction (ILDP) System Using Machine Learning Models

Authors : A. Durga Praveen, T. PanduRanga Vital, D. Jayaram, L. Venkata Satyanarayana

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Abstract

Liver disease (LD) is a common disease in the world. The functionality of the liver is very crucial in the human body where it impacts much physical functionality like the manufacture of protein, Metabolism of iron and sugar, and blood clotting. In the present decade, the research on prediction and prevention of LD with Data Mining and artificial intelligence concepts is very important. For this, artificial inelegancy concepts play a vital role. Many researchers have to utilize machine learning (ML) models for predictions of diseases. In this paper, we present the empirical statistical analysis to prevent the LD and apply efficient ML models for predictions of liver diseases in early with low cost. The data set is collected from hospital and reputed clinical centers of Andhra Pradesh, India during 2018–2020. The data set contains personal and clinical information. We apply reputed 5 ML models that are KNN,

previous chapter next chapter

Literature

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Probabilistic Neural Network-based Model for Identification of Parkinson's Disease by using Voice Profile and Personal Data

Vital, T. Pandu Ranga[a] ; Nayak, Janmenjoy[a] ; Naik, Bighnaraj[b] ; Jayaram D.[c]
Save all to author list

[a] Department of Computer Science Engineering, Aditya Institute of Technology and Management (AITAM), Tekkali, 532201, Andhra Pradesh, India

[b] Department of Computer Science Applications, Veer Surendra Sai University of Technology, Burla, 768018, Odisha, India

[c] Department of MCA, Chaitanya Bharathi Institute of Technology (CBIT), Gandipet, Hyderabad, Telengana, India

Abstract

Parkinson's disease (PD) is an aging neurological disease deficiencies dopamine and occupies the second position among the neurological disease after the Alzheimer's in the world. The identification of PD in the early stage is extremely advanced and expensive. Many researchers investigated on PD in

An Automated Framework for Enterprise Financial Data Pre-processing and Secure Storage

Sirisha Alamanda[1]
Research Scholar, Department of Computer Science
Jawaharlal Nehru Technological University (JNTU-H)
Hyderabad, India

Dr. Suresh Pabboju[2]
Professor, Department of Information Technology
Chaitanya Bharti Institute of Technology
Hyderabad, India

Dr. G. Narasimha[3]
Professor, Department of Computer Science
Jawaharlal Nehru Technological University (JNTU-H)
Hyderabad, India

***Abstract*—The analysis on the financial data is highly crucial and critical as the results or the conclusion communicated based on the analysis can generate a greater impact on the personal and enterprise scale business processes. The primary source of the financial data is the business process and often the data is collected by automation tools deployed at various points of the business process data flow. The data entered in the business process is primary done by the stake holders of the process and at various levels of the process the data is modified, translated and sometimes completed transverter, due to which the impurities or anomalies are introduced in the data. These impurities, such as outliers and missing values, cause a high impact on the final decision after processing these datasets. Hence an appropriate pre-processing for financial data is the demand of the research. A good number of parallel research outcomes can be observed to solve these problems. Nonetheless, majority of the solutions are either highly time complex or not accurate effectively. Thus, this work proposes an automated framework for identification and imputation of the outliers using the iterative clustering method, identification and imputation of the missing values using Differential count based binary iterations method and finally the secure data storage using regression based key generation. The proposed framework has showcased nearly 100% accuracy in detection of outliers and missing values with highly improved time complexity.**

Keywords*—Financial data pre-processing; outlier treatment; missing value treatment; regression; differential iterations; iterative clustering

I. Introduction

The financial data is primarily considered to be time series data, which is variant to the time. The major complexity with the time series data analysis is two. Firstly, the speed of data change is very high. Thus, the algorithm designed to analyse the data, must be highly time efficient. Secondly, the time series data is collected from various sources, thus, the format of the data is also highly critical. These problems are well furnished in the work by C. Chatfield et al. [1]. Nonetheless, the time series data sets are the only option for a valid data analysis for making financial decisions as these financial decisions are expected to be highly time dependent [13].

Many of the cases, it is relevant to analyse the data using neural network-based algorithms due to the factor that these algorithms are less time complex and can generate better results with moderate accuracy. The work by L. Montesdeoca et al. [2] establishes significant observations in concluding the benefits of such algorithms on the financial data. Nevertheless, the primary demand of any neural network-based algorithm is highly sanitized dataset. Thus, the pre-processing of any financial data is highly expected. Also, many of the cases, a big enterprise primarily relies on the outcomes from small business units, which demands final data aggregation for the enterprise as showcased in the work by T. Cook et al. [3]. During such aggregation operations, it is highly possible to receive the final dataset with huge impurities, majorly missing values. Henceforth, it is conclusive that, the pre-processing of the financial data [Fig. 1] is a highly expected feature in any framework. Thus, this research focuses on building a framework for data pre-processing and storage security for business-critical data [19].

A. Research Problem

For financial risk analysis, a plethora of techniques has been created. In general, traditional unsupervised methods for clustering and classification do not provide adequate accuracy and semantics, while supervised approaches for classification and clustering depend on a significant quantity of training data.

B. Motivations and Objectives

This article investigates the semi-supervised scheme for financial data prediction, in which accurate predictions may be anticipated with a bit of quantity of labeled data, as shown in the previous paper. Existing semi-supervised methods have difficulty achieving acceptable results with financial data because of a lack of significant distinguishability across variables. Rather than simply propagating the input labeled data, we transform the input labeled hints to the prior global probability and propagate the 'soft' prior probability to learn the posterior probability to enhance performance.

C. Contributions

The purpose of this paper is to present automated framework for identification and imputation of the outliers using the iterative clustering. For low-security applications that only need modest levels of protection, it is necessary to provide sufficient security Secure Storage for Financial Data. The rest of the work is furnished such as, in the Sections II and III, the fundamental concepts of the data pre-processing and encryption methods for data at rest is analyzed and understood,

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QUANTIFYING COVID-19 VIRUS HEALTH OPINIONS: A CASE STUDY

[1]Babu Enthoti, [2] Kommu Gangadhara Rao
[1]Asstistant Professor, [2]Asstistant Professor
[1]Department of CSE, Malla Reddy Engineering College & Management Sciences, Hyderabad, India
[2]Department of Information Technology, Chaitanya Bharathi Institute of Technology, Hyderabad, India.

ABSTRACT : A huge amount of potentially dangerous COVID-19 misinformation is appearing online. Here we use machine learning to quantify COVID-19 content among online opponents of establishment health guidance, in particular vaccinations (anti-vax) and that the anti-vax community is developing a less focused debate around COVID-19 than its counterpart, the pro-vaccination (pro-vax) community. However, the anti-vax community exhibits a broader range of favors of COVID-19 topics, and hence can appeal to a broader cross-section of individuals seeking COVID-19 guidance online, e.g. individual's way of a mandatory fast-tracked COVID-19 vaccine or those seeking alternative remedies. Hence the anti-vax community looks better positioned to attract fresh support going forward than the pro-vax community. This is concerning since a widespread lack of adoption of a COVID-19 vaccine will mean the world falls short of providing herd immunity, leaving countries open to future COVID-19 resurgences. We provide a probabilistic model that interprets these results and could help in assessing the likely efficiency of intervention strategies. Our approach is scalable and hence tackles the urgent problem facing social media platforms of having to analyze huge volumes of online health misinformation and disinformation.

IndexTerms: probabilistic model, Cloud, social media

I. INTRODUCTION

Scientific experts agree that defeating COVID-19 will depend on developing a vaccine. However, this assumes that a sufficiently large proportion of people would receive a vaccine so that herd immunity is achieved. Because vaccines tend to be less effective in older people, this will require younger generations to have very high COVID-19 vaccination rates in order to guarantee herd immunity .Yet there is already significant opposition to existing vaccinations, e.g. against measles, with some parents already refusing to vaccinate their children. Such vaccine opposition increased the number of cases in the 2019 measles outbreak in the U.S. and beyond. Any future COVID-19 vaccine will likely face similar opposition. What is Virtual Reality?

Online social media platforms, and in particular the built-in communities that platforms like Facebook (FB) feature, have become popular for vaccine opponents (anti-vax) to congregate and share health misinformation. Such misinformation can endanger public health and individual safety. Likewise, vaccine supporters (pro-vax) also congregate in such online communities to discuss and advocate for professional public health guidance. Well before COVID-19, there was already an intense online conflict featuring anti-vax communities and pro-vax communities. Within anti-vax communities, the narratives typically draw on and generate misinformation about establishment medical guidance and distrust of the government, pharmaceutical industry, and new technologies such as 5G communications.

Business Strategy and the Environment

RESEARCH ARTICLE

The impact of sustainable development strategy on sustainable supply chain firm performance in the digital transformation era

Kirti Nayal, Rakesh D. Raut, Vinay Surendra Yadav, Pragati Priyadarshinee, Balkrishna E. Narkhede

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Citations: 4

3D Convolution Neural Network Based Ensemble Model to Detect Endometrium Issues at Early Stages and Enhance Fertility Chances in Women

T. Satya Kiranmai, P.V.Lakshmi

Keywords: Endometrium cyst, Ovary, Machine learning, Detection

ABSTRACT

Endometriosis is a frequent progressive illness in women's health when tissues similar to uterine liner are seen in other sections of the body such as ovaries, fallopian and other reproductive organs. In women, pelvic discomfort and infertility are one of the most prevalent reasons. It is still unknown the real aetiology of endometriosis and very hard to detect. In this research we aim to discover the diagnosis drivers by using ensemble machine learning model from endometriosis. If the chance of endometriosis can be predicted adequately in advance, the main risks of infertility and other health concerns can be eliminated in a large measure. The patients affected can therefore be provided suitable medical attention and treatment. The studies in the article depict that the proposed ensemble model out performs the conventional machine learning algorithms.

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Indoor Navigation Using Augmented Reality

Satya Kiranmai Tadepalli, Preethivardhan Anusri Ega, Pavan Kalyan Inugurthi
Information Technology, Chaitanya Bharathi Institute of Technology(A), Hyderabad, Telangana, India

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ABSTRACT

This system advice directions to the destination in the user's camera screen. QR codes shall be installed at all possible destinations in the building assuming any destination can be the starting point of the user. Users must scan a QR code to select a destination. Google AR Core takes live feed from the user's camera and does simultaneous localization and mapping to update the user's location. Shortest path to the chosen destination is found using A * algorithm and the directions to the destination are shown in the user's camera screen using Augmented Reality. The application is developed in Unity from scratch using some essential plugins like Google ARCore. We aim at developing the front end in the simplest way possible so that the users can easily reach their destination by just opening the camera where the directions are shown as animations in their surroundings.

Keywords : Navigation, QR Code, A* Search Algorithm, NavMesh, Augmented Reality, SLAM.

I. INTRODUCTION

Indoor navigation deals with navigation within buildings. Because GPS reception is normally non-existent inside buildings, Wi-Fi or Bluetooth Beacons can be used for indoor navigation. But these have an accuracy of 5 – 15 meters and require costly hardware installation. It is easier to navigate indoors when you can see your surroundings. So, we intend to develop an Indoor Navigation Application using Augmented Reality.

II. METHODS AND MATERIAL

A. Requirements

It mainly requires the following:

1. Unity
2. Google AR Core
3. Blender

Unity provides a workspace that combines artist-friendly tools with a component-driven design that makes game development pretty darn intuitive. Both 2D and 3D development is possible in Unity, with 2D physics handled by the popular Box2D engine. Unity uses a component-based approach to game dev revolving around prefabs. With prefabs, game designers can build objects and environments more efficiently and scale faster.

Google AR Core is a plugin that brings AR functionalities to unity. To provide augmented reality, our devices need to understand it. ARCore provides a variety of tools for understanding objects in the real world. These tools include environmental

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Systematic Review of Indexing Spatial Skyline Queries for Decision Support

Swathi Sowmya Bavirthi, Department of IT, Chaitanya Bharathi Institute of Technology(A), Hyderabad, India*
Supreethi K. P., Department of CSE, JNTUH College of Engineering, Hyderabad, India

ABSTRACT

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KEYWORDS

Hybrid Indexing, Nearest Neighbor, R-Tree, Spatial Skyline Queries, Textual Relevance

INTRODUCTION

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DOI: 10.4018/IJDSST.286685 *Corresponding Author

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A Mining Approach for Water Pipe line Leakage Detection and Localization

P. VasanthSena, SammulalPorika, M.VenuGopalachari

Mr. P.VasanthaSena, IT department, CBIT, Hyderabad, INDIA. Email: vasanthmtechsit521@gmail.com
Professor SammulalPorika, CSE department, JNTU CEJ, Hyderabad, India. Email: sammulalporika@gmail.com
Dr.M.VenuGopalachari, Assoc Professor, IT department, CBIT, Hyderabad, INDIA. Email:mvenugopalachari_it@cbit.ac.in

Abstract:A test based smart water meter distribution network is a water grid that provides reliable and capable to self protected and trustworthy twenty four hours throughout the week water distribution service. The main of this experiment is that the water pipe line leakage identification and localization. The research based experiment main objective is that the identifying unexpected damages to the water pipelines and find out exact leakage location by using prime factor like longitude and latitude. Providers and Consumers are turning to the Internet of Thing, machine learning and deep learning algorithmic techniques to meet requirement. This is very wearisome task that the continuously look at the system and taking manually requirements. The Smart water meter nodes with hall sensors provide continuous measurements and warehoused in databasecaptured from the smart city water meter distribution grid. Thisresearch journal handlessmart water meter water distribution pipe line leakage detection and localization of faults. In order to find out leakage intensity estimation and exact leakage localization in water distribution pipelines the proposed frameworkuses the pulse rate, flow rate and quantity as prime factors with help of longitude and latitude.The various machine learning and deep learning algorithms are exhibits significantly better result in leakage detection and localization.

Keywords:machine learning, deep learning, classification, smart water meters, leakage detection, leakage localization.

I. INTRODUCTION

Due to increase in population day to day the natural resource like water, air, soil and so on need to be restrain and preservation, so we have to use them wisely and efficiently in these days to preserve for the next generation. In order to address these issues a smart water network was introduced. The main target of these approaches that provide water in reasonable cost and minimizing the water wastage. One of the emphasizing task for smart meter water distribution network faces the problems as measurable amount of the wastage water. The pour out in the smart meter water distribution grid might had occur either maintanace issues such as damaged made human indirectly, rust in the water pipe lines, iron cracks or irregular climate changes like extreme

Water Quality Monitoring System through IoT

P. Vasanth Sena, Dr. Pragati Priyadarshinee, Sammulal Porika
Research Scholar, R & D cell, JNTUH, , Hyderabad, CBIT, INDIA. Email: vasanthmtechsit521@gmail.com
Assistant Professor, Chaitanya Bharathi Institute of Technology(A), Hyderabad-500075, Email:Priyadarshinee.pragati@gmail.com
Professor Sammulal Porika, CSE department, JNTU CEJ, Hyderabad, India. Email: sammulalporika@gmail.com

Abstract

Out of the five-utility water is one important factor. Current edge due to globalization, water pollution has become the threat. The quality of the water should be monitored for the drinking purpose. The article proposes a new approach for water monitoring through Internet of Things (IoT). The IoT system again constitutes several sensors to measure the parameters of drinking water. These parameters can be the PH value, temperature, and density to be measured. These parameters can be processed further by the core controller. Here, Arduino model is used as the core controller. The data can be viewed by the sensors.

Keywords: PH, IoT, sensor, Ardurino model

I.INTRODUCTION

In the twenty first century, due to pollution there was no proper drinking water. Basically, the water quality is measured through its PH value. 7PH value indicates pure water and less or more indicates the water is not safe to drink. Temperature measure is also required to know the quality of drinking water. There was a number of causes for water pollution. Same time processing the quality drinking water is also cost effective and time consuming with methods. The existing system for quality water purification is yet complicated and low performance. The objective of the study is twofold.

i. To introduce an intelligent quality measurement system through internet of thing.
ii. To measure the physical parameters in drinking water.

The rest of the paper is as follows. Literature review is discussed in the section II. Research methodology along with several approaches is discussed in section III. Section IV deals with data validation and preprocessing. Then the section V discusses the result analysis part followed by conclusion in section VI.

II. Literature Review

Integration of different technologies such as virtual instrument technology and frequency hopping communication is done by the proposed system to serve the need of monitoring of water quality through wireless data transmission. Reflected results lead to the adjustment of carrier frequency and use of full radio spectrum is done by spectrum hole detection samples. No interference with samples is needed to perform wireless transmission of data and also the system receives the rich data effectively. Furthermore, nonprofessional staff can also read and interpret the information using this system [1]. Some neighboring countries of India lack safe drinking water. This paper provides water quality supervised system centered upon microcontrollers. Being sensitive to parameters like turbidity, PH value, hydrogen potential

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Machine Learning Based Solution for Detecting Malware Android Applications

A.S.Sharan [1], Dr. K.R.Radhika[2]
Department. of ISE, B.M.S College of Engineering, Bengaluru, under VTU, Belagavi, India
Email : sharansrinivas833@gmail.com

Abstract— Smartphone usage has increased rigorously. Android is one of the most used operating systems in various smartphone worldwide. It is open-source and has chances of installing third-party applications without permission. Android is the most vulnerable operating system for a malware attack. This is a big threat to cyber security. In this paper, we make a dynamic analysis using android network traffic logs. We propose an ensemble modelled approach called XGBoost to detect malware and benign applications using the traffic. The proposed model is providing the accuracy of 92.28% and a Kappa coefficient of 0.83. Finally, some of the good set of features from android applications are outlined that helps us to label them as malware and benign. The proposed model is tested across various metrics and they are providing promising results.

Keywords— Android, Malware, Benign, Ensemble Model, XGBoost, Kappa co-efficient, Detection

I. Introduction

In modern days, smartphones are an essential commodity of life. There many numbers of mobile applications providing various facilities to users. These mobile applications are installed on smartphones. The smartphones contain various numbers of sensors that are used by many of the applications that create a large number of complex data [8,12]. From 2008, an android made its place with the users due to its user-friendly features in applications. Android has access to user's information. The leakage of these data destroys the user's android privacy. Hence attackers are interested in these data. So, they are spreading Malware applications in the android market.

According to the survey made by Kaspersky labs, 80 % of the smartphones uses android as their operating system. One million malware attacks on android devices were recorded in 2019. Malware is the program that disrupts the system operations and stores the users personal and financial information. In the Android platform, to overcome malware application it asks permission from the users while installing [11]. Permissions are offered on its personal because both malicious and benign requires the same set of permissions. Hence this is an ineffective way to detect a malicious application. A Framework must be created to classify malicious and benign applications This can be done by anyone of the two methods.

Static Analysis: It is a quick and inexpensive way to detect malware application by analysing the code. They analyse the variable usage, API calls, code sequences and statements. They can classify the application into malicious or benign without executing the application.

Dynamic Analysis: It is an effective way to detect malicious or benign application by executing the applications in a controlled manner and watching its behaviour. Sandbox is commonly used for dynamic analysis.

We use dynamic analysis because of its efficiency. During the execution of any applications, few features will be recorded. All response and requests are recorded. This log is used to label the application into benign and malware.

A. Working Procedure and Organization of paper

Initially, we shape the dataset and remove all the outliers. Outliers are the numbers which are at the abnormal position other than the normal values. Then the data is normalized and standardized. Now the dataset is divided for training a testing part. The algorithm is trained and then predicted across various algorithms such as K-mean, Decision tree, Naive based, SVM, Ada-boost and XGBoost. By adopting standard metrics such as recall, precision, accuracy, F1 score which is also called as sensitivity and specificity to measure how efficient and to check the performance of our work by running the algorithm on dataset produce by reputed organizations.

In the next portion, we discuss the remaining works of our paper as mentioned below. Section II deals with the bibliography that has been the base papers for the current work carried out in this paper, Section III emphasizes on design, methodology and implementation of the proposed algorithm, Section IV discusses results and analysis that includes metrics and performance evaluation with a different algorithm. Finally, the paper is ended by the conclusion in section V.

II. Literature Survey

Anshul Arora [2] et.al. has developed a detector to detect malware and benign applications using the rule-based classifier. Initially, they analyse the features according to the behaviour of network traffic. Then they distinguish the features depending on the importance. They build the classifier and train the traffic. The classifier is used to predict the traffic as malware or benign. This experiment is only specific to those malware which is connected to remote servers in the background.

Westyarian et al. [3] use 205 malware and benign applications for analysis. They use kernel-level logs such as API system calls based on permissions for analysis. They make a correlation comparison that doesn't affect the machine learning algorithm for detecting malware. They classify using SVM, J48 and random forest machine learning algorithms.

DISEASE DIAGNOSIS WITH MEDICAL PRESCRIPTION

Prof Dr K RADHIKA
Chaitanya Bharathi Institute of Technology (Autonomous) Hyderabad
Balaji Phani Pranav Padala, S Yadavendra Reddy

Abstract

In the 21st century there has been many profound technological advances taking place, and there are also many advances in the field of medicine. Due to this, the life expectancy increased from 40-50 years in the 19th century to 60-70 years in 21st century. Since 1950s due to the sudden rise in artificial intelligence, there is a lot of development in the medical field which has a great impact on the health conditions of human beings. The machine learning techniques are used in the medical field for further improvement. We are proposing the solution by using the different concepts of Artificial Intelligence/Machine Learning. We are implementing the components such as Disease Prediction and Medicine/Drug Recommendation based on the disease. In the proposed solution, the first component is based on entering the symptoms details which are used in to predict the disease by machine learning models like Logistic Regression, Support vector machine. Then based on the disease predicted and from the dataset provided, the medicines are prescribed and the results obtained are nearly with 95% accuracy.

Key Words *: machine learning, Random forest, support vector machines, Tkinter GUI, bagging, logistic regression, SQLite, drug prediction, symptoms*

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1 INTRODUCTION

1.1 HISTORY OF ARTIFICIAL INTELLIGENCE

In the 21st century the technology has advanced and there have been a lot of changes in several fields including medical, military, commercial etc. In computer science, Artificial intelligence is defined as machine intelligence and with that we are able to make technological progress. The concept of artificial intelligence from 1940's to 1950's where a handful of scientists from a variety of fields (Mathematics, psychology, engineering and computer science and linguistics) came up with a theory where machines could think by themselves without the human intervention. During the mid-1950 the subject of Artificial Intelligence was imbibed into general academic studies. Gradually the Concept of machine learning emerged and in 2010's the Deep learning also emerged.

TO FORECAST HOSPITAL ADMISSIONS FROM THE EMERGENCY DEPARTMENT USING DATA MINING TECHNIQUES

A.Mohan[1] ,Uppala Shravya [2] Dr.M.venugopalachari [3]

[1]Asst.professor(Computer Science and Engineering),CBIT,Hyderabad

[2]UGstudent (Computer Science and Engineering),CBIT, Hyderabad

[3]Associate.professor(information technology),CBIT,Hyderabad

[1]amohan_cse@cbit.ac.in,[2]shravyareddyu@gmail.com,[3]mvenugopalachari_it@cbit.ac.in

Abstract:

Crowding within Emergency Departments (EDs) can have notable negative consequences for patients. EDs, therefore, got to explore the utilization of innovative methods to enhance patient flow and stop overcrowding. One potential method is the use of knowledge mining using machine learning techniques to predict ED admissions. This work will show the collected administrative data from two major acute hospitals to match contrasting machine learning algorithms in predicting the danger of admission from the ED. Here we use three common algorithms to create the predictive models: (1) logistic regression, (2) decision trees, and (3) gradient boosted machines (GBM). Drawing on logistic regression, we identify several factors associated with hospital admissions including hospital site, age, arrival mode, triage category, care group, previous admission within the past month, and former admission within the past year. This study highlights the potential advantage of three common machine learning algorithms in predicting patient admissions. Practical implementation of the models developed during this study in decision support tools would offer a snapshot of predicted admissions from the emergency department at a given time, allowing advance resource planning and, therefore, the avoidance of bottlenecks in patient flow, also a comparison of predicted and actual admission rates.

Keyword: logistic regression, decision trees and gradient boosted machines

I. INTRODUCTION

Emergency department (ED) crowding can have serious negative consequences for patients and staff, like increased wait time, ambulance diversion, reduce staff morale, adverse patient outcomes like increased mortality, and cancellation of elective procedures. Previous research has shown ED crowding to be a significant

A DEEP LEARNING APPROACH FOR CRIMINAL PREDICTION ANALYSIS

M Venu Gopalachari[1], Udumala Vineeth[2], Zohaib Abdullah Ahmed[2]

[1]*Associate Professor, Department of IT, Chaitanya Bharathi Institute of Technology, Hyderabad.*

[2] *UG Student, Department of IT, Chaitanya Bharathi Institute of Technology, Hyderabad.*

[1]*mvenugopalachari_it@cbit.ac.in,* [2]*ugs17118_it.vineeth@cbit.ac.in,*
[3]*ugs17120_it.zohaib@cbit.ac.in*

Abstract: *With crime being one of the dominant aspects of our society, a huge number of crimes are committed on a daily basis and predicting what type of crime and where it is happening has become the major concern to society. In previous traditions, crime is usually predicted using historical data such as time , location ,type of crime, gender of victim, these attributes are the only way of predicting a crime but in our paper we are trying to use voice data integrated into an application which can detect a potential victims voice and based on what the victim says the application will pick up on that and trigger an alert notifying anyone nearby in the area to come help the victim in trouble. The different voice inputs we provide can be used to develop the sound classification systems to overcome efficiency issues of the traditional systems. Our aim, in this paper, is to use the voice data analysis for classifying the different voice data based on the generated spectrograms of these voice data. We used the spectrogram analysis of voice data to train the convolutional neural network (CNN). This work uses one dataset named Speech commands dataset. This system was trained on this dataset, and the achieved accuracy was 82% in CNN. From this, it is concluded that the proposed approach for sound classification using the spectrogram analysis of sounds can be efficiently used to develop the sound classification. It is seen that artificial intelligence and deep learning models have shown its importance in almost all the fields and crime prediction is one of them. The ability to predict the crime which can occur in future can help the law enforcement agencies in preventing the crime before it occurs. The capability to predict any crime on the basis of voice data can be a game changer. Thus, the crime prediction and analysis methods are very important to detect the future crimes and reduce them.*

Keywords: **crime prediction, CNN, voice prediction, audio processing**

1. INTRODUCTION

Crime prediction and criminal identification are the major problems to the police department as there are tremendous amount of crime data that exist. There is a need of technology through which the case solving could be faster. We could do this with the help of machine learning, it came out that machine learning and data science can make the work easier and faster. The aim of this project is to make crime prediction using the features present in the dataset, specifically 'Voice Data'. The dataset is extracted from the official sites and we used a few of our own voice data we gathered. With the help of machine learning algorithms and spectrogram. We can predict whether a potential victim is in danger or not just with the voice alone, the application will detect if a victim is in danger or not, it can distinguish if a person is in trouble or not just with the data set we provide for it to train and test with. The objective would be to train a model for prediction. The training would be done using the training data set which will be validated using the test dataset. Building the model will be done using better algorithm depending upon the accuracy. The Convolutional Neural Network (CNN) classification and other algorithms like spectrogram analysis will be used for crime prediction. This work helps the law enforcement agencies to predict and detect crimes in India or anywhere that matter of fact which thus reduces the crime.

Crime prediction is an essential area of research to oversee criminal activities for the law and enforcement agencies. A vast amount of literature has been cited to identify and predict criminal activity. However, it is difficult to review the available shreds of evidence based on traditional literature. The aim is to figure out different techniques where technology can come into play, we have all seen law enforcement use only historical literature to predict hotspots of where crime occurs frequently which is

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Hashtag Generation with Transfer Learning

M. Venu Gopalachari[1], Pavan Pawar[2], Nishtharth Kasireddy[3], S Rakesh [4]
[1]*Associate Professor,* [2, 3]*UG Student,* [4]*Assistant Professor Department of IT, Chaitanya Bharathi Institute of Technology, Hyderabad*

Abstract— In the recent past, Online Marketing applications have been a focus of research. Now-a-days we can observe a rapid growth of users on social media platforms which makes these platforms more suitable for Online Marketing. But still there are enormous challenges on the accuracy and authenticity of the content posted through social media. And if the social media business platforms are considered, majority of the users who try to add a market value to their own product face the problem of not getting enough attention from their target audience. Hashtags are super useful, not only do they help users find their desired product, they also help businesses reach their target audience. This paper focuses on providing trending hashtags for businesses to increase their reach in the market and also help users find their desired product. Firstly Data collection and preprocessing is done next few pre-trained model are selected for performing transfer learning, comparing results of various pre-trained models and choosing the best one and get the trending hashtags
***Keywords*— hashtag generation, deep learning, social media analytics, social networks, automatic recommendation**

I. INTRODUCTION

Now-a-days as most of the people are using social media, ordering clothes online, ordering food online etc., and on the other hand we can also see newly emerging businesses which strive to provide best quality products to its customers. But all these businesses fail to reach their target audience due to lack of knowledge about social media marketing[1, 7]. This is because social media is vast and also dynamic. So to solve this problem hashtags are at rescue. Hashtags are super useful, Not only do they help users find content, they also help recommendation systems to curate content to users, and that has intrinsic value in it. Better product recommendations means happier users and more happier businesses [10, 11]. There are many researches done and projects developed which generate a short caption on image provided but there are very fewer sources that talk about hashtags and their importance. As we know that social media is vast and tracking changes and finding the public interests is difficult and to solve this problem hashtags were introduced i.e., classifying the content on internet [8].

Figure 1 Like percentage vs No.of Hashtags(2020)

There are many researches done and projects developed which generate a short caption on image provided but there are very fewer sources that talk about hashtags and their importance [9]. As we know that social media is vast and tracking changes and finding the public interests is difficult and to solve this problem hashtags were introduced i.e., classifying the content on internet. Since hashtags increase the reach and engagement of content, they are a great way to increase traffic on Twitter, Instagram, and other social media platforms. The purpose of this work is to develop a safe and efficient trending hashtag generating application for social media marketers (business users) which generates trending and relevant hashtags for user content. The main problem related to this paper is identifying the image and giving hashtags which are on top of search results in Instagram. Instagram does not allow users to scrape its posts in large number so to tackle this, transfer learning and Instaloader API are used in the paper.

II. RELATED WORK

The analysis phase in [1] was focused on gathering information about the existing systems and analyzing the weaknesses and strengths of the respective systems which lead to the concept of developing the new system. Requirements of the new system were clearly understood during the analysis phase. The research team identified main users of the "Trending Hashtag Generator and Image Authenticator" are social media marketers, promoters and their target audience [5, 6]. After conducting a

Minimal Influential Node Set Detection in Social Networks

[1]M Venu Gopalachari, [2]P Hima Bindu, [3]S. Rakesh
[1]Associate Professor, [2]PG Student, [3]Assistant Professor
[1]Department of IT,
[1]Chaitanya Bharathi Institute of Technology, Hyderabad, India

Abstract : Social Networks became popular in recent times with the applications such as facebook, twitter, wechat etc, which provides a platform to share wide variety of information in turn involved in many business models like target marketing. Social influence analysis (SIA) is a vast research field on the social networks that includes topics such as community detection, influence maximization and minimization, flow of influence, and individual influence. This project focuses on influence maximization problem, which is to select a subset of nodes, so that the spread of information could be maximized. However, the existing works were more focused to define influence propagation but did not consider the size of the influence node set. The size of the influence node set matters if it overlaps neighbor node set. Also the existing works considered positive influence dominant set while the negative influence is ignored. This paper developed a methodology that detects minimum sized maximum influential nodes in social network which also considers the percentages of positive and negative influences of the users in the community.

IndexTerms **- Social Networks, Influential Node set, Minimum Influential Node, Greedy algorithm**

I. INTRODUCTION

A social network (e.g., Facebook, Google+, and Myspace) is composed of a set of nodes (such as individuals or organizations) theft share a similar interest or purpose. The social network is a powerful medium of communication for sharing, exchanging. and disseminating information, and for spreading influence beyond the traditional social interactions [1]. Since social networks emerged, they have significantly expanded our social circles and become a bridge to connect our daily physical life and the virtual web space. With the emergence of social applications (such as Flickr, Wikis, Netflix, and Twitter, etc.), a tremendous interest has focused on how social networks can be utilized effectively to spread ideas or information within a community. Capturing the dynamics of a social network is a complex problem, thus, it requires an approach to analyse the dynamics of positive and negative social influences that result from individual-to- individual and individual-to-group interactions. Individuals in a social network may have both positive and negative influences on each other.

For example, within the context of gambling, a gambling insulator has a positive influence on his friends/neighbours. Moreover, if many of an individual's friends are gambling insulators, then the aggregated positive influence is exacerbated [2]. However, an individual might become a gambler, who has a negative impact on his friends/neighbours. A social network is defined as a chain of individual and their personal connections. Expanding one's connections with other people is a technique that can be used both for personal or business reasons. It is based on the concept of "six degree of separation", where in any two people can make contact by a chain of most five mediators. Alternatively referred to as a virtual community or profile site, a social network is a website that brings people together share ideas and interest .this type of together to talk, share idea and interests this is knows as social media examples of social media is Discord, Quora, Vero, Flick etc. here comes about the opinion mining or sentiment analysis aims to determine the attitude of a speaker with respect to some topic or the overall contextual polarity of the document.

This opinion mining is important because opinions are the key influences of our behaviours, our beliefs and perceptions of reality are conditional how other see the world. Whenever we need to make a decision we often seek out the opinion from others.it is the area of research that attempts to make automatic system to determine human opinion from text written in natural language and the process of analysing the text about a topic written in a natural language classify them as positive negative or neutral based on the human sentimental emotions opinion expressed in it.

Social influence analysis is a vast research field that has attracted research interest in many areas we analyse social influence method including influence maximization and minimization flow of influence and individual influence. In a minimum sized positive individual domination set D, so that every other node has at least half of the its neighbours is considered, and while the negative influence is ignored. Most studies ignore negative influences among individuals and groups. For this a new optimization problem called the Minimum-sized Positive Influential Node Set (MPINS) selection problem is proposed to identify the minimum set of influential nodes such that every node in the network can be positively influenced by these selected nodes. In this paper a methodology is developed that detects minimum size maximum influential nodes that means in social networks which also consider the negative influences of the user in the community.

II. RELATED WORK

Influence maximization is a classic optimization problem studied in the area of social network analysis and viral marketing [1]. Given a network, it is defined as the problem of finding k seed nodes so that the influence spread of the network can be optimized. Kempe et al. have proved that this problem is NP hard and the objective function is sub modular, based on which a greedy algorithm was proposed to give a near optimal solution [2]. However, this simple greedy algorithm is time consuming, which limits its application on large-scale networks. Heuristic algorithms generally cannot provide any performance guarantee [3, 4]. To solve this problem, in this paper they propose CoFIM, a community-based framework for influence maximization on large-scale networks. In our framework the influence propagation process is divided into two phases:(i) seeds expansion; and (ii)intra-community propagation. The first phase is the expansion of seed nodes among different communities at the beginning of diffusion. The second phase is the influence propagation within communities which are independent of each

MEDICAL IMAGE SECURITY BASED on REVERSIBLE DATA HIDING

Sugamya katta
Dept.of IT , CBIT

Suresh Pabboju
Dept.of IT , CBIT

Swapnika
Dept.ofIT,CBIT

Abstract : A system that combines encryption standards with watermarking techniques to provide security to exchanged medical images is the main concern of this paper. The system is based on a hybrid algorithm that applies the techniques of encryption and watermarking to offer different security features to medical images transmitted between healthcare entities. Based on the proposed algorithm, the authenticity and integrity of the transmitted images can be verified either in the spatial domain or in the encrypted domain or in both domains. This is achieved by joining the watermarked image and its encrypted version after embedding two unique watermarks; one in the plain image and one in the encrypted image. The proposed algorithm makes use of the concept of bit planes where two images consist of 8-bit planes combined to form a single image having 16-bit planes. The algorithm provides high embedding capacity while keeping low computational complexity.

Keywrds : Digital Imaging and Communication in Medicine (DICOM), Reverse Data Hiding (RDH) Advanced Encryption Standard (AES).

1. INTRODUCTION

Telemedicine is the remote delivery of healthcare services, such as health assessments or consultations, over the telecommunications infrastructure. Today, the world has been digitalized [1] in all the ways. Every business units, government and private sectors, research [2] units are using the digital image as transferring mode for every critical data. As these images over the internet will not be secure, there is a need of image security. Currently, there exist various image security[3] techniques like encryption, watermarking, steganography, etc. This project combines both watermarking and encryption techniques to provide image security. To provide safe transmission of medical images [4] between different health entities, cryptographic techniques and digital watermarking technologies [5] have been widely used. In cryptography, encryption standards and digital signatures are used to provide confidentiality, authenticity, and integrity [6] to exchanged images. However, the medical images are subject to different types of manipulations and illegal redistribution once they get decrypted [7] at the receiving health entity. On the other hand, digital watermarking [8] techniques have been proposed in recent years for embedding information into objects such as images, audio signals, and video frames, which can be used for media notation, copyright protection, integrity, authentication, [10]and covert communication. Therefore, digital watermarking technologies can achieve authenticity and integrity by embedding control information watermarks in the digital objects, whereas confidentiality is not achieved. To compare the two technologies, digital watermarking [11] can be considered as *pre protection* mechanism; whereas encryption can be considered as a *posteriori* control mechanism as the image content is still available for interpretations [12] while the remaining is protected.The International Health Organisation (IHO) published some special standards that deals with the medical [13] data security issues. One such standard is Digital Imaging and Communication in Medicine (DICOM) [14]. It provides guidelines and mechanisms to the healthcare professionals and healthcare entities to achieve telemedicine security. The medical images are subject to different types of manipulations and illegal redistribution [15].To provides security for the safe transmission of medical images by using encryption with watermarking techniques.

2. METHODOLOGY

In this work, a data hiding algorithm based on watermarking and encryption techniques is used. The algorithm makes use of the concept of bit planes where it combines two images each consisting of 8-bit planes in a single image consisting of 16-bit planes. The algorithm can be seen as employing encryption at the sender side where the two joined 8-bit plane images i.e.; the combined image has the encrypted and plain bit planes shuffled. On the other hand, it can be seen as employing decryption at the receiver side

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Design and Development of a Fuzzy Logic Controller for Prediction of Outer Surface Finish of Flow Formed Component

P.V.R.Ravindra Reddy[1], B.Veerajyothi[2]

[1,]Professors, Mechanical Engineering Department, Chaitanya Bharathi Institute of Technology, Hyderabad-75

[2] Assistant Professor, Department of Information Technology,Chaitanya Bharathi Institute of Technology, Hyderabad-75

ravindrareddypvr_mech@cbit.ac.in[1],veerajyothi_it@cbit.ac.in[2]

Abstract: *Fuzzy logic controller (FLC) is well suited where there is a considerable amount of uncertainty in the process. Flow forming is an incremental forming process widely used used to reduce thickness of the tubes. Compared to machining it improves the strength. It is extensively used for manufacturing of components used for aerospace and automobile applications. The surface finish depends on stagger and the feed rate and their combined effect on the surface finish of the tube formed by flow forming process. The uncertainty arises due variation of these parameters . Hence in the present work a Fuzzy logic controller is developed to predict the surface finish with variation of stagger and feed rate and validated. The experiments are carried out on SAE 4130 Steel using L4 orthogonal array. To deal . To minimise the no. of experiments in designing data base an L-4 orthogonal array is chosen for experimentation. Flow forming is carried out and and data base with 4 rules are formulated. Triangular membership function is selected for the input and out variables and FLC is designed. The FLC is validated with 5 more experiments. Mamdani approach is used to develop the Fuzzy controller.*

Key words: *Orthogonal array, Fuzzy logic controller, Flow forming, Triangular function, Mamdani approach, crisp value, Membership function.*

1.0 Introduction

A fuzzy logic controller is described by a set of rules of type IF (condition) THEN (action) to convert the language control strategy acquired from a human expert into a well-adapted automatic control strategy [1]. Fuzzilogic controllers are extensively used in many engineering application [2-6]

Flow forming is process in which tube fitted on the madrel is is locally deformed by the rollers to reduce its thickness. In the processes the mechanical properties of the material improve a lot . before the mid of 20th century , the thin walled components form the sheet metal such as domestic products were used to be manufactured by spinning process [7]. Due to higher skill requirement and lower repeatable more mechanised processes such as flow forming is developed [8]. More over lubrication becomes a major problem in drawing of long cylinders necciating a better process for manufacturing of thin walled cylindrical components [9] as the There is a significant work by various authors on mechanics of shear forming, shear spinning of cones, spinning of tubes. It is very difficult, if not impossible, to work to close dimensional tolerances, especially when producing large diameter articles from thin gauge material. It is equally difficult to control thickness variations in the final product to less than about 25% of the blank thickness. In contrast to hand spinning sheet metal, flow forming is based upon the principle of equal volumes. The basic shape used for practically all calculations in flow forming is cylinder. The thickness of the preforms is a function of the final length of the finished product [10]. Flow forming is a technique of elongating a thick walled preforms by reducing its wall thickness.[11]. Because of a number of merits such as lesser loads, flexibility, cheaper tooling the designs can be optimized for weight and cost specifically in automotive and aerospace [12]

ANALYSIS ON EMPLOYEE PERFORMANCE AND 3D PRINTING TECHNIQUE IN GARMENT INDUSTRIES

Dr.L.Suresh Kumar, Assistant Professor, chaitanya Bharati Institute of Technology,Gandipet, Hyderabad, Teangana, India.
Dr.K.Hari Prasad Reddy, Associate Professor, Center for Management Studies, Jain to be Deemed University, Lalbagh Main Road, Bangalore,Karnataka,India.
Dr.B.Veera Jyothi, Assistant Professor, chaitanya Bharati Institute of Technology,Gandipet, Hyderabad, Teangana, India.

Abstract
In the garment industries the concept such as quality of work life, motivation and retention performs the significant role. The three concepts incorporate the major task in the garment industries and this study explains 3Dprinting techniques. The top-level management faces several disputes because of these factors. The authors chose these important attributes to solve the disputes in the garment industries. The quality of work life describes the infrastructure, statutory labor welfare measures, health and safety life of the employees in the garment unit. Motivation creates stimuli to work in the organization. The motivation may be monetary and Non-monetary aspects for the employees. To retain the skillful employees is the primary task for the employers in the organization. This study analysis all the three factors and 3D printing techniques concepts with the structure questionnaire for hundred employees in the organization. The tools like percentage analysis are performed to adopt suitable suggestions to improvise in the garment field.

Keywords: Quality of work life, Job fulfillment, Motivation, Monetary, Skillful, Retention.

1 Introduction

Quality of work life ensures the fulfillment level of employees in the organization, where it mentions to the advantageousness or unavoidableness of a job environment for the human beings operating in an organization.

The overriding motive of QWL is to change the climate of employees and improve the human-technological-organizational interface of employees. In the olden days the conventional organizationprovidedinadequateconsideration to human values. In the existingsituation, ambitions of the employees are altering. Gradually for better QWL. The concept of QWL such as humanizations of work, employed life, business inequality and participative work. QWL is a way of considering human beings, for Quality work life towards the distinctive elements focuses about the difficulty about the impact of labor on human beings asstructuralefficiency, and (ii) the concept of contribution in structuralefforts.

2 Employee Motivation

Employee motivation is explains the stimuli for the employees to generate the factors like d enthusiasm, dedication and the quantity of creativity that and worker brings to the business enterprise on an everydaybasis.

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TOTAL QUALITY MANAGEMENT ANALYSIS ON FACTORS AFFECTING AN ORGANIZATIONAL DEVELOPMENT

Dr.B.Veera Jyothi, Assistant Professor, chaitanya Bharati Institute of Technology,Gandipet, Hyderabad, Teangana, India.
Dr.K.Hari Prasad Reddy, Associate Professor, Center for Management Studies, Jain to be Deemed University, Lalbagh Main Road, Bangalore,Karnataka,India.
Dr.L.Suresh Kumar, Assistant Professor, chaitanya Bharati Institute of Technology,Gandipet, Hyderabad, Teangana, India.

Abstract
This assessment was grasped to separate and understand the entire quality administration in gathering of Aditya Birla. Here, this examination shows the importance of mean administration of quality and its impact that might update, quality, productiveness displays of affiliation. Moreover, the art of finishing contribution by people. Also, the term TQM refers to organization thinking, which could be normally recognized in the form of strategy for enhancing the productivity of relationship. The term TQM refers to feeling, which organization strategies, devices, & structures might be used in the form of technique aimed at social occasion & demonstrating information as to deal with empower brain of human to understand insights and musings, which implemented to physical models, reason the systems for yielding optimal outcomes. Moreover, organization quality composing provides an extensive extent of significant worth over the board devices, techniques, and structures most generally identified in the organization quality. Here, objective of amass in Assembling ofAditya Birla, for mull over robust and fast superiority organization of Assembling of Aditya Birla to look at care amid laborers regarding appraisals of quality taken by Assembling of Aditya Birla. For examining the system of qualitysucceededAssemblingof Aditya Birla. Here, assessmenthas been furthermore begun thru help of Assemblingof Aditya Birla, where huge information & responding for audit. A review including 10 requests was passed on amid3 creation lines and workers might be an ultimate objective of data arrangement. Also, assessment has been carried out in the wake of dealing with respondent information into examination of rate. Furthermore, the assessment of Quality, researchers used some of gadgets TQM for flaw of quality in progress. Moreover, examination uncovered dissects various factors that have been responsible aimed at affecting the gathering of Birla representative to be satisfied, verifying the system of quality. It has been a critical aimed at additional enhancement.

1 Introduction

To be serious in the present market, it is miles basic for assembling gatherings to give more prominent steady fine and charge to their proprietors/clients. This is the ideal opportunity to the area behind us the old unfriendly way to deal with overseeing producing work. The time has come to grow higher and more noteworthy direct associations with our proprietors/clients, to incite more cooperation hands on location, and to give better phenomenal compositions. the idea should be perceived and completed to an association's In request to understand the need for development inside the assembling business and to all the more likely control our drives and creation organizations, Production chiefs need to improve their general presentation. Assembling costs are getting far excessively over the top. Quality administration is more noteworthy intense than it must be. At the point when turnaround on the provide up of request turns into a painful appreciate with unnecessary debates (which must be settled) that ascent up because of lacking remarkable or apathy to agreeable, settlement by utilizing exchange, intervention, or perhaps suit forces a genuine channel at the budgetary wellsprings of a business and limits benefit capability.operations. Meeting owner/buyer necessities (giving client charm) is a main goal of fine administration, and temporary workers who are the suppliers of assembling administrations should adapt to proprietor/benefactor necessities in the event that they are to be victorious. The assembling undertaking exists to offer a support of its owners/clients who have gotten more horrendous and are searching for better best, more exorbitant

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Digital Image Watermarking using Chaotic Encryption and Arnold Transform

Santhosh Voruganti[1], U. Sairam[2]
[1, 2]*Department of Information Technology, Chaitanya Bharathi Institute of Technology, Hyderabad, India-500075*

Abstract: ***Internet has caused an extraordinary increase in the transfer and sharing of digital data like text, videos, images, audio, etc. over it. However, with the advent of modern access technology, multimedia data is more prone to security risks as data can be modified or redistributed without prior permission. Chaotic encryption-based blind digital image watermarking technique applicable to both grayscale and colour images. Discrete cosine transform (DCT) is used before embedding the watermark in the host image. Arnold transform is used in addition to chaotic encryption to add double-layer security to the watermark. Three different variants of the proposed algorithm have been tested and analysed. The simulation results show that the proposed scheme is robust to most of the image processing operations like joint picture expert group compression, sharpening, cropping, and median filtering. To validate the efficiency of the proposed technique, the simulation results are compared with certain state-of-art techniques.***

Keywords: ***Discrete cosine transform, Image Processing Techniques, Chaotic Encryption, Digital watermarking, Arnold Transform.***

I. INTRODUCTION

We are living in an age where the Internet has such a great impact on our lives, that we are dependent on it in every aspect. This internet has transformed the entire world into a global village and in last few years, there has been an extraordinary increase in the transfer and sharing of digital data like text, videos, images, audio, etc. over it. However, with the advent of modern access technology, multimedia data is more prone to security risks as data can be modified or redistributed without prior permission. The security risks may include copyright violations, piracy, hacking, unapproved production and distribution, information theft and several other statistical and differential attacks. According to the Motion Picture Association of America (MPAA) and the Institute of Policy Innovation (IPI), billions of dollars and thousands of jobs are lost annually due to piracy and copyright violation faced by movie, music and software industries.

A. Image Processing Techniques

Image enhancement operations improve the qualities of an image like improving the image's contrast and brightness characteristics, reducing its noise content, or sharpen the details. This just enhances the image and reveals the same information in more understandable image. It does not add any information to it.

Image restoration like enhancement improves the qualities of image but all the operations are mainly based on known, measured, or degradations of the original image. Image restorations are used to restore images with problems such as geometric distortion, improper focus, repetitive noise, and camera motion. It is used to correct images for known degradations.

Image analysis operations produce numerical or graphical information based on characteristics of the original image. They break into objects and then classify them. They depend on the image statistics. Common operations are extraction and description of scene and image features, automated measurements, and object classification. Image analyze are mainly used in machine vision applications.

Image compression and decompression reduce the data content necessary to describe the image. Most of the images contain lot of redundant information, compression removes all the redundancies. Because of the compression the size is reduced, so efficiently stored or transported. The compressed image is decompressed when displayed. Lossless compression preserves the exact data in the original image, but Lossy compression does not represent the original image but provide excellent compression.

Image synthesis operations create images from other images or non-image data. Image synthesis operations generally create images that are either physically impossible or impractical to acquire.

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An AI(Artificial Intelligence) based Device for Covid-19 Fever Detection

Gangadhara Rao Kommu, Vennavaram Nithisha
Information Technology, Chaitanya Bharathi Institute of Technology

Abstract*—Coronavirus disease (covid-19) is a global pandemic, and every country is actively fighting against the virus. It is an effective way to prevent the spread of the virus in finding the person with abnormal temperature promptly to perform the further medical observation. However, the traditional method of temperature measurement has low efficiency and accuracy. Body temperature acting as important role in medicine, several diseases is characterized by a change in human body temperature. Monitoring body temperature also allows the doctor to track the effectiveness of treatments. But current continuous body temperature measurement system is mainly limited by reaction time, movement noise, and labour requirement. In addition, the traditional contact body temperature measurement has the problem of wasting consumables and causing discomfort. To address the above issues, we present a non contact, automatic system using a single thermal non-contact sensor. The Proposed Covid prevention method scans body temperature through MLX9014 Contactless Temperature Sensor and sends the data to Raspberry pi model 3+ architecture. Our application takes data from MLX9014 and analyzes it to see whether the temperature is greater than 37^0 Celsius , which then captures the image through pi camera.

***Keywords*—Raspberry pi model 3+, MLX90614 Contactless Temperature Sensor, pi camera model**

I. INTRODUCTION

The motivation behind this project is that if we can take the help of IOT to measure the skin temperature in a contactless manner based on the pi camera input, it would be helpful to increase our safety. If deployed correctly, the temperature detector could potentially be used to help ensure our safety. The model can be applied to the camera in densely populated areas, essential districts, large-scale industries to scan the people's faces to ensure whether they have the temperature on their face. It can be applying to communities, business buildings, schools, hotels, scenic spots, transportation hubs, and other public service places.[2]

Covid-19 is the major pandemic, we are facing these days, finding the person with abnormal temperature plays a major role in maintaining safety and avoiding the spread of Covid. So, to overcome this issue we need a device to find the body temperature of a person, increasing accuracy up to 75 % to 80 %.

The solution enables the user to identify individuals with an elevated skin temperature efficiently and effectively. An elevated skin temperature is an indicating symptom of an infectious disease. It is noncontact based which prevents the chances of cross-infection. [3]

II. METHODOLOGY

In our approach we try to build a model which takes input from the live camera image and detect the face and screen the body temperature. The accuracy to which the body temperature is predicted mainly depends on the sensor.

A. Raspberry Pi

The Raspberry Pi is a low cost, credit-card sized computer capable of computing, and uses Graze and Python languages. It can be plugged into a computer monitor or TV and uses a keyboard and mouse as input devices. It can replace a desktop computer, from browsing the internet, CAD modelling, frolicking high-definition video and games, and word-processing. To use a raspberry pi for various application an SD Card, display and connectivity cables, keyboard and mouse, power supply and internet connection are required.[4]

B. MLX90614

The MLX90614 is a Contactless Infrared (IR) Digital Temperature Sensor as shown in Figure 2.4.3 that can be used to measure the temperature of a particular object ranging from -70° C to 382.2°C. The sensor uses IR rays to measure the temperature of the object without any physical contact and communicates to the microcontroller.

C. Pi Camera

1) Insert pi camera module to raspberry pi.
2) Launch the Application

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Performance Evaluation of Map Reduce vs. Spark framework on Amazon Machine Image for TeraSort Algorithm

Gangadhara Rao Kommu
Information Technology, Chaitanya Bharathi Institute of Technology

Abstract: TeraSort is one of Hadoop's widely used benchmarks. Hadoop's distribution contains both the input generator and sorting implementations: the TeraGen generates the input and TeraSort conducts the sorting. We focus on the comparison of TeraSort algorithm on the different distributed platforms with different configurations of the resources. We have considered the parameters of measure of efficiency as Compute Time, Data Read, Data Write, Compute Time, and Speedup. We have conducted experiments using Hadoop map reduce and Spark (Java). We empirically evaluate the performance of TeraSort algorithm on Amazon EC2 Machine Images, and demonstrate that it achieves 3.95 × - 2.4 × speedup, compared with TeraSort, for typical settings of interest.

Keywords: TeraSort, Amazon Machine Image (AMI), Hadoop, Spark and Java

I. INTRODUCTION

A. First we use hadoop-mapreduce-examples-2.7.4.jar (hadoop sample program) to generate 128GB and 1TB file in HDFS directly. Then we use map reduce program to sort each file.
B. We split the program into three parts.
C. Main function: it has main function to run the program. In the beginning [1] , it created a job instance then start to set mapper, combiner and reducer function in this job. Finally, it implements each function to sorting the data. To achieve the peak performance, the program also calls combiner, which grouped data in the map phase.
D. Mapper function: it split each line of data in <key, value> pair, which key is first 10 characters, and value is remaining characters. Then it passed all <key, value> pair on combiner function.
E. Reducer function: it took the grouped data from combiner as input and sorting all of the values associated with that key.

II. CONFIGURATION SETUP

A. Amazon machine image (AMI) Specifications
1) Ubuntu Server 18.04 LTS (HVM), SSD Volume Type - ami-82f4dae7
2) Ubuntu Server 18.04 LTS (HVM),EBS General Purpose (SSD) Volume Type. Support available from Canonical
3) With 128GB terasort, we used Amazon ubuntu image 1 x i3.large instance.
4) i3.large (9 ECUs, 2 vCPUs, 2.3 GHz, Intel Broadwell E5-2686v4, 15.25 GiB memory, EBS only) 1 x 475 (SSD)
5) With 1TB terasort, we used Amazon ubuntu image 1 x i3.4xlarge instance.
6) i3.4xlarge (53 ECUs, 16 vCPUs, 2.3 GHz, Intel Broadwell E5-2686v4, 122 GiB memory, EBS only)
7) With 1TB terasort in cluster, we used Amazon ubuntu image 8 x i3.large instance. i3.large (9 ECUs, 2 vCPUs, 2.3 GHz, Intel Broadwell E5-2686v4, 15.25 GiB memory, EBS only) 1 x 475 (SSD)
8) Environment setting: java-8-openjdk-amd64, hadoop-2.7.4
9) We mounted the EBS volume to boot and combine the disks into a RAID-0 to achieve the best possible performance.

III. EXPERIMENTS

A. Experiment -1
1) Experiment Setup: Before running 128GB data set, we installed java environment and hadoop package. Then we start to set each hadoop configuration file hdfs-site.xml, mapred-site.xml, core-site.xml and yarn-site.xml. Next we setup environment variables in ./bashrc and hadoop-env.sh. Then we can format namenode and start hadoop framework. We started testing small dataset like 1GB file to check hadoop is mounted successfully. Then we tested 128GB [2] using 1 mapper and 1 reducer, but it was fail due to lack of disk size. So we mounted 300GB EBS to accommodate datanode and namenode files and 400 GB EBS for temperate data which is generated from map reduce program. The result is shown in Figure 2 to compare experiment 2 results.

Recognition and Annotation of Places of Interest

[1]Satya Kiranmai Tadepalli, [2]Kratika Sharma
Assistant Professor, Assistant Professor,
Information Technology,
Chaitanya Bharathi Institute of Technology(A), Gandipet, Hyderabad,Telangana,India

Abstract : Recognition and Annotation of places of interest for real-time places-of-interest (POI) for smartphone photos, with the availability of online geo-tagged images for POIs as knowledge base. A "Spatial+Visual" (S+V) framework which consists of a probabilistic field-of-view(pFOV) model in the spatial phase and sparse coding similarity metric in the visual phase to recognize phone-captured POIs. An offline Collaborative Salient Area (COSTAR) mining algorithm to detect common visual features (called Costars) among the noisy photos geotagged on each POI, thus, to clean the geotagged image database. The mining result can be utilized to annotate the region-of-interest on the query image during the online query processing. Besides, this mining procedure also improves the efficiency and accuracy of the S+V framework. Furthermore, by extending the pFOV model into a Bayesian FOV(βFOV) model which improves the spatial recognition accuracy by more than 30% and further alleviates visual computation. From a Bayesian point of view, the likelihood of a certain POI being captured by phones is a prior probability in pFOV model which is represented as a posterior probability in βFOV model. Experimenting in the real-world and Oxford 5K datasets show promising recognition results. To provide a fine-grained annotation ground truth, a new dataset is labeled based on Oxford 5K and made it public on the web. COSTAR mining technique outperforms state-of-the-art approach on both dataset.

IndexTerms - COSTAR, Bayesian network, probabilistic FOV model, sparse-coding visual matching technique.

I. INTRODUCTION

The wide proliferation of smartphones, the world is being captured through millions of phone cameras, and then displayed in images via Internet social applications (e.g. Facebook and Flickr) to an enormous audience[1]. These images, ever increasing in numbers at an unprecedented rate, comprise a rich and useful cyber data-source for the physical world. Think of a tourist visiting an unfamiliar city holding a GPS-equipped smartphone. Upon taking a photo of a place (e.g. a building) using their mobile phone, the smartphone will automatically show the name of the place and highlight its region in the screen in real-time. This Knowing Camera Prototype System project, which aims at developing a system for recognizing and annotating outdoor Places-of-Interests (POIs) captured in smartphone photos, relying on geo-tagged photos from online services. Sometimes even when we book a cab, it does not allow us to choose an exact location [2], e.g : House addresses. Visitors not just from other states or countries, even the local people do not have a very clear idea of the locations and nearby places to eat or hangout. It is a tedious task to search for the place on google, then search for restaurants nearby again.

II. Problem Definition

The target of KC is to identify the POI name and annotate its salient region given a query photo. More formally, we rely on two databases:

(1) a POI database denoted by P, where each point p ∈ P has a geolocation p.loc; and

(2) an image database denoted by S, where each photo s ∈ S has a geotag location s.loc and is also associated with one POI in P.

Then, given a query q that contains a query image q.img[1], and its camera geometries stored in q.fov, the goal is:

(3) to recognize the POI q.poi ∈ P being captured in the smartphone photo;

(4) to annotate the respective screen region[3] in q.img by finding a set of local feature points D = {d|d ∈ q.poi} where d ∈ q.poi means that the feature point d is in the POI region in the query photo q.img. It address the first problem by presenting a general "spatial + visual" (S+V) framework. Then extends the work to solve the second problem with a COSTAR mining algorithm. Notably, the output of the mining algorithm can be used as feedbacks to further enhance the solution to the first problem, namely POI recognition.

III. Objective of this Approach

Generally, existing techniques for POI recognition can be classified into two categories, the spatial techniques and the visual ones[1]. It is important to note that although the query contains GPS location, it cannot be directly used to identify the target POI due to two reasons:

(1) GPS is known to be erroneous because of uncertainty[4].

(2) even though the GPS is of high accuracy, the target POI that the smartphone captures may not match its GPS location (e.g. we are standing at the region of some POI while targeting at another POI). Thus, the spatial approach usually restricts the POI candidates as whose locations are within the boundary of the field-of-view (or FOV1) of the camera[5].

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Glaucoma Detection Using Convolution Neural N...

Glaucoma Detection Using Convolution Neural Networks

Author Name : Satya Kiranmai Tadepalli

ABSTRACT
Glaucoma is the most leading cause of irreversible blindness with the population of Africa and Asia ranking the highest over the rate of glaucoma affected regions around the world. The defect will damage eyes irreversibly by affecting the optic cup and optic disc of an eye. The early detection of glaucoma is an unavoidable need in the medical field. The widely used technique to detect glaucoma is an invasive method that may lead to other effects on the eye. This reason led to the introduction of a non-invasive method that follows image processing for the detection of glaucoma. Retinal image-based detection is the best way to choose as it comes under non-invasive methods of detection. Detection of glaucoma using retinal images requires various medical features of the eyes such as optic cup diameter, optic disc diameter and optic cup-to-disc ratio are used. Glaucoma disease detection from retinal images supports convolutional neural networks (CNN). The textual features obtained from retinal images such as the optic cup to optic disc measures are used for this classification. Convolutional Neural Networks use little pre-processing techniques that can be implemented relatively uncomplicated compared to other image classification techniques. The implementation of this project follows the traditional CNN architecture, applying filter layers such as Convolution layer and Pooling layer and also activation functions such as ReLu function and sigmoid function to pre-process as well as to update weights respectively on the hidden layers of the CNN followed by classifying the image.
***Keywords: Glaucoma, DenseNets,ResNet*IJCRT_207012**

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PREDICTION OF CARDIOVASCULAR DISEASES USING GENETIC ALGORITHM AND DEEP LEARNING TECHNIQUES

Kratika Sharma
Dept. of Information Technology
Chaitanya Bharathi Institute of Technology (A)
Hyderabad, India
Kratikasharma_it@cbit.ac.in

T. Satya Kiranmai
Dept. of Information Technology
Chaitanya Bharathi Institute of Technology (A)
Hyderabad, India
tskiranmai_it@cbit.ac.in

Abstract

The early methods of forecasting the cardiovascular diseases resulted in the reduction of risks by helping make effective decisions about the changes to have occurred in high-risk patients. Cardiovascular diseases are a broad range of diseases that are affecting heart and blood vessels. The health care industry stores lots of medical data, therefore machine learning algorithms can be used to make effective decisions in the prediction of heart diseases. Recent research has delved into uniting these techniques to provide hybrid machine learning algorithms. Medical Diagnosis Systems play a vital role in medical practice and are used by many medical professionals for treatment and diagnosis . In this paper, a medical diagnosis system is presented for predicting the risk of cardiovascular disease. This system is built by combining the relative advantages of genetic algorithm and neural network. Multilayered feed forward neural networks are particularly suited to complex classification problems. The weights of the neural network are determined using genetic algorithm because it finds acceptably good set of weights in less number of iterations. The dataset provided by University of California, Irvine (UCI) machine learning repository is used for training and testing. It consists of 303 instances of heart disease data each having 14 attributes including the class label. First, the dataset is preprocessed in order to make them suitable for training. Genetic based neural network is used for training the system. The final weights of the neural network are stored in the weight base and are used for predicting the risk of cardiovascular disease

Keywords— *cardiovascular diseases; genetic algorithm; Multilayered feed forward neural networks; classification problems*

I. INTRODUCTION

The health care industries collect and store huge amounts of data that contain some concealed information, which is useful for making decisions. Some advanced data mining techniques are used for providing appropriate results and making effective decisions on data. In this dynamic world people want to live a life where they work like a machine in order to earn lot of money and live a contented life therefore in this process they forget to take care of

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Survey on Various Techniques for Over-Speed Detection of Vehicles

Kratika Sharma[1], V. Yashwanth Kumar[2], P. Vinil Kumar[3]
[1, 2, 3]Dept. of Information Technology, Chaitanya Bharathi Institute of Technology (A), Hyderabad, India

Abstract: ***Traffic flow prediction and vehicle speed estimation is one of the most important research topics of recent years. The rapid recent advancements in computation ability of everyday computers have made it possible to widely apply deep learning methods to the analysis of traffic surveillance videos. Traffic flow prediction anomaly detection, vehicle re-identification and vehicle tracking are the basic components in traffic analysis. Good solutions to this problem could prevent traffic collisions and help improve road planning by better estimating transit demand.***

In this paper, we detect the vehicles and track them in traffic videos and estimate their speed. We follow 'detect then track' approach. Machine learning and Computer vision approaches are used for object tracking. An algorithm is used for creating classifier, which is used for detecting objects. The vehicle motion is detected and tracked along the frames using dlib library. It is based on the correlation of pixels in bounding boxes containing detected objects in consecutive frames. A data driven approach is used to estimate the speed of vehicle. A model is built for detecting vehicles, correlation trackers are used for tracking vehicles in traffic videos based on detect then track paradigm coupled with data driven speed estimation approach.

Keywords: Tracking, Classifier, Vehicle Detection, Speed estimation.

I. INTRODUCTION

The rapid recent advancements in the computation ability of everyday computers have made it possible to widely apply deep learning methods to the analysis of traffic surveillance videos. Traffic flow prediction, anomaly detection, vehicle re-identification, and vehicle tracking are basic components in traffic analysis. Among these applications, traffic flow prediction, or vehicle speed estimation, is one of the most important research topics of recent years. Good solutions to this problem could prevent traffic collisions and help improve road planning by better estimating transit demand. In this paper, modern machine learning models are combined with classic computer vision approaches to propose an efficient way to predict vehicle speed. Here detect and track approach is used to find the speed of the vehicle.

The continuously increasing number of on-road vehicles has put a lot of pressure on road capacity and infrastructure, making traffic management difficult and giving way to problems like congestion, collisions, and air pollution, among others. These problems have significant impact on our daily lives. A robust and efficient traffic management system is required to reduce their effect. A large amount of traffic data is generated daily. Traffic data contains information related to traffic flow, distribution, pattern, and collisions, which can be used to solve various traffic related issues. Traffic collisions can be analyzed to see the correlation of traffic volume and number and severity of collisions. This helps us to analyse the urban traffic videos and improve traffic conditions and prevent traffic collisions. Also, various statistical parameters, such as the average number of vehicles on the road at a certain time, and the state of congestion can also be studied.

II. RELATED WORK

To ensure decline in road accidents speed control techniques such as speed using RF transceiver, automatic braking systems, Camera based speed detection. Traditionally radar systems were usedA radar speed gun is a device used to measure the speed of moving objects It measures the speed of the objects at which it is pointed by detecting a change in frequency of the returned radar signal caused by the Doppler effect, whereby the frequency of the returned signal is increased in proportion to the object's speed of approach if the object is approaching, and lowered if the object is receding. Such devices are frequently used for speed limit enforcement, although more modern LIDAR speed gun instruments, which use pulsed laser light instead of radar, began to replace radar guns during the first decade of the twenty-first century, because of limitations associated with small radar systems. The radar system is not able to become popular in traffic surveillance system due to high cost of radar, less accuracy, it requires line of sight connection between vehicle and radar equipment. Many algorithms and methodologies have been proposed for detection of vehicle speed through traffic videos. Many methods have been developed that use classic computer vision and machine learning approaches for object tracking.

SURVEY ON PERSONALITY PREDICTION FOR E-HR SYSTEM

[1]Kratika Sharma, [2]Sindhu Sreeram, [3]Shivani DathaBoggarapu

[1]Assistant Professor,[2]Student,[3]Student
[1]Information Technology,
[1]Chaitanya Bharathi Institute of Technology, Hyderabad,India

Abstract :The development of social networks, a large variety of approaches have been developed to define users' personalities based on their social activities and language use habits. Particular approaches differ with regard to different machine learning algorithms, data sources, and feature sets. The goal of this paper is to investigate the predictability of the personality traits of users based on different features and measures of the Big 5 model.The system will help the human resource department to select right candidate for particular job profile, which in turn provide expert workforce for the organization. Candidate here will register him/herself with all its details and will upload their own CV into the system, which will be further used by the system to shortlist their CV.

Index Terms **- Personality Trait, Prediction, Big5 model, Classifier, CV, logistic regression, E-HR system.**

I. INTRODUCTION

The personality of a human plays a vital role in his personal and professional life. Nowadays, many organizations have also started shortlisting the candidates based on their personality as this increases the efficiency of the work because the person is working in what he/she is good at than what he/she is exactly to do. " The Big Five model is also known as the Five-Factor Model (FFM) and OCEAN model (the acronym of OCEAN is Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism) was developed in the early 1980s according to many conceptual theories". When the statistical analysis is applied to personality survey data, some words extracted from the data used to describe the persons' overall character or personality of the person accurately.

This system can be used in many business parts/areas that may require expert candidates which reduce workload of human resource department, which in turn provide expert (all the workers in a company or country) for the organization. Admin can easily shortlist a candidate based on their personality scores and select an appropriate candidate for a particular job profile. This system will focus not only on qualification and inexperience but also focuses on other important aspects, which are needed/demanded in a particular job position. Admin can store the data in an excel sheet for further comparison and sorting of data. There is a huge workload on the human resource department to select the right candidate for a particular job profile which in turn would provide an expert workforce for organizations from a large pool of candidates. Developing a system that predicts personality of a person with 'OCEAN' (Openness, Conscientiousness, Extraversion, Agreeableness, Neuroticism) values and resume is helpful.

II. RELATED WORK

In recent years, social media such as Facebook, Twitter, and Weibo have become some of the most popular destinations for internet users. These users' activities on social networks provide a great platform for researchers to study and understand their online behaviors, preferences, and personalities. Different personalities are related to formation of different social relations and interaction behaviors on status profiles or preferences. Study predicts personality based on users' social behavior and their language-use habits on Facebook's social media platform. First, we choose most beneficial features for each personality dimension and successfully predict user's personality. Next, we propose a method to design and implement one category of Social Network Analysis (SNA) features and two categories of linguistic features such as Linguistic Inquiry and Word Count (LIWC) and Structured Programming for Linguistic Cue Extraction (SPLICE) based on the myPersonality dataset. We explore correlations between each of the feature sets and personality traits.

The study investigates literature on the uses of social media framework as behavioural feature study by exploring relationship between users' personalities and their behaviours in social networks. To predict a user's personality, we conducted a comparative study of best behavioural indicators for Face book usage of same set of features to capture ways users socialize, communicate and connect with each other.

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Brain Tumor Detection with Deep Learning on MRI Image Dataset

S. Rakesh[1], L. Manideep[2], M. Shrutha Keerthi[3], Dr. M. Venu Gopala Chari[4]
[1, 2, 3, 4]*Department of Information Technology, CBIT, Hyderabad*

Abstract: ***Tumor is an unusual growth of the tissues in any part or organ of the human body. A brain tumor is an abnormal growth of cells in the brain or central spine canal. Brain tumors can be malignant (cancerous) or benign (non-cancerous) and have different treatments. Any extra growth of cells in the brain can result in pressure inside the skull as it is rigid and hence damages the brain. In the recent years, a progressive research has been done in this medical imaging field to more accurately detect the brain tumors. This is very important for early treatment. The proposed model detects the location and dimensions of the tumor present in the brain of a patient accurately using deep convolutional neural networks. In this paper we have presented the two models, Inception V3 and VGG-Net. The main aim of this paper is to find the best technique to detect the brain tumor from the MRI scanned images. The proposed models have given good results with good accuracy.***
Keywords: Brain Tumor, deep learning, feature extraction, Inception-V3, MRI image, VGG-Net

I. INTRODUCTION

Brain Tumor Detection is one of the critical tasks in the analysis of medical images. When the cells presented within the human brain increases unusually or abnormally, then this condition is known as brain tumor. In general cases its growth starts from the nerves coming out of the brain, brain cells and the vessels of blood. Tumors can be categorized in two forms and they are malignant (cancerous) and benign (noncancerous) tumors. Benign tumors are considered as slow increasing tumors. The benign tumors do not extend in the adjoining brain tissue. These tumors will only apply potentially harmful pressure. The malignant tumors are described as fast increasing tumors. These tumors are capable to extend in the surrounding brain. The normal brain cells can be destructed by the tumors because of the generation of inflammation, applying pressure on the brain parts and rising pressure into the head.

Brain tumor has already become a very big reason of deaths and disabilities globally. In the last few years, a lot of research work has been carried out for the The National Cancer Institute (NCI) estimated that 22,070 new cases of brain and other central nervous system(CNS) cancers would be diagnosed in the US in 2009. The American Brain Tumor Association(ABTA) clarifies this statistic further by estimating that 62 ,930 new cases of brain tumors have been diagnosed in 2010. A Brain Tumor is a collection, or mass of abnormal cells in our brain. Our skull which encloses our brain, is very rigid. Any growth inside such a restricted space can cause problems. Brain tumors can be cancerous or non-cancerous. When cancerous or non-cancerous tumors grow, they can cause the pressure inside or skull to increase. This can cause brain damage, and it can be life threatening.

Today, most medical institutions use the World Health Organization (WHO) classification system to identify brain tumors. The WHO classifies brain tumors by cell origin and how the cells behave, from the least aggressive (benign) to the most aggressive (malignant). There are three common types of tumor: Benign tumor, Pre-Malignant tumor, Malignant tumor.

A benign (non-cancerous) brain tumor is a mass of cells that grows slowly in the brain. It usually stays in one place and does not spread. The symptoms of a benign brain tumor depend on how big it is and where it is in the brain. Some slow-growing tumors may not cause any symptoms at first. Common symptoms include severe, persistent headaches, seizures (fits), persistent nausea, vomiting and drowsiness. PreMalignant Tumor: A precancerous condition or pre malignant condition, sometimes called a potentially precancerous condition or potentially pre malignant condition, is a state of disordered morphology of cells that is associated with an increased risk of cancer. If left untreated, these conditions may lead to cancer.

II. LITERATURE SURVEY

One of the challenging and also high demanding tasks is to segment region of interest from the object and segmenting the tumor from an MRI Brain image is an ambitious one. Researchers across the globe are working in this area to get the best-segmented region of interest and various approaches simulated from a distinct perspective. Now a day Convolution Neural Network based segmentations gives very much prominent outcomes, and the flow of using this CNN model is augmenting day by day. B.Devkota et al. [1] established the entire segmentation process depends on Mathematical Morphological Operations and also spatial FCM

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Connecting Researchers; Nurturing Innovations

SMART IRRIGATION AND LEAF DISEASE DETECTION USING IOT AND CNN

S. Rakesh, V. Praveen Kumar & G. Mahesh Varma
Research Scholar, CBIT, Gandipet, Hyderabad

ABSTRACT

Agriculture is the main source of livelihood for many people in India but very little advancement is done in agriculture to improve the field and tackle issues like irrigation and leaf disease detection. With the advancement of IoT there is a chance of creating an IoT based system which helps the farmers to monitor the moisture content of soil, temperature around the field, water level in the tank and by using these values the motor will be turned on/off automatically which helps in improving the quality of the crops. Leaf Disease Detection in agriculture is being done manually for many years. This process can be done automatically using deep neural networks. The tomato crop is a significant staple in the Indian market with high business esteem and is delivered in enormous amounts. Diseases are impeding to the plant's health which thusly influences its development. To guarantee negligible misfortunes to the developed harvest, it is essential to direct its development. There are various sorts of tomato diseases that focus on the yield's leaf at a disturbing rate. This paper receives a slight variety of the convolutional neural system model called inception V3 to recognize and distinguish ailments in tomato leaves. Neural network models employ automatic feature extraction to aid in the classification of the input image into respective disease classes. This proposed framework has accomplished a normal exactness of 90-93 % showing the attainability of the neural system approach significantly under negative conditions. Hence the paper provides an insight of creativeness to the researchers to develop an integrated smart irrigation and leaf disease identification system that gives successful results in real-time.

KEYWORDS: *Bluetooth, CNN (Convolutional Neural Network), Raspberrypi, WSN(Wireless Sensor Network), Zigbee*

Article History

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INTRODUCTION

In the current era, farmers have used irrigation technology in the control of the intertwine theme, in which farmers irrigate from island to time. This process sometimes uses too much water. Automated irrigation planning in relation to manual irrigation based on direct soil water measurements has been shown to be valuable in continued water use. Watering plants is usually a very lengthy process and should be completed within a reasonable time.

Nowadays, some organizations use technology to reduce the number of workers and the time needed to water the plants. With such systems, control is very limited and many resources are still wasted. One of these resources is the excessive use of water. This method represents massive losses as the amount of water exceeded the requirements of the plants. Excess water is discharged through the pores of the pots, or it passes through the soil in the fields. An automated irrigation system can prove to be an effective solution to these shortcomings. Early detection of diseases helps save the

The Prediction Of Water Consumed Pattern Using Time Series Data (Recurrent Nueral Network) In Water Test Bed Grid (Network).

PDF (https://turcomat.org/index.php/turkbilmat/article/view/11854/8671)

Keywords:
forecasting, hydrologic time series, recurrent neural networks, river flows

P. Vasanth Sena

Sammulal Porika, M.Venu Gopalachari

Abstract

There are several factors that make forecasting a hydrologic time series a difficult endeavour, including a wide range of data, the lack of accurate data, and a lack of enough data. It has recently become common practise to use artificial neural networks (ANNs) for time series forecasting in numerous industries. Forecasting river flows using artificial neural networks is demonstrated in this research. A feed forward network and a recurrent neural network have been selected for the experiment. The recurrent neural network is trained utilising the method of ordered partial derivatives, while the feed forward neural network is taught with the usual back propagation approach. Both networks' architectures and training methods are described in detail. ANN models were used to train and estimate monthly flows of an Indian river with a catchment area of 5189 km2 up to the gauging station using the models that were chosen for this task Both single-step and multiple-step forecasts may be made using the trained networks. A comparison of the two networks reveals that feed forward networks were outperformed by recurrent neural networks. In addition, recurrent neural networks had smaller architectures and took less time to train. For both single-step and multiple-step forecasting, the recurrent neural network performed better. The use of recurrent neural networks in river flow forecasting is therefore strongly advocated.

Issue

Vol. 12 No. 14 (2021): Vol. 12 No. 14 (2021) (https://turcomat.org/index.php/turkbilmat/issue/view/49)

Section

Articles

AEGAEUM JOURNAL ISSN: 0776-3808

N-GRAM AND VOCABULARY BASED AUTHORSHIP IDENTIFICATION

T.Prathima, P Sneha, A. Sirisha
Chaitanya Bharathi Institute of Technology, Gandipet, Hyderabad, Telangana, India

Abstract: *Authorship Identification is the task of identifying the author of the text from a set of authors whose authorship is unknown or is in doubt. The main part of this task is identifying the appropriate characteristics of authors in order to get the stylistic information. From machine learning view, it can be viewed as multiclass single-label text classification task where author represents a class (label) of a given text. Stylometric features are used for solving this type of problems which finds the patterns that appear in the text for the same author. Many features can be used to capture the stylistic information of authors which includes vocabulary, syntactic, semantic, n-grams etc. As part of this project we built two models one of which is based on N-grams that includes 1-gram, 2-gram, 3-gram using Keras CNN model and other based on vocabulary of an author using TensorFlow for finding the authors of a given text.*

Keywords: **CNN, Machine Learning, N-grams, Vocabulary, Stylometric, Natural Language Processing**

1. INTRODUCTION

Authorship attribution or authorship identification is the process of identifying likely author of a given text or document whose authorship is unknown or in doubt. It has become an important problem as the information which is anonymous is increasing day by day with growing usage of internet. As many economic and other activities use world wide web as a medium, the authenticity of the text or document is becoming more relevant. A famous example is the Federalist papers, where there are 85 articles written by Alexander Hamilton, John Jay, and James Madison between 1787 and 1788 out of which twelve are claimed to be written by both Alexander Hamilton and James Madison [1].

Authorship Attribution can be regarded as a categorization problem. Unlike other categorization tasks it is not clear which features of text should be considered to classify an author. In previous experiments many text attributes were considered but they resulted in disputed authorship. The main idea behind identification of authorship is that by measuring some textual features we can distinguish texts or documents written by different authors. In this project we use the text mining methods for the identification of the author. Stylometry, the statistical analysis of variations in literary style between one writer or genre and another is often used to attribute authorship to disputed documents. Identifying the author can be used to detect plagiarism in internet, that is the copy of ideas, information and materials for academic purposes from different websites. Other applications include verification of suicide notes that is to verify who has written the suicide letter, computer forensics, anonymous emails etc.

Finding authorship attribution is a well-studied problem since many years. Due to increase in amount of anonymous texts and documents this problem has become more important. This involves the style detection of the author that includes natural language processing which is an important subject.

As information becomes widely available and easily accessible through the Internet and other sources, the trend of plagiarism has been increasing. Plagiarism and copyright infringement are issues that come up in both academic and corporate environments. We need author classification techniques to inhibit such unethical violations. Source code is also intellectual property and reflects individual style. It is important to be able to identify the author of source code. Building a tool to detect the author of a program in an

3.

Journal of Environmental Chemical Engineering
Volume 9, Issue 6, December 2021, 106477

Economic assessment and application of bio-composite membrane in microbial fuel cell

Harsha Nagar Ph.D (Assistant Professor) [a], Vineet Aniya Ph.D (Scientist) [b], Ch. Saranya M.Tech (Student) [b]

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https://doi.org/10.1016/j.jece.2021.106477

Highlights

- Pyrolysis of chicken feather at 550° C for the biochar preparation.

4.

Original Paper | Published: 21 November 2021

Design of oxygenated microporous adsorbent for removal of 2,4,6-Tricholrophenol from wastewater: kinetics, density function theory and mechanism

V. Aniya ✉, A. Kumari & H. Nagar

International Journal of Environmental Science and Technology (2021) | Cite this article

82 Accesses | 2 Citations | 1 Altmetric | Metrics

Abstract

An oxygenated rich functional biochar/adsorbent was prepared from a renewable source with its potential application for the adsorptive removal of 2,4,6-Tricholrophenol (TCP) from agricultural wastewater. The elemental analysis validates that pyrolysis at 600 °C was sufficient to induce the aromatization with an increase in H/C of 79.08%. While the chemical oxidation showed an increase in single-bonded oxygen surface functional groups (OSFGs) in the moieties of phenolic and hydrolyzed products of lactones. The quantum chemical parameters through density functional theory confirm the experimental results and help in designing the adsorbent. The molecular dynamics simulation certifies the adsorption of TCP

5.

Volume: 11, Issue: 2, April-June 2021

INTERNATIONAL JOURNAL OF RESEARCH IN SCIENCE & TECHNOLOGY

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A Critical Review on The Effect of Feed to Inoculum Ratio on Biogas Digestion

M Kalyani, Shalini Suran, P Ramya

Department of Chemical Engineering,
Chaitanya Bharathi Institute of Technology,
Hyderabad, India

Paper Received: 28th April, 2021; **Paper Accepted:** 19th June, 2021;
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DOI: http://doi.org/10.37648/ijrst.v11i02.001

6.

JOURNAL OF CRITICAL REVIEWS

ISSN- 2394-5125VOL 7, ISSUE 16, 2020

EXPERIMENTAL STUDY ON INTERPRETATION OF NANOFLUID CONVECTIVE HEAT TRANSFER

Bala Krishna inguva[1],M. Kalyani [2]

Department of Chemical Engineering, Chaitanya Bharathi Institute of Technology,Hyderabad.
Corresponding Author:binguva@gmail.com

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ABSTRACT

Numerous studies have been carried out on the effects of thermal transmission nanofluids, in addition to rearrangement of flow passage conditions, in order to assess the improvement of properties. The main aim of this study is to compile this research exclusively through a convection for single- and two-stage mixture models based on the natural, forced, and mixed heat transfer characteristics of nanofluids. Improvements in thermal transfer are prospective of the application of nano fluids. We are suitable for the transfer of heat. In addition to control element configurations, a variety of studies on the effects of nanofluids in the heat transfer have been carried out. The main aim of this study is to improve current work exclusively in single and two-stage models based on the normal, forced and mixed convective heat transfer features of nanofluids.
KEYWORDS: nanofluids, convective heat transfer, experimental study

1. INTRODUCTION

Improvement in heat treatment equipment efficiency, on the one hand, increased power consumption and, on the other, reduced the size of such equipment, resulting in a reduction in material and production costs. Such changes have been possible by increasing the contact surface area per unit volume, which raises the pressure drops and demands stronger pumps. The heat transfer equipment price also increases. Over the past two decades the advancement of nanotechnology generally and the use of nanofluids as a method of heat transfer have been a breakthrough.The first to introduce the concept of nano-fluids was Choi and Eastman,1 in 1995. Nanofluids are basically thermal fluids, consisting of a base fluid and suspended particles within a 1–100 nm range. In contrast to conventional base fluids, solid particles have better thermal conductivity and are therefore expected to increase the thermal conductivity of nanofluid with additional solid nanoparticles. For instance, the thermal conductance of solid Cu (copper) particles in liquid forms is 700 times and 3000 times higher than that of water and motor oils. Decades ago, it was proposed to add micro-sized solid particles to the base fluids. The micro-particles have been found to tend to settle for suspensions, leading to channels, pipes and heat exchangers being blocked.

12.

Published: 20 April 2021

Thermodynamic Measurements and Correlation of Properties for Tribromomethane

K. Naresh, Harsha Nagar ✉ & Vineet Aniya ✉

Journal of Solution Chemistry 50, 723–751 (2021) | Cite this article

130 Accesses | Metrics

Abstract

Experimental saturated vapor pressure data were measured using a Modified Swietoslawski-type ebulliometer and correlated with the Antoine, Clarke–Glew, and Wagner equations. A least root-mean-square deviation (RMSD) was obtained for the Antoine (0.667) and Wagner (0.796) equations while the group contribution and group interactiox (GCGI) method by Nanodal et al. showed an RMSD of 1.094. The estimated enthalpy of vaporization is found to be 46.87 kJ·mol^{-1} and 38.56 kJ·mol^{-1} at reference temperature (298.15 K) and normal boiling point (422.28 K), respectively, and wss well verified with Watson's correlation. The critical properties and acentric factor are reported based on the GCGI method. Experimental density data are reported and are well correlated with the DIPPR 116 correlation with an RMSD of

14.

Chemical Engineering & Technology

Research Article

Data-Driven Modeling of Biodiesel Production Using Artificial Neural Networks

Anitha Mogilicharla, P. Swapna Reddy

First published: 23 February 2021 | https://doi.org/10.1002/ceat.202000434

Abstract

Data-driven modeling of biodiesel production was developed by simultaneous transesterification and esterification of rapeseed oil and myristic acid with methanol, without catalyst or with different amounts of sulfated zirconia catalyst. An artificial neural network (ANN)-based model was created with experimental literature data. The input data, i.e., reaction time, catalyst, temperature, and methanol-to-oil ratio, and output data, i.e., total fatty acid methyl ester and oleic acid methyl ester, were considered to develop the model. Multiple input single output (MISO) ANN architecture was taken to predict the above targeted two output parameters. The proposed ANN model is computationally efficient and works reasonably well when tested on biodiesel production for solving the MISO model.

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Application of bioelectrochemical systems to regulate and accelerate the anaerobic digestion processes

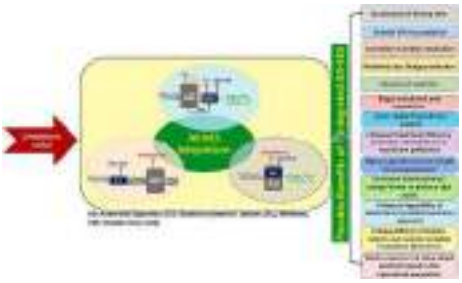
C. Nagendranatha Reddy [a,b], Sanath Kondaveeti [c], Gunda Mohanakrishna [d], Booki Min [a,*]

[a] Department of Environmental Science and Engineering, Kyung Hee University, Seocheon-dong, Yongin-si, Gyeonggi-do, 446-701, Republic of Korea
[b] Department of Biotechnology, Chaitanya Bharathi Institute of Technology (Autonomous), Gandipet, 500075, Hyderabad, Telangana State, India
[c] Division of Chemical Engineering, Konkuk University, 1 Hwayang-Dong, Gwangjin-Gu, Seoul, 05029, South Korea
[d] Department of Chemical Engineering, Qatar University, Doha, 2713, Qatar

HIGHLIGHTS

- BES integrations can enhance process capability and economic viability of AD.
- Microbe-electrode interactions for product syntheses in BES are reviewed.
- Microbial and electrochemical processes are reviewed for various valuable products.
- Upscaling considerations and future perspectives of BES-AD are identified.

GRAPHICAL ABSTRACT



ARTICLE INFO

Handling Editor: Eldon R Rene

Keywords:
Anaerobic digestion (AD)
Bioelectrochemical systems (BES)
Integration technology
pH stability
Resource recovery

ABSTRACT

Anaerobic digestion (AD) serves as a potential bioconversion process to treat various organic wastes/wastewaters, including sewage sludge, and generate renewable green energy. Despite its efficiency, AD has several limitations that need to be overcome to achieve maximum energy recovery from organic materials while regulating inhibitory substances. Hence, bioelectrochemical systems (BESs) have been widely investigated to treat inhibitory compounds including ammonia in AD processes and improve the AD operational efficiency, stability, and economic viability with various integrations. The BES operations as a pretreatment process, inside AD or after the AD process aids in the upgradation of biogas (CO_2 to methane) and residual volatile fatty acids (VFAs) to valuable chemicals and fuels (alcohols) and even directly to electricity generation. This review presents a comprehensive summary of BES technologies and operations for overcoming the limitations of AD in lab-scale applications and suggests upscaling and future opportunities for BES-AD systems.

1. Introduction

Anaerobic digestion (AD) is a conventional process for the bioconversion of organic matter/CO_2 to biogas that has great potential to recover a spectrum of biobased products (Appels et al., 2008; Zhou et al., 2017). It is generally known as a controllable and sustainable way to treat sewage sludge compared with other disposal routes such as landfill and composting. However, the rate and efficiency of AD are low,

* Corresponding author.
E-mail address: bkmin@khu.ac.kr (B. Min).

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metabolites

MDPI

Review

Antifungal Metabolites as Food Bio-Preservative: Innovation, Outlook, and Challenges

Bishwambhar Mishra [1,†], Awdhesh Kumar Mishra [2,†], Sanjay Kumar [3], Sanjeeb Kumar Mandal [1], Lakshmayya NSV [1], Vijay Kumar [2,4], Kwang-Hyun Baek [2,*] and Yugal Kishore Mohanta [5,*]

1 Department of Biotechnology, Chaitanya Bharathi Institute of Technology, Hyderabad 500075, India; mishra.bishwambhar@gmail.com (B.M.); sanjeeb.vit@gmail.com (S.K.M.); lakshmannunna@gmail.com (L.N.)
2 Department of Biotechnology, Yeungnam University, Gyeongsan 38541, Gyeongsangbuk-do, Korea; awdhesh@ynu.ac.kr (A.K.M.); vijaykumarcbt@gmail.com (V.K.)
3 Department of Biotechnology, National Institute of Technology, Tadepalligudem, Andhra Pradesh 534101, India; sanjay0193@gmail.com
4 Department of Orthopedics Surgery, Johns Hopkins University School of Medicine, Baltimore, MD 21205, USA
5 Department of Applied Biology, University of Science and Technology Meghalaya, Ri-Bhoi 793101, India
* Correspondence: khbaek@ynu.ac.kr (K.-H.B.); yugalkmohanta@ustm.ac.in (Y.K.M.); Tel.: +82-53-810-3029 (K.-H.B.); +91-9439093024 (Y.K.M.); Fax: +82-53-810-4769 (K.-H.B.)
† These authors contributed equally to this work.

Abstract: Perishable food spoilage caused by fungi is a major cause of discomfort for food producers. Food sensory abnormalities range from aesthetic degeneration to significant aroma, color, or consistency alterations due to this spoilage. Bio-preservation is the use of natural or controlled bacteria or antimicrobials to enhance the quality and safety of food. It has the ability to harmonize and rationalize the required safety requirements with conventional preservation methods and food production safety and quality demands. Even though synthetic preservatives could fix such issues, there is indeed a significant social need for "clean label" foods. As a result, consumers are now seeking foods that are healthier, less processed, and safer. The implementation of antifungal compounds has gotten a lot of attention in recent decades. As a result, the identification and characterization of such antifungal agents has made promising advances. The present state of information on antifungal molecules, their modes of activity, connections with specific target fungi varieties, and uses in food production systems are summarized in this review.

Keywords: anti-fungal; bio-preservation; food spoilage; perishable foods; shelf life

Citation: Mishra, B.; Mishra, A.K.; Kumar, S.; Mandal, S.K.; NSV, L.; Kumar, V.; Baek, K.-H.; Mohanta, Y.K. Antifungal Metabolites as Food Bio-Preservative: Innovation, Outlook, and Challenges. *Metabolites* **2022**, *12*, 12. https://doi.org/10.3390/metabo12010012

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1. Introduction

The world's population is expected to reach 9.7 billion people by 2050 [1]. With the growing population, food waste and deterioration must be significantly reduced. As a result, the food business is confronting significant hurdles in meeting present and future demand. Aside from challenges such as food warehousing and distribution infrastructure, climate change impacts, and water resilience, there is far too much food waste, which encompasses livestock and crop illness.

To some extent, the food industry provides a solution through the use of admixtures such as artificial preservatives, which allow manufacturers to meet customer demands for diverse array, ease of access, price, convenience, and delivery performance while reducing the amplitude of technological treatments that results in quality losses [2]. On the other hand, consumers are not atypical in their condemnation of some food additives. Moreover, awareness among consumers about food safety and hygiene and their rejection of chemical additives has prompted research into the use of beneficial microorganisms and their metabolites as viable natural preservatives for storage stability and improved food safety.

Biomass Conversion and Biorefinery
https://doi.org/10.1007/s13399-021-01276-5

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Received: 19 October 2020 / Revised: 29 December 2020 / Accepted: 2 January 2021

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Influence of Trace Metals concentration on Methane generation using Microbial Electrochemical Systems

C. Nagendranatha Reddy [a,b], Sanath Kondaveeti [c], Booki Min [a,*]

[a] Department of Environmental Science and Engineering, Kyung Hee University, 1732 Deogyeong-daero, Giheung-gu, Yongin-si, Gyeonggi-do, 17104, Republic of Korea
[b] Department of Biotechnology, Chaitanya Bharathi Institute of Technology (Autonomous), Gandipet, 500075, Hyderabad, Telangana State, India
[c] Department of Chemical Engineering, Konkuk University, 1 Hwayang-Dong, Gwangjin-Gu, Seoul, 05029, Republic of Korea

ARTICLE INFO

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ABSTRACT

The biomethane generation in microbial electrosynthesis systems (MESs) was affected by the addition of trace metals (TMs) during biocatalyst s metabolic activity. The functional role of various TMs (Mg^2 , Fe^2 , Ni^2 , Zn^2 , Co^2 , Mn^2 , and Mo^2) in regulating the CH_4 production potential of a biocatalyst was evaluated under three different ranges of TM concentrations, and their performances were compared with the control operation (no trace metals). The TM level in a relatively medium concentration range exhibited the best efficiency and could enhance the CH_4 production and currents generation by 3.9 and 7.7 folds higher than the values from the control. Cyclic voltammogram profiles depicted increment in redox catalytic currents during MES operation with TMs and also supported the involvement of mediators towards CH_4 generation. The optimum TM concentrations could enhance MES performance as a constituent of ferredoxin and hydrogenase linked to energy metabolism.

1. Introduction

From an industrial perspective, CO_2 is a valuable feedstock for the generation of building block chemicals such as formate, alcohols (e.g., methanol and ethanol), and gases such as CH_4 [1]. However, as CO_2 is a stable molecule, its conversion in the abiotic process to a value-added product requires a more extensive energy input due to overpotentials and multielectron reduction steps. In this regard, several researchers had exploited the electrochemical and biological systems to catalyze the CO_2 [2,3]. In particular, the biological reduction of CO_2 with the use of microorganisms and enzymes assists in an eco-friendly sustainable approach. Moreover, the biological CO_2 reduction is highly interested in the industrial sector due to ambient operational conditions such as temperature and pressure. Also, the microbes are self-regenerative catalysts, and therefore, they are much more suitable for long term operations of CO_2 reduction systems [1,4].

In this regard, several studies have tested microbes usage for the conversion of CO_2 towards biosynthesis along with equivalent supplementation of H_2 artificially. In the early 1980s, several researchers had grown numerous microbes using CO_2 as a carbon source in the anaerobic fermentation process. Tanner et al. [5] demonstrated the growth of *Clostridium lungdahlii* for acetate generation by using H_2 and CO_2. Liou et al. [6] exhibited *Clostridium* species growth for the generation of alcohols and products such as acetate from CO_2 and H_2 along with other sugars as carbon support. In further, Logan [7] suggested applying these microbes in microbial electrochemical systems (MES) to produce sugars, alcohols, and CH_4 without external H_2 supply. Biological reduction of inorganic carbon (CO_2) has been piqued from the last decade in the field of microbial electrochemical systems as a valuable strategy for cyclic carbon reuse [8]. Also, MES technology opens a new prospect in the tunability of product formation with variation in potential applied [9]. Furthermore, MES can open new possibilities in combining renewable energy, viz., solar and wind power, to the biological systems to achieve a self-sustainable biorefinery process.

The external supplementation of H_2 to generate the CH_4 makes the anaerobic fermentation process unfavorable due to high operational cost and energy loss from storage and transport [10,11]. As an alternative method, the generation of CH_4 by direct electrochemical reduction of CO_2 by microbes without any external addition requirement of H_2 in MES is preferable. This would offer a bioelectrocatalytic direct CO_2 reduction without any need of additional mediators and supplementary processes such as water splitting to enable energy storage in the form of valuable products. To our knowledge, the first study on the CO_2 reduction to generate CH_4 bioelectrochemically in MES without the

* Corresponding author.
E-mail address: bkmin@khu.ac.kr (B. Min).

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Fabrication of Randomly Integrated PMMA/ZnO nanorods NanoGenerator (RING)

Dr. Madunuri Chandra Sekhar[1]
Asst.Prof Physics,
Chaitanya Bharathi Institute of Technology
Hyderabad, Telangana, 507002

Eediga Nirmala Devi[2]
Research Scholar
Department of Physics
Rayalaseema University, Kurnool

Abstract:

An easy & efficient fabrication method of ZnO NanoGenerator, in which the Randomly oriented ZnO naorods are deposited on silver coated copper electrode was reported in this paper, besides, PMMA is spin coated over the randomly aligned ZnO nanorods for the intention of their enduring constancy. The ZnO nanorods tips from PMMA are covered by gold coated zigzag copper electrode. The performance is based on Metal-Semiconductor schottky barrier, the operation of RING (Randomly Integrated NanoGenerator) is analyzed by subjecting the two electrodes to minor relative displacements which produces an output of 0.9V. The random orientation of nanorods is revealed by the SEM images in PMMA. XRD, UV, FTIR, PSA, AFM further confirmed the presence and performance of ZnO nanorods in PMMA.

Keywords: ZnO nanorods, Piezoelectricity, PolyMethyl-MetaAcrylate, RING(Randomly Integrated NanoGenerator), Schottky barrier.

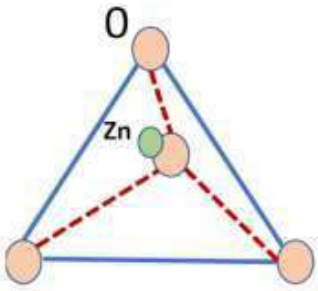

Fig 2a. Pzt effect in ZnO unit cell (P-dipole vector).

1. Introduction:

To produce energy from environment mechanical vibrations, nanopiezotronics are being developed and the same is stimulating a new overwhelm of research on self powered nanosystem[1-4]. A regular instance is the fabrication of ZnO nanogenerator which is relied on the piezoelectric effect [5]. The nanoscale mechanical energy is converted by the nanogenerator into electrical energy by using the coupling of PZT and semiconducting properties of ZnO nanorods. Integrated nanogenerator(LING),Vertically integrated nanogenerator(VING) are the most common nanogenerator structures.

An easy method was looked at by us to construct Randomly Integrated NanoGenerator (RING) that shows improved output voltage and current.

ZnO is a semiconducting piezoelectric material having energy band gap of 3.37eV and large excitation binding energy of 60meV at room temperature [6]. Exhibiting both semiconducting and piezoelectric properties those are eco friendly, biocompatible, easy growth methods are the benefits of ZnO nanostructures [7]. Various methods are used for the synthesis of ZnO nanostructures. Solution based chemical techniques are more beneficial as they are easy, handy, inexpensive, less dangerous, compatible for flexible/metal substrates, competent of large scaling up and development happens at relatively low temperature[6]. So in the current work, piezoelectric ZnO nanorod deposition on metal alloy substrate with flexible material like PMMA spin coated, has been reported, which brings robustness to the nanogenerators. M-S interface is the vital parameter for the working of nanogenerators.

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Assessment of indoor radon activity concentration levels in four northern districts of Telangana state, India

G. Srinivas Reddy[1,2] · K. Vinay Kumar Reddy[2] · Sreenivasa Reddy B.[3] · B. Linga Reddy[2] · M. Sreenath Reddy[1] · Ch. Gopal Reddy[3] · P. Yadagiri Reddy[1]

Received: 30 April 2021 / Accepted: 28 July 2021

Abstract
Indoor radon activity concentrations were carried out using twin cup dosimeters with SSNTDs in four districts viz., Karimnagar, Peddapalli, Jagtial and Rajanna Sircilla of Telangana state, India. The part of study area falls under Karimnagar Granulite Terrain, the geological region recognized for the occurrence of high uranium content metasedimentary enclaves within granite. The radon concentrations, in the study area, were found to vary from 7 to 457 Bq m^{-3} with a geometric mean of 62 Bq m^{-3} (GSD 2.24). The estimated radon activity is observed to obey log-normal distribution. The analysis of seasonal variation confirmed that the indoor radon concentration levels are relatively higher in the winter. Variation of radon activity levels in dwellings with different types of building materials was also studied and presented in this paper.

Keywords Radon · Log-normal · SSNTDs · Granulite terrain · Twin chamber cup dosimeter

Introduction

Exposure to natural ionizing radiation is a general feature everywhere on the globe and it is not possible for the humankind to escape. This is mainly due to the accumulation of radioactive gases in indoor atmosphere and the studies across the world reveals that more than the half of average annual background radiation dose comes from radon and its isotopes [1]. Out of these the more abundant, universally present one is radon (^{222}Rn) naturally originated in the process of decay of uranium (^{238}U) series, directly from radium (^{226}Ra), and undergoes further decay (with a half-life of 3.82 days) causing alpha-emission which produces electrically charged progeny particles. These progeny particles can easily attach to dust and aerosol particles in the air and can be deposited in respiratory tract, while inhalation and exhalation.

Several epidemiological studies were conducted to understand the effects of the radon. Exposure to radon isotopes and their progeny has been identified as a major carcinogen and may cause lung cancer [2–4]. The prominent source for residential radon is the soil/rock beneath the dwelling [5]. The earlier studies on indoor radon levels and analysis of its variation were found to be influenced by the factors such as geology, types of building materials used for the construction of dwellings [6–9]. In addition, ventilation rates; air circulation, temperature and pressure gradient etc., play a vital role in accumulation of radioactive gas in indoor environment [10–13].

The present investigation is the first systematic study on indoor radon levels carried out in four northern districts of Telangana state, India viz. Karimnagar, Peddapalli, Jagtial and Rajanna Sircilla. Geologically, the study area lies in the north-eastern part of the Eastern Dharwar Craton, in the north of which lies the perm-carboniferous sedimentary formations of Godavari Graben [14]. Some of the locations of these districts are situated under the potential granulite province of Karimnagar Granulite Terrain (KGT). The Karimnagar Granulite Terrane (KGT) is predominantly made up of massive granite gneisses, granites and charnockites in which quartz-free granulite and other high-grade rocks occur as enclaves within granite gneisses. The earlier attempts conducted by Atomic Mineral Directorate for Exploration

✉ M. Sreenath Reddy
marriot@gmail.com

[1] Department of Physics, Osmania University, Hyderabad 500007, India

[2] Department of Physics and Chemistry, Mahatma Gandhi Institute of Technology, Hyderabad 500075, India

[3] Department of Physics, Chaitanya Bharathi Institute of Technology, Hyderabad 500075, India

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Thoron Studies in Dwellings of Certain Northern Districts of Telangana State, India

G. Srinivas Reddy[2], K. Vinay Kumar Reddy[3], B. Sreenivasa Reddy[3], B. Linga Reddy[3], M. Sreenath Reddy[1,a)], Ch. Gopal Reddy[1] and P. Yadagiri Reddy[1]

[1]*Department of Physics, Osmania University, Hyderabad-500007, India*
[2]*Department of Physics and Chemistry, Mahatma Gandhi Institute of Technology, Hyderabad – 500 075, India*
[3]*Deprtment of Physics, Chaitanya Bharathi Institute of Technology, Hyderabad-500075, India*

a) Corresponding author: marrisr@gmail.com

Abstract. Indoor thoron activity concentration in four districts viz., Karimnagar, Peddapalli, Jagtial and Rajanna Sircilla of Telangana state have been estimated with solid state nuclear track detector based twin chamber cup dosimeters. The measured tthoron concentrations in four districts were found to be varied from below detection limit (3 $Bq.m^{-3}$) to 556 $Bq.m^{-3}$. The distribution of thoron activity concentration is observed to be log-normal. The seasonal variation study of the thoron activity shows that it is moderately higher in the winter. Variation of thoron concentration in dwellings with type of building materials is also studied.

Keywords. Thoron; log-normal; SSNTDs; radioactivity; twin chamber cup dosimeter.

INTRODUCTION

Exposure to ionizing radiation, an inevitable feature experienced by humans, is greatly contributed by the build-up of indoor radon (^{222}Rn), its isotopes and their progeny [1]. Radon and thoron (^{220}Rn, an isotope of radon) are inert radioactive gases produced in the nuclear decay chains of ^{238}U and ^{232}Th, respectively. The extensive studies carried out on the indoor radon measurements and its profile revealed significant fluctuations in a wide range depending on various factors such as types of materials used in the construction of dwelling, geological formation, environmental conditions, etc. [2-7]. However, the studies conducted on the accumulation and variation of thoron in indoor are overshadowed. Thoron has been generally observed to have a very short half life time of 55.6 s and it decays quickly with its less diffusion length. But, the hazardous influence through the inhalation of thoron cannot be neglected as its decay product ^{212}Pb, with a half-life time of 10.6 h, can be expected to accumulate in the indoor atmosphere of the dwelling. In addition, soil under the dwelling, the thorium rich materials used for the construction and the ventilation conditions can significantly alter the levels of thoron, which poses the problem of radioactive risk [8-11]. In the earlier radioactive investigations, there seems to be no considerable attempts made on thoron measurements, as many researchers have thought of radiological influence of radon only. This notion has been changed with time due to the systematic studies conducted on thoron across the world which established that high thoron concentration was observed if the materials have rich content of thorium [12-15]. The measurements on natural radioactivity during the last two decades reveal that the concentration of thoron and its progeny in some parts of the globe are considerable to that of radon levels [16-18].

The present study for the estimation of thoron levels has been conducted in four northern districts of Telangana state, India viz. Karimnagar, Peddapalli, Jagtial and Rajanna Sircilla. Some parts of the locations under investigation spread into the potential granulite province of Karimnagar Granulite Terrain (KGT). The general activities of granitic quarries being carried out in these locations can influence the radiation levels [19, 20].

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Cation distribution in Ni substituted $Ba_{0.5}Sr_{1.5}Co_2Fe_{12}O_{22}$ Y-type hexagonal ferrites

M. Manendar[a], S.Shravan Kumar Reddy[b], J. Ramesh[c], M.Sreenath Reddy[a], M.Manivel Raja[d], Ch.Gopal Reddy[a], P.Yadagiri Reddy[a], V.Raghavendra Reddy[e]

[a]*Department of Physics, Osmania University, University College of Science, Hyderabad-500 007, India.*
[b]*Chaitanya Bharathi Institute of Technology, Gandipet, Hyderabad – 500075, India.*
[c]*CMR Institute of Technology, Kandla koya, Hyderabad – 501401, India*
[d]*Defence Metallurgical Research Laboratory, Hyderabad, 500058, India.*
[e]*UGC-DAE Consortium for Scientific Research, University Campus, Khandwa Road, Indore-452001, India.*

Abstract

The present work reports the study of cation distribution in Ni substituted polycrystalline $Ba_{0.5}Sr_{1.5}Co_2Fe_{12}O_{22}$ (Co_2Y-BSCFO) hexaferrite samples using complimentary experimental methods viz., in-field ^{57}Fe Mössbauer and Raman spectroscopy. Combining the analysis of in-field ^{57}Fe Mössbauer and Raman spectroscopy measurements it is shown that the substituted Ni in Co_2Y-BSCFO preferentially occupies the octahedral site with spin-down configuration i.e., $6c_{VI}$. The obtained cation distribution data is found to qualitatively match the magnetization values as obtained from bulk magnetic measurements. Temperature dependent dielectric data reveals a significant dispersion in dielectric constant associated with loss peaks and the conduction-hopping mechanism explains such behavior.

Keywords:
Y-type hexaferrites, cation distribution, Mössbauer spectroscopy

1. Introduction

Hexaferrites are used in wide range of applications such as high frequency telecommunications, permanent magnets, microwave devices etc [1, 2]. In spite of being known for a quite a long time, there has been a recent interest in these materials because of the observation of single phase magnetoelectric/multiferroic phenomena and also because of various exotic applications such as in the domain of microwave/GHz frequencies etc [2]. Hexaferrites are classified into M, W, X, Y, Z and U- type depending on their chemical composition and crystal structure [3]. All these hexaferrites exhibit ferrimagnetic ordering with a Curie temperature significantly higher than the room temperature and therefore are considered to be attractive for room temperature based applications [2]. Extensively studied hexaferrites include Ba and Sr based M-type ferrites viz., $BaFe_{12}O_{19}$ and $SrFe_{12}O_{19}$ respectively, popularly represented as BaM and SrM. In addition, cobalt containing hexaferrites viz., Y-type $Ba_2Co_2Fe_{12}O_{22}$ (Co_2Y), Z-type $Ba_3Co_2Fe_{24}O_{41}$ (Co_2Z), W-type $BaCo_2Fe_{16}O_{27}$ (Co_2W), X-type $Ba_2Co_2Fe_{28}O_{46}$ (Co_2X) etc., are also studied extensively in literature [2]. Recently, Yaseen et al., reported the phase evolution in $Ba_{1-x}Sr_xFe_{12}O_{19}$ samples synthesized by sol-gel autocombustion method [4].

The Co_2Y based hexaferrites exhibit highest magnetic anisotropy as compared to other hexaferrites as mentioned above and also exhibit low coercive field as compared to BaM and SrM compounds and therefore are considered to be an important category of hexaferrites [1, 2]. The Ba ions in the structure of Co_2Y are replaced by Sr and Pb completely or partially for better magnetic properties [2]. Apart from the magnetic properties, the study of dielectric and conductivity properties of the hexaferrites including Co_2Y are being reported in recent literature because of the fact that these ferrites exhibit high dielectric constant, low ac- conductivity and low dielectric loss which are considered to be more useful for microwave based applications, EMI shielding etc [5, 6, 7, 7, 9, 10]. It may be noted

Email address: ch.gopalreddy@yahoo.com(Ch.GopalReddy)

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marrisr@gmail.com

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G. Srinivas Reddy[2], K. Vinay Kumar Reddy[3], B. Sreenivasa Reddy[3], B. Linga Reddy[3], M. Sreenath Reddy[1,a)], Ch. Gopal Reddy[1] and P. Yadagiri Reddy[1]

[1]*Department of Physics, Osmania University, Hyderabad-500007, India*
[2]*Department of Physics and Chemistry, Mahatma Gandhi Institute of Technology, Hyderabad – 500 075, India*
[3]*Deprtment of Physics, Chaitanya Bharathi Institute of Technology, Hyderabad-500075, India*

a) Corresponding author: marrisr@gmail.com

Abstract. Indoor thoron activity concentration in four districts viz., Karimnagar, Peddapalli, Jagtial and Rajanna Sircilla of Telangana state have been estimated with solid state nuclear track detector based twin chamber cup dosimeters. The measured tthoron concentrations in four districts were found to be varied from below detection limit (3 $Bq.m^{-3}$) to 556 $Bq.m^{-3}$. The distribution of thoron activity concentration is observed to be log-normal. The seasonal variation study of the thoron activity shows that it is moderately higher in the winter. Variation of thoron concentration in dwellings with type of building materials is also studied.

Keywords. Thoron; log-normal; SSNTDs; radioactivity; twin chamber cup dosimeter.

INTRODUCTION

Exposure to ionizing radiation, an inevitable feature experienced by humans, is greatly contributed by the build-up of indoor radon (^{222}Rn), its isotopes and their progeny [1]. Radon and thoron (^{220}Rn, an isotope of radon) are inert radioactive gases produced in the nuclear decay chains of ^{238}U and ^{232}Th, respectively. The extensive studies carried out on the indoor radon measurements and its profile revealed significant fluctuations in a wide range depending on various factors such as types of materials used in the construction of dwelling, geological formation, environmental conditions, etc. [2-7]. However, the studies conducted on the accumulation and variation of thoron in indoor are overshadowed. Thoron has been generally observed to have a very short half life time of 55.6 s and it decays quickly with its less diffusion length. But, the hazardous influence through the inhalation of thoron cannot be neglected as its decay product ^{212}Pb, with a half-life time of 10.6 h, can be expected to accumulate in the indoor atmosphere of the dwelling. In addition, soil under the dwelling, the thorium rich materials used for the construction and the ventilation conditions can significantly alter the levels of thoron, which poses the problem of radioactive risk [8-11]. In the earlier radioactive investigations, there seems to be no considerable attempts made on thoron measurements, as many researchers have thought of radiological influence of radon only. This notion has been changed with time due to the systematic studies conducted on thoron across the world which established that high thoron concentration was observed if the materials have rich content of thorium [12-15]. The measurements on natural radioactivity during the last two decades reveal that the concentration of thoron and its progeny in some parts of the globe are considerable to that of radon levels [16-18].

The present study for the estimation of thoron levels has been conducted in four northern districts of Telangana state, India viz. Karimnagar, Peddapalli, Jagtial and Rajanna Sircilla. Some parts of the locations under investigation spread into the potential granulite province of Karimnagar Granulite Terrain (KGT). The general activities of granitic quarries being carried out in these locations can influence the radiation levels [19, 20].

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Structural and magnetic properties of $Y_{1-x}Dy_xFeO_3$ multiferroics

G. Padmasree [a], S. Shravan Kumar Reddy [c], N. Pavan Kumar [d], P. Yadagiri Reddy [b], Ch. Gopal Reddy [b,*]

[a] Stanley College of Engineering & Technology for Women, Abids, Hyderabad 500001, Telangana, India
[b] Department of Physics, Osmania University, Hyderabad 500007, Telangana, India
[c] Department of Physics, Chaitanya Bharathi Institute of Technology, Hyderabad 500075, India
[d] Matrusri Engineering College, Saidabad, Hyderabad 500059, Telangana, India

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ABSTRACT

$Y_{1-x}Dy_xFeO_3$ (x = 0.0, 0.2, 0.4, 0.6 and 0.8) multiferroic materials are prepared by sol–gel method. The effect of Dy doping on the structural and magnetic properties of $YFeO_3$ has been investigated in this paper. X-ray diffraction plots indicate that all the samples are crystalline and possess orthorhombic structure. The morphological studies show that samples possess non uniform grain size and grains are irregular in shape. Magnetic measurements suggest that substitution of Dy^{+3} ions in place of Y^{+3} ions effectively enhances the magnetization of $YFeO_3$. This enhancement may be due to the additional Dy-Dy interactions, Dy-Fe interactions and Fe-O-Fe superexchange bond caused by the distortion of crystal structure.

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1. Introduction

Ceramic oxides show a variety of properties like ferroelectricity, magnetism, superconductivity, magneto-resistivity, etc. Among them, $RFeO_3$ (R = rare earth ion) orthoferrites possess perovskite structure and show multiferroic properties and are extensively studied for their potential applications. $YFeO_3$ has an orthorhombic perovskite structure with corner-linked FeO_6 octahedra having Fe at the centre and larger Y^{+3} cations occupying the voids within the three dimensional framework of the octahedra [1]. In $YFeO_3$, three major magnetic interactions occur between Fe–Fe, Y–Fe and Y-Y [2]. These competing interactions determine their magnetic properties and lead to very interesting phenomena. The well defined crystallographic and magnetic sub lattices present within the same compound leads to strong interplay between localized moments, magnetic ordering and other important features, which are related to exchange mechanisms and the competition between ferromagnetic and antiferromagnetic phases [3]. The substituted ferrites show changes in the crystal structures and magnetic properties due to change in oxygen stochiometry and composition of cation sub lattice [4,5].

The interactions between Fe^{+3} moments give rise to antiferromagnetism in $YFeO_3$ (as Y^{+3} is diamagnetic ion). Based on this property $YFeO_3$ is widely studied in the field of dielectric relaxation [6], spin reorientation [7], etc. There are studies, which show that substitution of magnetic or diamagnetic ions at R site in $RFeO_3$ (R = rare earth ion) can effectively modify the structural and physical properties of orthoferrites [8–10]. The present study is on the effect of substitution of a magnetic ion like Dy at Y site of $YFeO_3$ on its magnetic properties. It is interesting to note that Y^{+3} and Dy^{+3} possess same valence state and therefore this substitution will not cause any changes in valence states. However, since the Dy^{+3} ion possess slightly larger radius than Y^{+3}, the substitution of Dy at Y site may cause changes in the crystal structure and magnetic interactions which will lead to many striking characteristic changes in the system. The variation of lattice parameters and its effect on the magnetic properties of $Y_{1-x}Dy_xFeO_3$ (x = 0, 0.2, 0.4, 0.6 and 0.8) samples are investigated.

2. Experimental

$Y_{1-x}Dy_xFeO_3$ (x = 0, 0.2, 0.4, 0.6 and 0.8) samples are prepared through sol–gel method. Yttrium oxide (Y_2O_3) and Dysprosium oxide (Dy_2O_3) weighed according to their stochiometric ratio are dissolved in nitric acid to form their respective nitrates. Iron (III) nitrate nano hydrate [$Fe(NO_3)_3{\cdot}9H_2O$] and citric acid taken in 1:1

* Corresponding author.
E-mail address: ch_gopalreddy@yahoo.com (Ch. Gopal Reddy).

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Magnetization Studies of Mn Doped $YFeO_3$ Multiferroics

G. Padmasree[1], S. Shravan Kumar Reddy[3], N. Pavan Kumar[4], P. Yadagiri Reddy[2] and Ch. Gopal Reddy[2,a)]

[1]*Stanley College of Engineering & Technology for Women, Abids, Hyderabad-500001, Telangana, India.*
[2] *Department of Physics, Osmania University, Hyderabad-500007, Telangana, India.*
[3]*Department of Physics, Chaitanya Bharathi Institute of Technology, Hyderabad-500075, India.*
[4]*Matrusri Engineering College, Saidabad, Hyderabad-500059, Telangana, India.*

[a)] Corresponding author: ch_gopalreddy@yahoo.com

Abstract: The studies on the structural and magnetic properties of $YFe_{1-x}Mn_xO_3$ (x =0, 0.1, 0.2, 0.3, 0.4 and 0.5) multiferroic samples, prepared by sol-gel method, are reported in this paper. The X-ray diffraction studies confirm the crystalline nature of the compounds which are formed in a pure single phase. From scanning electron micrographs, the average particle size is found to be increased with increasing Mn content and the sample is becoming porous. Magnetization versus magnetic field studies reveal that as Mn content increases, the saturation magnetization, remnant magnetization and coercive field values decreases which clearly indicates that the antiferromagnetic coupling gets strengthened. This increase in the antiferromagnetic nature is possibly due to the structural distortions in the compounds which give rise to the antiferromagnetic super exchange magnetic interactions between Fe^{+3} - Fe^{+3} and Fe^{+3} - Mn^{+3}.

INTRODUCTION

Materials having a chemical formula ABX_3 usually have A as a cation with larger radius (rare earth or alkaline or alkaline earth materials), B is a cation of smaller radius (transition metal) and X an anion (mostly oxygen) and are called perovskite materials. These materials have a unique property of showing ferroelectric and ferromagnetic nature simultaneously in one phase and moreover these properties are tunable by the external field. Therefore, these materials are called multiferroic materials [1]. Due to these properties, $YFeO_3$ has many applications in micro-technological devices like magneto-optical current sensors, fast latching optical switches, spintronic devices, ultrafast lasers in magnetic devices, etc. [2-4].

Orthoferrites ABX_3 in the form of $AFeO_3$ usually crystallizes in distorted orthorhombic structure. This structure contains Fe^{+3} ion bonded to six oxygen atoms in an octahedron configuration, with Fe^{+3} ion at the center. The cation A is present at the interstitial area between the octahedron, coordinated by 12 oxygen anions [5]. In $AFeO_3$ there exists exchange interactions between Fe^{+3}-Fe^{+3}, A^{+2}- Fe^{+3} and A^{+3}- A^{+3} (A^{+3} = magnetic active ion) [6]. Below Neel temperature (T_N), Fe^{+3}- O - Fe^{+3} super exchange interactions are dominant which leads to ordering of Fe^{+3} magnetic moments and results in weak ferromagnetism. The origin of weak ferromagnetism is attributed to antisymmetric Dzyaloshinkkii-Moriya (DM) exchange between neighboring spins [7-9]. Spin reorientation is observed due to A^{+3}- Fe^{+3} exchange interactions. The direction of magnetization can be changed from one axis to another with the external field or temperature. The weak interactions between A^{+3}- A^{+3} gives rise to ordering of rare earth ions at low temperatures. In orthoferrites, where A cation is a non magnetic ion such as Y, no spin reorientation is seen at room temperature. But spin reorientation in these materials can be induced by applying strong magnetic field or by lowering temperatures [10].

Earlier works on orthoferrites and transition metal oxides have shown that the structural and physical properties can be modified by doping [11, 12]. The main purpose of the present work is to study the structural and

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Synthesis of iron oxide nanoparticles and their electrochemical behavior

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E. Nirmala Devi, M. Chandra Sekhar and N. V. S. S. Seshagiri Rao

Multi U-bent Cladded POF Sensors for Refractive Index Measurement

P.V.N. Kishore[a], N. Aruna[a], B.M. Pratima[b], N. Rajeswara Rao[c], J. Ashok[d]

[a]Department of Freshman Engineering, Lakireddy Bali Reddy College of Engineering, Mylavaram-521230, Andhra Pradesh, India; [b]Department of Physics, Chaitanya Bharathi Institute of Technology, Hyderabad, Telangana-500075, India; ; [c] Department of Physics, Aditya College of Engineering & Technology, Surampalem, A.P-533437, India; [d]Department of Physics, SRK Institute of Technology, Enikepadu, A.P-521108, India

ABSTRACT

The cladded U-bent plastic optical fiber (POF) probes with single, triple and quintuple U-bent regions investigated under this study show a RI sensitivity of 2.7, 3.7 and 2.3 absorbance units/RI units respectively. The highest sensitivity obtained here is more than 50% of decladded single U-bent POF probes, however with superior chemical resistance.

Keywords: Fiber optic Sensors, Optical Sensing and Sensors, Remote Sensing, plastic fiber, POF Sensors, U-bent fibers, Refractive index, low cost.

1. INTRODUCTION

Identification of precise refractive index (RI) changes, is an important concern in various fields such as petroleum industries, food processing, pharmacy applications, clinical diagnostics etc. Conventional RI measuring instruments suffer from limitations due to their voluminous size, inefficiency for remote monitoring and high cost [1]. Plastic optical fiber (POF) based RI sensors have recently gained attention due to their innate properties such as ease in handling, flexibility, high facture toughness, negative thermo-optic coefficient and high sensitivity to strain. Apart from that they offer excellent compatibility to organic materials, enabling them for chemical and biomedical applications [2]. Evanescent field absorption based POF sensors could be low cost and reliable alternatives for RI measurement. Various fiber sensors such as straight decladded fiber, biconically tapered, D-shaped, micro bent, laterally polished etc, were reported for the measurement of RI. Among all these configurations, U-bent POF sensors offer advantages such as robustness, high sensitivity, ease in fabrication and adoptability for point sensing [3, 4]. However, the resistance of decladded POF (PMMA fiber core) to harsh chemicals such as acids and organic solvents including alcohols is poor. Since the fiber with fluorinated polymer cladding over PMMA fiber core offers better chemical resistance, U-bent probes with their cladding intact can be an alternative. However, presence of cladding restricts the evanescent wave penetration into medium. This problem may be circumvented by introducing multiple turns to improve their RI sensitivity. In the present study, three U-bent probe configurations each with single, triple and quintuple U-bent sensing regions, one turn U-bent and two turn U-bent POF probes are realized and their sensitivities are compared.

2. EXPERIMENTAL

Sensor probes of bent radius 1mm were made using 0.5 mm POF (core diameter is 480 μm and cladding thickness is 20 μm) by winding the POF on a flat iron rod of 5 mm width and 2 mm thickness and firmly pasted with tape. The legs of the probes are inserted into suitable glass capillary tube and exposed to 100°C by placing it in hot air oven for ten minutes. The three U-bent POF probe configurations are as shown in Fig. 1. Green LED (at 530 nm) used as

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Detection of copper by localized surface Plasmon resonance based fiber optic technique

N.Aruna[a,b], K.Chandra Mouli[b] ,P.V.N.Kishore[a], B.M. Pratima[c], N. Rajeswara Rao[d], J. Ashok[e]
[a]Department of Freeman Engineering, Lakireddy Balireddy College of Engineering, Mylavaram-521230, Andhra Pradesh, India; [b]Department of Engineering Physics, Andhra University College of Engineering (A), Visakhapatnam-530003, Andhra Pradesh, India; [c]Department of Physics, Chaitanya Bharathi Institute of Technology, Hyderabad, Telangana-500075, India; [d] Department of Physics, Aditya College of Engineering & Technology, Surampalem, A.P-533437, India; [e]Department of Physics, SRK Institute of Technology, Enikepadu, A.P-521108, India

ABSTRACT

The present article discusses a cost effective technique for the detection and quantification of copper ion by using localized surface Plasmon resonance (LSPR) based fiber optic technique. For the purpose, a small portion of a plastic optical fiber is functionalized with gold nanoparticles which are modified with 4-mercapto benzoic acid (4-MBA). The proposed is very successful in the detection of Cu^{2+} even in trace levels (ppb) in a wide range of real time samples. The results are comparable with the existing detection techniques.

Keywords: Fiber sensors, Copper detection, Plastic fibers, Surface Plasmon resonance, metal ion detection, Plastic optical fibers, straight plastic fiber probes, LSPR

1. INTRODUCTION

During recent decades, the necessity for detection of selective heavy metal ions, such as Mercury (Hg), Cadmium (Cd), Arsenic (As), Chromium (Cr), Lead (Pb), Zinc (Zn) Copper (Cu) etc., has increased immensely due to growing environmental pollution. Upsurge of metal ion concentration above the permissible limit, would prompts carcinogenesis and other severe health problems [1-4]. Copper ion pollution is one of the major contributor of the overall metal ion pollution.

Plastic optical fiber is observed to be unique in absorbing Evanescent field sensitivity as well as less fragility. The sensitivity of the fiber can be further enhanced by functionalizing the fiber with gold (Au) nano particles which incites localize surface Plasmon resonance (LSPR) [5].

The present work is initiated for the detection of Copper (Cu^{2+}) using a chemical receptor 4-MBA (4-mercapto benzoic acid) tagged on gold nanoparticle (AuNP) functionalized etched plastic optical fiber. The sensing mechanism and experimental procedure are summarized in detail in following sections.

2. SENSING PRINCIPLE

As shown in figure1, the device consists of a decladded plastic optical fiber which is functionalized with gold nano particles (40nm size) tagged with 4-MBA (4-mercapto benzoic acid). Through one end of the probe, light gets transmitted and is detected at the other end of the probe. As the 4-MBA has high affinity towards Copper ions, when the probe is exposed to Copper ion solution, copper ions gets bind to MBA [6]. During the process of this reaction, plasmonic probe experiences

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Natural background gamma radiation dose estimation in the surrounding villages of Devarakonda Town, Telangana State, India

M. Srinivas Reddy[1] · G. Suman[2] · K. Vinay Kumar Reddy[3] · M. Sreenath Reddy[1] · Ch. Gopal Reddy[1] · P. Yadagiri Reddy[1]

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Abstract
Natural background gamma radiation levels were estimated in indoors and outdoors of the surrounding seven villages of Devarakonda town, these villages are at a distance of 15 to 20 kms from the proposed uranium mining area, in the Telangana State, with μR survey meter and Thermoluminescence Dosimeters (TLDs). The estimated average absorbed dose rates in the indoors and outdoors with survey meter were found to be 233 ± 68 nGy h^{-1} and 204 ± 55 nGy h^{-1}, respectively, and estimated average gamma radiation levels with TLDs in the indoors were found to be 318 ± 48 nGy h^{-1}. The estimated dose rate is about four times higher than the national average. The distribution of gamma activity concentration in the study area is observed to be followed normal distribution. An attempt has been made to find out the cause of gamma radiation levels in the dwellings and calculated the effective dose rate due to gamma radiation levels to the public living in these villages.

Keywords Gamma radiation · Absorbed dose · Effective dose · Thermoluminescence dosimeters

Introduction

The investigation of ionizing radiation in the human environment is a growing concern across the world since natural radioactivity has been recognized as radiological hazardous. The assessment of natural radioactivity has become an important and necessary feature in the environmental protection studies [1]. The radionuclides, present in the rock and soil that constitute earth crust, are responsible for natural radioactivity in the environment. The radioactive nuclides belonging to the members of natural radioactive uranium and thorium decay series emit gamma radiation. This gamma radiation, along with a considerable part contributed by potassium-40, is called terrestrial gamma radiation. Generally, the natural radioactivity at a given location and associated external exposure due to the terrestrial gamma radiation depend on the geology of the area that are responsible for the content of radionuclides available in the soil. However, the gamma levels in indoors primarily depend on the building materials used for construction, in addition to geology [2–4]. These levels may be enhanced as a consequence of man-made activities like mining, modern medical services, industrial activity, etc. [5]. The natural background gamma radiation levels are expected to be elevated in and around areas of mining activity for the extraction of radioactive mineral as the dwellings constructed in these areas are usually built with locally available materials that are likely to have high radioactive content. The assessment of natural background gamma radiation levels in these areas helps in understanding excess radiation dose received by the common public of this area and also to suggest the mitigation techniques. Moreover, quantification of population exposure to radiation in the human habitats is also important because public spent most of their time (almost 80%) in indoors.

Several studies have been initiated to estimate the levels of natural background gamma radiation in indoor and outdoor environment of human habitats across the world and these are primarily concern with the estimation of absorbed

✉ M. Sreenath Reddy
marrisr@gmail.com

[1] Department of Physics, Osmania University, Hyderabad 500007, India

[2] Department of Physics, Nagarjuna Government Degree College, Nalgonda 508001, India

[3] Department of Physics, Chaitanya Bharathi Institute of Technology, Hyderabad 500 075, India

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Radon and thoron levels in the dwellings of Buddonithanda: a village in the environs of proposed uranium mining site, Nalgonda district, Telangana state, India

G. Suman[1], K. Vinay Kumar Reddy[2], M. Sreenath Reddy[1*], Ch. Gopal Reddy[1] & P. Yadagiri Reddy[1]

Elevated levels of radon and thoron in the indoor atmosphere may cause the deleterious effects on the mankind. Mining sites and their environs attract a special interest in radon studies as higher levels are frequently reported in the habitats. In the present study, radon and thoron levels were measured in the dwellings of Buddonithanda, a village in the environs of proposed uranium mining site, with pin-hole (SSNTDs) dosimeters for the period of a year. The measured radon and thoron levels were found to vary widely from 14 to 675 Bq m^{-3} (geometric mean = 94 Bq m^{-3}) and from 21 to 704 Bq m^{-3} (geometric mean = 121 Bq m^{-3}), respectively. An attempt was made to understand the large spatial variation of these levels. The seasonal and diurnal variation studies were used in unraveling the behavior of the radioactive isotopes in indoor environment and the same was explained with the help of a simplified mathematical model. Quantification of inhalation dose due to radon and thoron was done with suitable occupancy factors.

Radon, being inert gas and radioactive in all of its isotopes, attracts much importance from radiological pollution point of view. The investigations across the globe indicate that half of the average annual natural background radiation dose comes from radon and its isotopes. Out of the various isotopes, the isotopes which are practically significant to the inhalation radiation dose are ^{222}Rn and ^{220}Rn, called as radon and thoron. The first one is more abundant, has half-life of 3.8 days and comes from the decay of ^{226}Ra. The latter has a very short half-life of 55.6 s and comes from the decay of ^{232}Ra[1]. Radon and thoron can enter human body by inhalation and most of the inhaled will be exhaled. However, a small fraction of the concentration of the gases might stuck in the lungs/ respiratory tract and these trapped radioactive elements on successive disintegration emit alpha particles that possibly ionize the lung tissues and results in the lung damage[2,3]. Epidemiological studies have confirmed that the exposure to radon in work places and dwellings increase the risk of developing lung cancer. Exposure to indoor radon and its isotopes have been determined to be the second leading cause of lung cancer after tobacco smoking[3]. The studies on uranium miners proved to be a positive risk coefficient on health and the measurements of radon and thoron levels are made inevitable in the indoor environment. This attention has been picked up the pace during last few decades and has become a global observable fact.

The concentration of radon and thoron gases in the indoors is largely influenced by the materials used for construction, life style of dwellers, geology and meteorological conditions of the study area[4]. Generally, the exposure to ^{222}Rn and its daughter products contribute more to radiation dose than that of ^{220}Rn[5]. However this perception has been changed, due to many systematic investigations across the world during the last few decades suggesting that, the ^{220}Rn is also significantly contributes to the inhalation dose if the thorium content is rich in materials used for construction and local geology[6–8].

[1]Department of Physics, Osmania University, Hyderabad 500007, India. [2]Department of Physics, Chaitanya Bharathi Institute of Technology, Hyderabad 500 075, India. [*]email: msnrlr@gmail.com

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ORIGINAL ARTICLE

Inhalation dose due to residential radon and thoron exposure in rural areas: a case study at Erravalli and Narasannapet model villages of Telangana state, India

B. Linga Reddy[1] · G. Srinivas Reddy[2] · K. Vinay Kumar Reddy[1] · B. Sreenivasa Reddy[1]

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Abstract
Exposure to indoor radon has been identified as a cause of lung cancer. The corresponding inhalation radiation dose received is an important parameter in estimating the risk of cancer due to the inhalation of radon. The present investigation is aimed at the estimation of the radiation dose due to radon, its isotopes, and progeny to the public residing in dwellings constructed in model villages of Telangana state, India. The indoor activity concentrations of radon and thoron were measured using pin-hole dosimeters. The measured activities along with appropriate dose conversion and occupancy factors were used in the estimation of the dose received by the dwellers. The doses estimated were compared with those to inhabitants of control dwellings. The estimated doses received by the public due to radon were found to be 1.54 ± 0.60 mSv and 1.51 ± 1.20 mSv, in the investigated model houses and in the control dwellings, respectively. Correspondingly, radiation doses due to thoron were found to be 1.08 ± 0.81 mSv and 1.44 ± 1.04 mSv, respectively. It is concluded that the model dwellings pose no extra radiation burden to the public.

Keywords Inhalation dose · Indoor radon · Indoor thoron · Pin-hole dosimeter

Introduction

Radon, an inert radioactive gas, has been of interest in the scientific radiation protection community for several decades. Indoor radon, in environments such as homes, schools, workplaces, mines and caves, has been considered as a radiological carcinogen. It should to be noted that radon (^{222}Rn), thoron (^{220}Rn, another radioisotope of the element radon) and their progeny dominate the radiation dose to the population due to natural radioactive sources (UNSEAR 2000). The International Commission on Radiological Protection (ICRP) and the World Health Organization (WHO) reported that radon is the main cause (3–14%) of lung cancer after smoking. The lower the radon activity concentration in a home is, the lower is the risk of lung cancer (ICRP 2010, 2014; WHO 2009). Importantly, there is no known threshold below which radon exposure carries no risk. Moreover, a statistically significant increase of the risk for lung cancer has been observed for radon activity concentrations higher than 200 Bq m^{-3} (Osoria et al. 2020; Pantelic et al. 2019; Fucic et al. 2010; Darby et al. 2005; Nazaroff and Nero 1988). Specifically, there is an about 16% increase in risk of lung cancer mortality per 100 Bq m^{-3} of indoor radon activity concentrations. Worldwide, indoor radon activity concentrations vary from 10 Bq m^{-3} to more than 10,000 Bq m^{-3}. The ICRP recommends 300 Bq m^{-3} as the upper value for the reference level, for indoor radon activity concentration, while the WHO established a reference level of 100 Bq m^{-3}. Depending on the prevailing geological and socio-economic situation of a country, the reference level may be chosen as low as reasonably achievable, and it should not exceed 300 Bq m^{-3}. The activity concentration of radon in indoors depends mainly on the geology of the area, building materials used for the construction of dwellings, ventilation, and life style of the residents (ICRP 2014; WHO 2009).

Radon is generated through radioactive decay of uranium and thorium. Sources of indoor radon are trace levels of uranium and thorium in soil within the first few meters from the

✉ B. Sreenivasa Reddy
beemireddy@yahoo.com

[1] Chaitanya Bharathi Institute of Technology, Gandipet, Hyderabad 500075, India

[2] Mahatma Gandhi Institute of Technology, Gandipet, Hyderabad 500075, India

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Mapping of ambient gamma radiation levels and risk assessment in some parts of Eastern Deccan Plateau, India

G. Srinivas Reddy[a], K. Vinay Kumar Reddy[b], B. Sreenivasa Reddy[b], B. Linga Reddy[b], M. Sreenath Reddy[c], Ch. Gopal Reddy[c] and P. Yadagiri Reddy[c]

[a]Department of Physics and Chemistry, Mahatma Gandhi Institute of Technology, Hyderabad, India; [b]Department of Physics, Chaitanya Bharathi Institute of Technology, Hyderabad, India; [c]Department of Physics, Osmania University, Hyderabad, India

ABSTRACT

Natural background gamma radiation levels in the indoors and outdoors of certain northern districts of Telangana State, situated on Deccan plateau, were measured with scintillation detector-based survey metre. It was observed that the absorbed gamma dose rates in the indoor and outdoor of the study area were found to vary from 106 $nGyh^{-1}$ to 322 $nGyh^{-1}$ with an average of 192 ± 48 $nGyh^{-1}$, and 102 $nGyh^{-1}$ to 331 $nGyh^{-1}$ with an average of 172 ± 50 $nGyh^{-1}$, respectively. Spatial distribution maps and isodose contours are created using inverse distance weighted technique. The histogram and quantile graphs of the indoor and outdoor natural background gamma radiation levels were observed to follow the structure of symmetrical distribution. The average ratio of indoor to outdoor gamma radiation levels was found to be 1.10. The influence of building materials on the natural background gamma radiation levels was discussed. The annual effective dose was found to vary from 0.20 to 1.89 mSv. The excess life cancer risk was also calculated.

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KEYWORDS
Gamma radiation; absorbed dose rate; annual effective dose; excess life cancer risk; uranium

1. Introduction

Assessment of environmental background radiation levels has gained an importance for the past few decades due to the deleterious effects on human health and this attention has been ever increasing across the world [1,2]. The total human exposure owing to natural sources is mainly due to the internal exposure that occurs largely from the radon isotopes (≈ 55%) and the external exposure (≈ 8%) due to gamma radiation [3]. The natural background external radiation levels in the environment arise: one from extra-terrestrial sources, such as cosmic rays that have shown an insignificant effect with depth of atmosphere towards the earth surface; and the other from terrestrial sources derived from the radioactive nuclides present in the earth crust [4,5]. The important radioactive nuclides that contribute to ambient gamma radiation are ^{238}U, ^{232}Th and ^{40}K [6]. The concentration of these nuclides depends on the type of rock from which the soil originates and their degree of presence which is influenced by natural features of that region [7]. The emission of radiation from these nuclides is the main source of external exposure

CONTACT M. Sreenath Reddy mantsr@gmail.com

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Non-collinear antiferromagnetism to compensated ferrimagnetism in $Ti(Fe_{1-x}Co_x)_2$ (x = 0, 0.5 and 1) alloys: experiment and theory

S. Shanmukharao Samatham, [a] Akhilesh Kumar Patel,[b] Alexey V. Lukoyanov,[cd] K. G. Suresh[b] and R. Nirmala[e]

The manifestation of the structural and magnetic properties of Co substituted $TiFe_2$ is investigated using powder X-ray diffraction, magnetization and density functional theory calculations. The alloys $TiFe_2$ and TiFeCo crystallize in the hexagonal structure ($P6_3/mmc$) with a reduction in the lattice parameters of TiFeCo (by about 0.51% in a and 0.64% in c) when compared to $TiFe_2$. On the other hand, $TiCo_2$ crystallizes in the cubic structure ($Fd\bar{3}m$). A structural transition from hexagonal to cubic is anticipated for a composition with $x \in [0.5, 1]$. The non-collinear antiferromagnetic (AFM) spin structure (formed by 6h Fe atoms) of $TiFe_2$ with Néel temperature $T_N \sim 275$ K is reported at zero magnetic field H. Meanwhile, a magnetic field-induced collinear antiferromagnetic spin structure is suggested by magnetization measurements and supported by density functional theory calculations. The magnetization of TiFeCo shows a weak-ferromagnetic (FM)-like transition around 204 K, followed by a broad hump at 85.5 K and H = 200 Oe. Ferromagnetic interactions are weakened, causing the hump to disappear due to the possible transfer of electrons between Fe and Co. $TiCo_2$ shows compensated ferrimagnetism with magnetization of the order of 10^{-5} μ_B f.u.$^{-1}$ and a linear increase of M with H at 5 K. The presence of a non-collinear AFM spin structure in $TiFe_2$, a reduced magnetic moment in TiFeCo due to the charge transfer between Co and Fe, and compensated ferrimagnetism in $TiCo_2$ promise a rich phase diagram of $Ti(Fe_{1-x}Co_x)_2$ alloys and the possible potential of these alloys for use in spintronics applications.

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1 Introduction

In recent times, the search for non-collinear antiferromagnets has gained paramount importance in condensed matter physics due to their potential applications in spintronics. Non-collinear magnetism may arise due to either the frustration (geometric) of spins in a triangular arrangement or the competition between the magnetic anisotropy and exchange interactions. Very recently, the Hall effect of non-collinear antiferromagnets has become a subject of interest, as it is unusually large and non-dissipative.[1] Predictions by Chen *et al.*[1] are found to be valid for non-collinear cubic antiferromagnets such as Mn_3Ir, Mn_3Sn, Mn_3Rh and Mn_3Pt. However, Kübler *et al.* have extended similar calculations for the Heusler family of hexagonal antiferromagnets.[2] The observation of the anomalous Hall effect in the strained nitrogenated thin films of Mn_3Ni with a large Berry curvature induced by a non-collinear structure has aroused the hope of its use in technological applications.[3] From the fundamental research point of view, the manifestation of exchange interactions in magnetic systems, triggered by the application of external parameters such as magnetic field H, hydrostatic pressure p and chemical substitution x, often leads to various novel and exotic ground states. The compression of lattice (*i.e.* reduction in the lattice parameters) by hydrostatic pressure, sometimes, enhances the electron–electron interactions, which leads to a metallic state. A magnetic field aligns the spins in its direction, leading to a magnetically ordered state. An external magnetic field also suppresses the spin fluctuations, causing an enhanced magnetoresistance and magnetocaloric effect. A magnetic field, through a metamagnetic transition, drives the system from an antiferromagnetic to a ferromagnetic state *via* a spin-flip process, if the anisotropic interactions are strong. In the case of weak anisotropy, the system is driven to a ferromagnetic state *via* a spin-flop process. Chiral/helimagnetic systems with weak exchange

[a] Department of Physics, Maharaj Vijayaram Gajapathi Raj College of Engineering, Vijayaram Nagar Campus, Chintalavalasa, Vizianagaram 535005, Andhra Pradesh, India. E-mail: ssarao@mvgrce.edu.in
[b] Magnetic Materials Laboratory, Department of Physics, Indian Institute of Technology Bombay, Mumbai 400 076, Maharashtra, India
[c] M. N. Mikheev Institute of Metal Physics of Ural Branch of Russian Academy of Sciences, 620108 Ekaterinburg, Russia
[d] Ural Federal University, 620002, Ekaterinburg, Russia
[e] Department of Physics, Indian Institute of Technology Madras, Chennai 600 036, India

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Cwebs beyond three loops in multiparton amplitudes

Neelima Agarwal,[a] **Lorenzo Magnea,**[b,c] **Sourav Pal**[d] **and Anurag Tripathi**[d]

[a] *Department of Physics, Chaitanya Bharathi Institute of Technology, Gandipet, Hyderabad, Telangana State 500075, India*
[b] *Theoretical Physics Department, CERN, CH-1211 Geneva 23, Switzerland*
[c] *Dipartimento di Fisica and Arnold-Regge Center, Università di Torino and INFN, Sezione di Torino, Via Pietro Giuria 1, I-10125 Torino, Italy*
[d] *Department of Physics, Indian Institute of Technology Hyderabad, Kandi, Sangareddy, Telangana State 502285, India*

E-mail: neelimaagarwal_physics@cbit.ac.in, lorenzo.magnea@unito.it, apalexan@gmail.com, tripathi@phy.iith.ac.in

Abstract: Correlators of Wilson-line operators in non-abelian gauge theories are known to exponentiate, and their logarithms can be organised in terms of collections of Feynman diagrams called *webs*. In [1] we introduced the concept of *Cweb*, or *correlator web*, which is a set of skeleton diagrams built with connected ghost correlators, and we computed the mixing matrices for all Cwebs connecting four or five Wilson lines at four loops. Here we complete the evaluation of four-loop mixing matrices, presenting the results for all Cwebs connecting two and three Wilson lines. We observe that the conjectured column sum rule is obeyed by all the mixing matrices that appear at four-loops. We also show how low-dimensional mixing matrices can be uniquely determined from their known combinatorial properties, and provide some all-order results for selected classes of mixing matrices. Our results complete the required colour building blocks for the calculation of the soft anomalous dimension matrix at four-loop order.

Keywords: NLO Computations, QCD Phenomenology

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Power corrections to event shapes using Eikonal dressed gluon exponentiation

Neelima Agarwal,[a] Ayan Mukhopadhyay,[b] Sourav Pal[b] and Anurag Tripathi[b]

[a] *Department of Physics, Chaitanya Bharathi Institute of Technology, Gandipet, Hyderabad, Telangana State 500075, India*

[b] *Department of Physics, Indian Institute of Technology Hyderabad, Kandi, Sangareddy, Telangana State 502285, India*

E-mail: neelimaagarwal_physics@cbit.ac.in, ayanmukhopadhyay5@gmail.com, spalexam@gmail.com, tripathi@phy.iith.ac.in

Abstract: Event shapes are classical tools for the determination of the strong coupling and for the study of hadronization effects in electron-positron annihilation. In the context of analytical studies, hadronization corrections take the form of power-suppressed contributions to the cross section, which can be extracted from the perturbative ambiguity of Borel-resummed distributions. We propose a simplified version of the well-established method of Dressed Gluon Exponentiation (DGE), which we call Eikonal DGE (EDGE), which determines all dominant power corrections to event shapes by means of strikingly elementary calculations. We believe our method can be generalized to hadronic event shapes and jet shapes of relevance for LHC physics.

Keywords: NLO Computations, QCD Phenomenology

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Raman and in-field ^{57}Fe Mössbauer study of cation distribution in indium (In) substituted phase pure cobalt ferrite ($CoFe_{2-x}In_xO_4$)

M. Sumalatha [a], S. Shravan Kumar Reddy [b], M. Sreenath Reddy [c,*], Suresh Sripada [d], M. Manivel Raja [e], Ch. Gopal Reddy [c], P. Yadagiri Reddy [c], V. Raghavendra Reddy [f]

[a] Sreenidhi Institute of Science and Technology, Hyderabad 501301, India
[b] Chaitanya Bharathi Institute of Technology, Gandipet, Hyderabad 500075, India
[c] Department of Physics, Osmania University, University College of Science, Hyderabad 500 007, India
[d] Department of Physics, JNTUHCEJ, Nachupally, Jagtyal 505501, India
[e] Defence Metallurgical Research Laboratory, Hyderabad 500058, India
[f] UGC-DAE Consortium for Scientific Research, University Campus, Khandwa Road, Indore 452001, India

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ABSTRACT

Structural, magnetic and ^{57}Fe Mössbauer investigations of indium (In) doped cobalt ferrite are reported. Polycrystalline $CoFe_{2-x}In_xO_4$, x = 0, 0.2, 0.4, 0.6, 0.8 samples are prepared by sol–gel method. In contrast to most of the literature, in the present work phase pure samples are obtained, except for x = 0.2. The presence of ferrimagnetic ordering in all the samples is confirmed from in-field ^{57}Fe Mössbauer spectroscopy measurements. The cation distribution is obtained unambiguously from the combined analysis of Raman and in-field ^{57}Fe Mössbauer spectroscopy measurements. The variation of magnetic moment values calculated from the obtained cation distribution are found to match qualitatively with the experimental values, supporting the analysis of in-field ^{57}Fe Mössbauer and Raman spectroscopy measurements.

1. Introduction

Ferrites are being studied extensively because of various applications in electronic and communication industries due to their interesting magnetic, electrical and structural properties [1,2]. In ferrites family, cobalt ferrite ($CoFe_2O_4$, CFO) which crystallize in cubic spinel phase is studied extensively due to its high magnetic anisotropy, high Curie temperature, excellent chemical stability etc [3–5]. In general, in ferrites including CFO, two kinds of sites viz., tetrahedral ((A)-) and octahedral ([B]-) coordinated sites are available for the cation distribution. In the normal spinel CFO, (A)-sites are occupied by Co^{+2} ions and [B]-sites are occupied by Fe^{+3} ions. However, when Fe^{+3} ions are settled in (A)-site and Fe^{+3}, Co^{+2} ions are equally distributed in [B]-sites the resulting structure is named as inverse spinel [6–8]. The electrical and magnetic properties of the spinel ferrites depends strongly on the preparation method, sintering temperature, substitution etc., which ultimately alter the cation distribution across (A)- and [B]-sites [1,2]. Therefore, generally the investigation of the ferrites is considered to be incomplete without knowing the cation distribution.

In literature, CFO has been studied with various substitutions to tune the magnetic and electrical properties [3–13]. In the present work, we selected indium (In) as substitute because of its large ionic radii as compared to Fe, to know the changes in the magnetic properties and cation distribution. Similar work has done by few researchers, however with the presence of secondary phases [3,15]. Verma et al., reported that for lower concentrations of In substitution, In ions occupy (A)-sites and for higher concentrations [B]-sites [15]. Rabia pandit et al., reported the spin canting investigation and cation distribution of In substituted CFO samples, however with secondary phases [3]. Vlazan et al., reported the magnetic and optical properties of In substituted CFO samples with secondary phase [14]. Razia et al., reported the electrical and magnetic properties of the same samples [16] for low concentrations of In substitution.

Therefore, the literature suggests that there is no detailed investigation of cation distribution and the resulting magnetic properties for In substituted phase pure CFO samples. Techniques such as sol–gel method is used to prepare many oxide samples with phase purity because of thorough mixing as compared to conventional solid-state sintering methods [12,17]. Sol–gel method and systematic sintering temperature optimization is carried out to prepare the phase pure In substituted CFO

* Corresponding author.
E-mail address: marrisr@osmania.ac.in (M. Sreenath Reddy).

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Multi U-bent cladded POF sensors for refractive index measurement

P. V. N. Kishore (/profile/Vayunandana-Kishore Pabbisetti-9352), N. Aruna (/profile/ARUNA.NAYUDU-4299456), B. M. Pratima (/profile/pratima.nunna-7583), N. Rajeswara Rao, J. Ashok

Author Affiliations + (/)

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Abstract

The cladded U-bent plastic optical fiber (POF) probes with single, triple and quintuple U-bent regions investigated under this study show a RI sensitivity of 2.7, 3.7 and 2.3 absorbance units/RI units respectively. The highest sensitivity obtained here is more than 50% of decladded single U-bent POF probes, however with superior chemical resistance.

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Presenter/Author
N. Aruna
Lakireddy Bali Reddy College of Engineering (India), Andhra Univ. College of Engineering (India)

Author
K. Chandra Mouli
Andhra Univ. College of Engineering (India)

Author
P. V. N. Kishore
Lakireddy Bali Reddy College of Engineering (India)

Author
B. M. Pratima
Chaitanya Bharathi Institute of Technology (India)

Author
N. Rajeswara Rao
Aditya College of Engineering & Technology (India)

Author
J. Ashok
SRK Institute of Technology (India)

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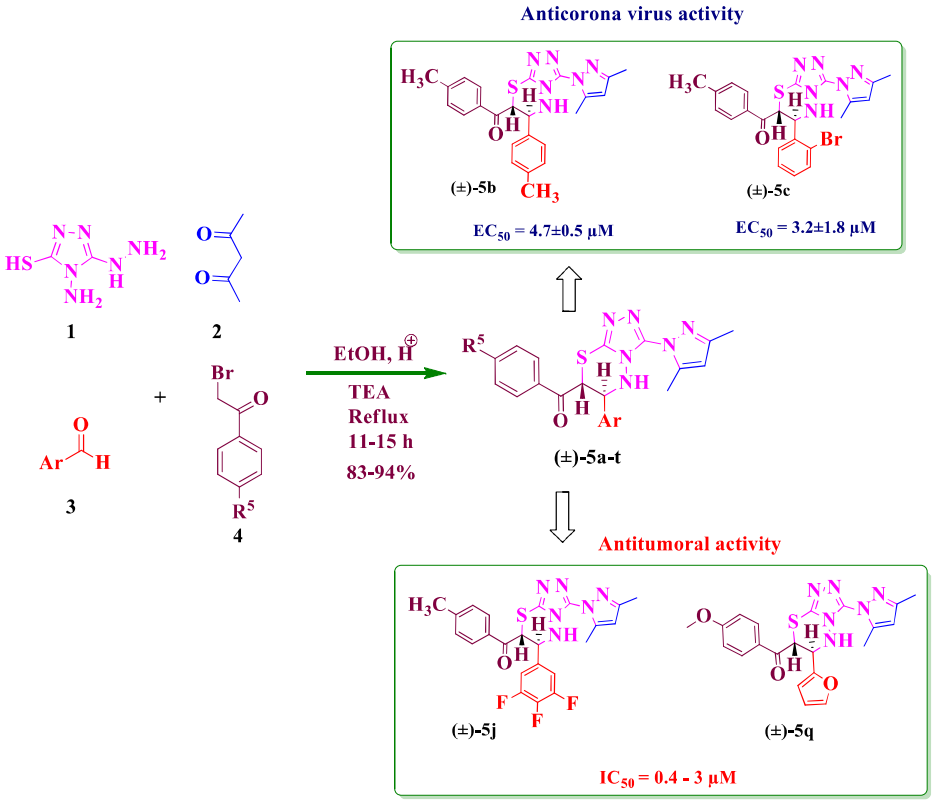

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Keywords—3D printing, lattice structures, additive manufacturing

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b t ni yoy dt h Lni f wuf ni s df dr Et dr yoy ul Po5c $q_{0.4}$: $(S\ uT_7)_5$ a ndyi on P ut yoi b w f wi

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Ui gi nzi h Nyp 19, 2019 Avi znwi h S gxs f i v 10, 2019 Aeggi t xi h F i gi q f i v 10, 2019

Eey wdf $On_3Xn_{0.75}(P\ sS_4)_3$ gsq t syr h gv wepmi wrr p s r wxi x t i wxvygxyvi . Xmi wxvygxyvi –ewt vi t evi h f xmi ws phi wexi vi egxns r q i xms h. I pi gxvs gmi q ngepp xmmyq rr wi vxns r –ewt i vks vq i h rr xs weq t pi ks v xmi knvwx xnq i . Tvi pnq rr ev wxyhni w–i vi gewni h syx xs er ep i xmi weq t pi ewi pi gxvs hi q exi vnepks v On-ns r fexxi vni w Xmi i pi gxvs gmi q ngepgnevl i hnvgnevl i gyvzi wvns –wrr wi vxns r sk4.8 Onnws f xerr i h rr weq t pi –mi r hnvgnevl i h xs 1.5] er h i –xvegxns r sk3.3 Onnws f wi vzi h hyvrr l gnevl i . C vi zi vwf pi get egnx sk112 q C m/l nws f wi vzi h ekxi v 25 g gpi w

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OnEs S_2 er h OnP r_2S_4 evi xmi keq npnev gexms hi q exi vnepwks v Onxmmyq ns r fexxi vni wcl , 2d. Os – t vngi , fi xxi v i pi gxvs gmi q ngep vi wypwrr wt nvi xmi vgni r xnwwxs i –t ps vi xmi t sp er ns r ng gs q t s yr hwews t xns r xs xmi t swxnzi i pi gxvs hi q exi vnepw S pzrr i Ond i TS $_4$, rewngs r $On_3Ji_2(TS_4)_3$, $On_2Rn_2(P\ sS_4)_3$ er h $On_2Es_2(P\ sS_4)_3$, $Ji_2(P\ sS_4)_3$ evi xmi keq npnevi –eq t pi ws kt ps er ns r ng gs q t s yr hw –mgmgs r whi vi h ewi pi gxvs hi q exi vnepw c3 6d. Xmi f i r i knxs kywrr l xmi q s p f hexi wer h zer e-hexi wl vs yt wrr t sp er ns r ng gs q t s yr hwnwxner owxs xmi vi hs –gs yt pi ws k P s $^{6+}$/P s $^{4+}$ er h] $^{5+}$/] $^{4+}$ ew–i pp xs xmi wxvygxyvepwef rpn i vwxmvs yl mg gprr l –mpi gs q - t evi h xs Vypt nexi wer h t ns wt nexi wl vs yt w Es r wi - uyi r xp q s p f hexi wer h zer e hexi wl vs yt wevi ef pi xs s kki v get egnx c7 9d. Xmnw pi ehw xs ml m xmi s vi xngep wt i gnkng get egnx . C zevni x s k Xner ny q fewi h i pi g - xvs hi q exi vnepwevi gs r whi vi h ew–s vxm r i l exnzi i pi g - xvs hi q exi vnepks v On-ns r fexxi vni ws –rr l xs xmi l ss h vi zi vwf rpnx s k xmi $Xn^{4+/3+}$ vi hs –gs yt pi c10, 11d. Dewi h s r epp efs zi gs r whi vexns r w, Xner ny q er h P s p f hi - ryq fewi h s –hi wevi gs r whi vi h ewi kki gxnzi t s wxnzi i pi gxvs hi w c7 11d. $On_3Xn_{0.75}(P\ sS_4)_3$ gv wepmi wrr p s r wxi x t i wxvygxyvi –nxms vxms vms q f ng w wxi q . Ml mewks yvexs q wt i vyr nxgi pp O s r wxi wxvygxyvi f i ps r l w xs xmi pexi wxgexi l s v s ks –hi w Xmi gepgypexi h pexxngi t eveq i xi vws k xmnwgs q t s yr h q exgni wkrr i –nxm xmi pxi vexyvi . Xmi gv wepwxvygxyvi s k $On_3Xn_{0.75}(P\ sS_4)_3$ nw wns –r rr J rl . 1. Xmi wxvygxyvi gs r wnwxws k s r i OnS_6 xvrl s r ept vnvq exng wxi i r gps wi h f x–s hnwwq npev nws - pexi h P s S_4 xi xvemi hve c12, 13d. Twi yhs mi –el s r ep xyr r i pw evi t vs hygi h f gs r r i gxnr l i hl i wnevnr l OnS_6 xvrl s r ept vnvq wer h $(On/Xn)S_6$ s gxemi hve eps r l xmi *b*-e–nw Nvl vi gi r r xxnq i w, t s p er ns r gs q t s yr h wpnoi $On_3](P\ sS_4)_3$ c14d. $On_3Ji(P\ sS_4)_3$ c15d. er h $On_2Rn_2(P\ sS_4)_3$ c16d. nezi f i i r vi t s vxi h ewi pi gxvs hi q exi vnepwks v Onns r fexxi vni w

On rr wi vxns r f i nezns v rr xs $On_3Xn_{0.75}(P\ sS_4)_3$, e r i – x t i p s r wxi gs q t s yr h –npp fi hnvgyvwi h rr xnnwq er - yvgvnt xks v xmi knvwxnq i . Vxvygxyvi s k $On_3Xn_{0.75}(P\ sS_4)_3$ er h vi hs – gs yt pi w s k Xn^{4+}/Xn^{3+} P s $^{6+}$/P s $^{5+}$ er h P s $^{5+}$/P s $^{4+}$ i r gs yvel i h ywxs wxyh xnnwgs q t s yr h ew i pi gxvs hi q exi vnepks v On-ns r fexxi vni w

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$On_3Xn_{0.75}(P\ sS_4)_3$ –ewt vi t evi h f xmi ws phi wexi vi egxns r q i xms h ywrr l viuynvi h uyer xnx s k On_2ES_3 (P i vgo, 99%) , XnS_2 (Vnl q e-Cphvrgm, 99.9%) er h P s S_3. Xmi gni q ngepw–i vi l vnr hi h rr er el exi q s vxev ks v nepk er ns yv er h ni exi h ex 550 E ks v 24 m xs hi gs q t s wi gevf s r exi . Xmi i r wyrr l t vs hygx –ew l vs yr h –i ppel err er h ni exi h ex 600 E ks v 6 m Cr i –gi ws k 3 q s p% On_2ES_3 –ewehhi h –nxm vi wt i gx xs ws s ngms q i xv xs gs q t i r wexi ks v xmi ps ws k zs pexnpi On_2S ex ml m xi q t i vexyvi c12d. Ckxi v xmi ni ex xvi ex - q i r x, xmi t vs hygx–ewuyi r gmi hxs vs s q xi q t i vexyvi . Xmi t vs gi ww –ew vi t i exi h yr xnp e wrr l pi t newi –ew s f xerr i h.

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Fk o k v0 nson r o yzynr owsnkv Rs r s w sx o syx sx y Tl lk on d k n vo [y r zr k o 0aro sx o syx wonr kxs w k o zvksxon s r o zo yp nk s so k ksvklvo sx [oV$_3$ m o h8.9i0Nk omox swo o ox s o nso o o nk son y sx r o py v/ wy sxq nywzy xn py vs r s w syx lk o so py o kwzvo d Tl$_{12}$/ V$_{33}$. d $_9$Tl$_8$V$_{47}$. as Tl$_2$V$_7$. S y$_3$Tl$_2$V$_{14}$. kxn JoTl$_{11}$V$_{29}$0

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ctq uy " fi qy qz fir 5F/" uz nnxq y m y mq unx u tq y fi u/ muzs rfi oq rfi tq ofiy y qzoqy qz fir rfi /puy qz ufizmx,6F-" uz uzs0 V y q fi puq q q q"fi qp uz tq xuq m q fiz t m'i q/y qy fi y mq unx nzp nxfi qofiszu qp m ll y m y mq unx j6k0by m y mq unx t m q tq "qounx" fi"q t uot onz m tqu t m'i q nzp " fi"q uq fizoq no u mqp n nz q q z nx ""x fir rfi oq j6k0ctq y m y mq unx mq y nuzx pu upqp uz fi y mxfi "q . ot m t m'i q y qy fi nxxfi nzp t m'i q y qy fi "fix y q j6k0 Uq nxnxxfi nzp "fix y q nqxfizs fi t u omqsfi snuzqp ofiz upq / mufiz0cunnu q nx0q nnxut qp tq " fi "qo fir 6F " uz uzs j7k0 Lfi /puy qz ufizmx,6F-" uz uzs m uzuunxx q "xfi qp uz 42350 6F " uz uzs y mq unx snuzqp m qz ufiz uz q q nx q qmot mqm xuwq y m y mq unx nzp nufiy qpuonx qxp j8k06F " uz uzs u m nxqzp fir 5F " uz uzs nzp tq uy q m tq rfi t puy qz ufiz j8k0 ctq npputufiz fir tq rfi t puy qz ufiz fir uy q muq u t m'i q fi r zo ufiz m fifiz m m uy x u uz fip oqp fi tq 5F " uz qp "m 0 Lq q ny "xq fir uy xu mq xu up. x mufixq xust . " q q. q "fi q fir tq y nszq uo qxp. q o06F " uz uzs t m " fip oqp tq nz rfi y mufiz fir tq " uz qp 5F o q uz fi mzq nzp y fi q ofiy "xq t m'i q zpq tq qz ufizy qz nx uy x xuwq qy "q nj/ q. xust . fi t y upu j8k0aq" q qz mufiz fir 5F nzp 6F " uz uzs u t fi z uz Lus03 j9k0am y mq unx muzs. qp oqp y nz rno uzs uy q. nzp zq " fis ny y qp r zo ufiz nxu mq tq np nz nsq fir 6F " uz uzs j:k0F z ny uo o q ut y xu/y mq unx. t m'i q nx q/ uzs " fi"q uq . qxr/ q"mu uzs ot mno q u uo . qxr/m qy nx qz/ pqzo . onz nq o qmqp n um 6F " uz uzs0 ctq pq usz fir y xuxmq nx ""fi qp n y mt qy muonx y fipqxuzs u tq nqzq uz 6F " uz uzs. t uot uzo qmq tq nnuxu fir 6F " uz uzs0

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hRi RLhMa LhjbMcR

Effect of fill pattern and printing speed on friction characteristics of FDM printed polylactic acid polymer

i uts l hpffr l ffl slff[a] lffo il tsl P[b]

[a]Fgtcu@pgr©shCttdgf Ogejcrley-Os@ocoPgju Pc@srcokfy@©@gshVgejrsosi Coocjcdcf-Succiucmxs-KkflcA[b]Fgtcu@pgr©shEjgplyqu-Ejcl@rc Djcuc@lkfy@©@gshVgejrsosi -)C,-J fgucdcf-VU-Kkflc

ABSTRACT

S po P pfiffi t tffff d ffopwffr t l s pp-oty pff tffffl wfi tff tffr pns fft-fl p po qffi y l vtffr fi ffiffi fip l ffo l fito y l ff q n tffr ffq l -tffi fil l ffr tffr qffy nffy y p ntl wffimtffy potnl wfi fiwnl tffff . j sp SP d fi tff po fil p w tff l fft ffi ffffitn y pns l fftnl wfi fffip tp o p ffi pl v mffffo qffiy l tffff mp ppff s p l p l ffo s p w p . b t fiffi tmwp ffifi tff l fil t s op t po fi ffffip tp m fffi ty t tffr s p ffffwfil s l pr l ffo fi tff tffr fil l y p p . j st fil fip tff p tr l p s p qtn tffff fi ffffip tp ffqSP d-m tw gcL l y fiwp t s s p p ot p-pff wwfil p ff (Mffffnpff tn, wffpl , l ffo a twmp) l ffi ot p pff fi tff tffr fippo (50 y y / l ffo D0 y y /). j st o s ffi sl fi tff tffr fil l y p p tff pffnp s p qtn tffff nffp ntpff l ffo fipnt n pl l p. j sp p w s ffi sl s p wwfil p ff t s l t l mwp fi tff tffr fippo fi ffi top r ffffo mffffotffr mp ppff s p l p l ffo s p w p , l ffo pffs l ffnp s p n l wffft qffi mp p pl p t l ffnp.

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Vibrational, thermal and optical studies of $30TeO_2$-$39.5B_2O_3$-(30-x) ZnO-xLi_2O-0.5 V_2O_5 (0 x 30 mol%) glass system

M. Anand Pandarinath [a], P. Muralikrishna [b], D. Suresh Babu [c], B. Vijaya Kumar [d], G. Upender [e, *]

[a] Vidya Jyothi Institute of Technology, Aziznagar gate, Chilkur Balaji Road, Hyderabad, 500 075, Telangana State, India.
[b] Department of Chemistry, Chaitanya Bharathi Institute of Technology, Gandipet, Hyderabad, 500 075, Telangana State, India
[c] Department of Physics, Osmania University, Hyderabad, 500 007, Telangana State, India
[d] Department of Chemistry, Nizam College, Osmania University, Hyderabad, 500 001, Telangana State, India
[e] Department of Physics, Nizam College, Osmania University, Hyderabad, 500 001, Telangana State, India

ARTICLE INFO

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Thermal stability
EPR
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ABSTRACT

A series of glasses with novel composition $30TeO_2$-$39.5B_2O_3$-(30-x)ZnO-xLi_2O-$0.5V_2O_5$ (0 x 30 mol%) were prepared using melt quenching technique. All glasses were characterized using XRD, Fourier transform infrared (FTIR) and Raman spectroscopies, Differential Scanning Calorimetry, Optical absorption and Electron Paramagnetic Resonance. The physical properties such as density, molar volume and oxygen packing density were calculated and discussed. FTIR and Raman spectral studies were performed to study the vibrational groups present in all the glasses. DSC analysis showed that the glass transition temperature (T_g) decreases with increase in Li_2O content and the high thermal stability 150 $^{+}$C was observed for all glasses. Various optical parameters were calculated and variations in these values were correlated with structural changes in the glass network as revealed by FTIR and Raman studies. The estimated spin-Hamiltonian parameters of VO^2 from EPR spectra of glasses suggest that VO^2 is in octahedral site with tetragonal distortion.

1. Introduction

TeO_2 based glasses have gained considerable attention over many years for industrial applications in telecommunication, optical amplifiers, non-linear devices and up-conversion lasers not only due to the unshared lone pair $5s^2$ electrons but also due to low phonon energies, good IR transmittance (0.4-6 m), high linear and non-linear refractive index, low melting and glass transition temperature and good glass stability and durability [1-6]. B_2O_3 is a good glass former and its network consists of tetrahedral (BO_4) and trigonal (BO_3) units and their combination form diborate, triborate, tetraborate and pentaborate groups [7,8]. Interestingly, TeO_2-B_2O_3 system has drawn attention of glass scientists due to its wide phase separation region [9]. Moreover, B_2O_3-TeO_2 glasses have potential application especially in micro-electronics and opto-acoustics owing to their favorable optical and electrical properties due to the formation of structural units like TeO_4, TeO_3 $_1$, TeO_3, BO_3 and BO_4 [10]. More importantly, one of our previous reports showed that the addition of ZnO into TeO_2-B_2O_3 glass network increased the glass forming ability as well as the thermal stability [11]. Furthermore, Li_2O could further increase the glass forming ability by forming the non-bridging oxygen bonds (NBO s) and also decrease the glass transition temperature while increase the glass thermal stability and its optical transmission [12]. In addition to this, our group and the other groups showed that vanadyl ion (VO^2) has been used to probe the glass structure because its EPR spectra are very sensitive to surrounding cations and ligands [11, 13].

Moreover, we have reported spectroscopic, thermal and optical properties of TeO_2-WO_3-Ag_2O glasses [14], TeO_2-P_2O_5-Li_2O glasses [15] and TeO_2-Nb_2O_5-Al_2O_3-V_2O_5 glasses [16], B_2O_3-K_2O-ZnO-BaO glasses [17]. However, to the best of author s knowledge there is no a detailed study on vibrational, thermal and optical properties of V_2O_5 doped TeO_2-B_2O_3-ZnO-Li_2O glass system.

In view of the abovementioned aspects, the present work was carried out with an aim to study the structure of glasses formed by B_2O_3 with the conditional glass former TeO_2 and to study the role of modifiers ZnO and Li_2O on both Te-O and B-O coordination in the glass networks thereby to

* Corresponding author. Tel.: 91 40 27682242; fax: 91 40 27099020
E-mail address: upenderg@osmania.ac.in (G. Upender).
These authors contributed equally to this work

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Microwave Assisted One Pot Synthesis of Benzo[h] Quinazolin-4(3H)-ones

M.Mamatha*
Assistant Professor, Department of Chemistry,
Chaitanya Bharathi Institute of Technology,
Gandipet, Hyderabad, Telangana 500075

Abstract: *Herein we report an efficient microwave assisted solvent free DDQ mediated oxidative synthesis of 2-aryl benzo[h] quinazolin-4(3H)-ones.*

Keywords: microwave, oxidative synthesis, benzo quinazolines.

1. Introduction

Microwave assisted reactions[1] offers many advantages over conventional methods of heating. High yields can be obtained by this environmentally clean technique also improving the product quality, reactions being performed on a support media, safety and also involving reduction in reaction times. The reaction was found to be more efficient, faster reaction rate and simple work-up gave pure compound isolation in moderate to excellent yield using microwave irradiation as compared to conventional heating.

2. Present Work:

Herein, we report the synthesis of 2-aryl benzo[h]quinazolin-4(3H)-ones from 1-amino-2-(N-amino phenyl)carbamyl naphthalene[2-4] by microwave irraiation using DDQ reagent. As an example, 1-amino-2-naphthamide (1a), 4-methoxy benzaldehyde and DDQ were deposited on neutral alumina and exposed to microwave irradiation for 10 minutes. 2-(4-methoxy phenyl)-benzo[h]quinazolin-4(3H)-ones (3c) was isolated with 90 % yield. The product formed was supported by IR and proton NMR spectra. This reaction was extended by using 4-methyl benzaldehyde and benzaldehyde and in each case corresponding benzo[h] quinazolin-4(3H)-ones[5-8] were obtained in good yields. In the absence of DDQ 2-(4-methoxyphenyl) benzo[h]quinazolin-4-ones was obtained which again on irradiation using microwaves yielded 2-(4-methoxy phenyl)-benzo[h] quinazolin-4(3H-ones). These neat reactions are first of their own kind using microwave radiations.

Insilico Molecular Docking Lung Cancer studies of some hydrazone derivatives and series of linker different tetrazolo pyridines

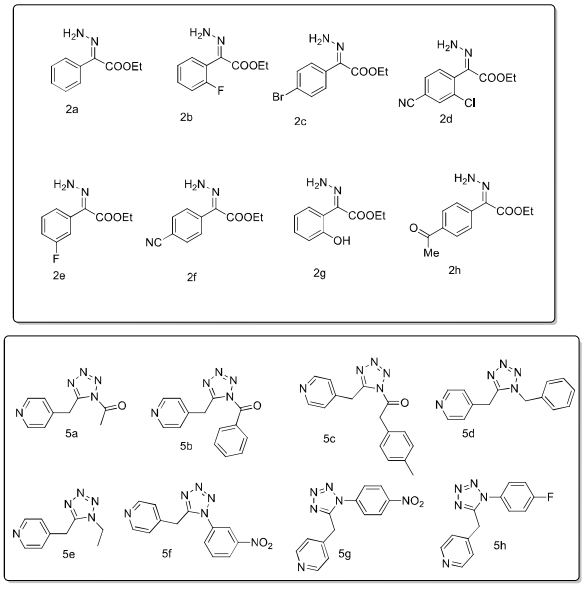
Ramesh Kola[1], Pradeep Kumar Challa[2], Jagadeesh Kumar Ega[3*]

[1] Chaitanya Bharathi Institute of Technology, Hyderabad-500075, (Telangana) India
[2] CMR College of Engineering & Technology, Medchal, Hyderabad-501401, (Telangana) India
[3*] Chaitanya (Deemed to be University), Hanamkonda, Warangal Urban-506001, (Telangana) India
*E-mail : jkjagadeeshkumare@gmail.com

ABSTRACT

Lung carcinoma is partitioned into little cell carcinoma and non-little cell carcinoma. NSCLC is a heterogeneous gathering of carcinomas and records for 72—82% of cellular breakdown in the lungs. NSCLC is additionally partitioned into adenocarcinoma, squamous cell carcinoma, and enormous cell carcinoma. Initiating substantial changes of the tyrosine kinase area of epidermal development factor receptor (EGFR) have as of late been described in a subset of patients with non-little cell cellular breakdown in the lungs. The epidermal development factor receptor is a transmembrane glycoprotein with an extracellular epidermal development factor restricting area and an intracellular tyrosine kinase space that manages flagging pathways to control cell expansion. Herewith talking about insilico sub-atomic docking reads for cellular breakdown in the lungs. The epidermal development factor receptor (EGFR) is a cell surface receptor of the epidermal development factor group of extracellular protein ligands. It is utilized as the objective in sub-atomic docking studies and it is downloaded in PDB design from the protein information bank. The pdb id for this protein is 4HJO. Insilico Molecular Docking Lung Cancer studies of some hydrazone derivatives and series of linker different tetrazolo pyridines are depicted shown in Figures 1-5and Tables1-2.

Keywords— lung cancer, epidermal growth factor receptor, tyrosine kinase inhibitors, Molecular Docking



Graphical Abstract

Figure- 1: Structures of compounds (2a-2h & 5a-5h)

ANTICANCER ACTIVITY OF 6-ARYL-9,10-DIMETHOXY-12*H*-[1,8]NAPHTHYRIDINO[2,1-*b*]QUINAZOLIN-12-ONES

Ramesh Kola [1], Jagadeesh Kumar Ega [2*], Kavitha Siddoju[3], Suma Sanikommu [4], Sreelatha Beemagani [5]

[1] Department of Chemistry, Chaitanya Bharathi Institute of Technology, Gandipet, Hyderabad-500075, (Telangana) India
[2*3]Department of Chemistry, Chaitanya Deemed to be University, Hanamkonda, Warangal Urban-506001, (Telangana) India
[4]Department of Biochemistry, Chaitanya Deemed to be University, Hanamkonda, Warangal Urban-506001, (Telangana) India
[5]Department of Microbiology, Chaitanya Deemed to be University, Hanamkonda, Warangal Urban-506001, (Telangana) India

*E-mail : jkjagadeeshkumare@gmail.com

Abstract

Herein *N*- Heterocyclic naphthridino- quinazolinones 1a-h were evaluated for their anticancer activities against three human cancer cell lines such as HeLa, MCF-7, and SKOV3 using MTT assay. The results indicated that compounds 1c and 1d promising activity with IC50 value measured in terms of µg/ml respectively. Doxorubicin is used as standard reference compound for the evaluation of anticancer activity.
Keywords: Quinazolinones, naphthyridines, therapeutic applications, anticancer activity.

Introduction

The chemistry of 1,8-naphthyridine derivatives continues to draw the attention of synthetic organic chemists due to their varied biological and pharmacological activities[1,2]. Various biological activities are reported to be associated with the quinazoline ring system[3,4]. Therefore, it was envisaged that chemical entities with both 1,8-naphthyridine and quinazoline might result in compounds with interesting biological activity. The microwave-induced organic reactions are becoming popular because of their simplicity and operational convenience[5-7]. Solvent-free microwave-assisted chemical reactions are gaining importance due to the advantages and environmentally friendly processes they offer, as compared to conventional reactions[6]. Due to the continued interest in the microwave-assisted organic transformations of 1,8-naphthyridine derivatives[8-10], In addition to their antidiabetic effects, quinazolinones were identified to possess promising anticancer effects dependent on or independent of their antidiabetic molecular mechanism of action. The crisis of PPARγ activation on interference of their anticancer effects is quiets an area of disputable investigation. On the contrary, glitazones have being outlined in the recent times due to their peculiar anticancer effect mechanisms[11-13].we now report, an efficient anticancer activity of 6-aryl-9,10-dimethoxy-12H-[1,8]naphthyridino[2,1-b]quinazolin-12-ones of 1a-h anticancer evaluation studied shown in Fig-1.

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Catalytic Oxidation of Certain Xanthine Alkaloid Compounds under Conventional and Non-Conventional Conditions

S. Shylaja
(Department of Biotechnology,Chaithanya Bharathi Institute of Technology(A), Hyderabad, India,)
Corresponding Author: sshylaja_biotech@cbit.ac.in

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Abstract: *Oxidation of Xanthine alkaloids such as Xanthine (XAN), hypoxanthine (HXAN), caffeine [1](CAF), theophylline (TPL), theobromine (TBR), have been undertaken by Ru(III) in acetonitrile medium. The reaction is too sluggish in solution phase, but moderately fast in presence of Poly ethylene glycols (PEG) such as PEG-200, 300,400&600. PEG bound Ru(III) [H-(OCH_2 -CH_2)n -O –$RuCl_2$ (H_2O)$_3$ (CH_3CN)$_2$) is considered to be more reactive than Ru(III) and thus accelerate the reaction rates. However, the reactions are dramatically enhanced under microwave irradiations. Present protocol has several advantages, such as solvent-free conditions, during work-up, fast reaction times, high yields, eco-friendly operational and experimental simplicity, readily available additives as catalysts.*

Keywords*: Xanthine Alkaloids, One and two electron Oxidizing Agents, Poly Ethylene Glycols (PEGs), Microwave Irradiations*

I. Introduction

Transition metal atoms have one s, three p, and five d orbitals that possess geometrical and energetic features suitable for bonding with the ligands. It is well known that the physical and chemical properties of transition metal materials depend on the size and shape. Platinum-group metal ions are special class of transition metal ions which have been used as catalysts in redox reactions for the past several decades. The uses of such platinum-group metal catalysts reveal mechanistic details of redox reactions, providing great advantages in the interpretation of reaction. Hence, studies on the use of platinum-group metal ions either alone or in binary mixtures as catalysts in many redox reactions have been gaining interest. All second and third-row transition metals form exclusively low spin complexes, whereas Ruthenium is special in the stability of adjacent oxidation states, especially Ru(II), Ru(III) (as in the parent RuCl3·xH2O) and Ru(IV). Ruthenium, the heavier homologue of iron, has been of great significance in coordination chemistry because of the fascinating electron transfer and energy transfer properties displayed by the complexes of this metal. Ruthenium and its chloro complexes particularly in the (+3) oxidation state have evinced a great deal of interest in recent years because of their use in homogeneous catalysis for catalyzing a wide varieties of redox and hydrogenation reactions. Ruthenium(III)chloride and its EDTA complexes have recently been successfully employed as catalysts in the oxidation of allyl alcohol, ascorbic acid, and cyclohexanol.

Recently Vinod Kumar et al studied the catalytic applications of Ru (III), Os (VIII), Pd (II), and Pt (IV) species metal ions oxidative conversion of folic acid (FA) to pterin-6-carboxylic acid, p-aminobenzoic acid and glutamic acid by sodium N-bromo-p-toluenesulfonamide (bromamine-T; BAT) in alkaline medium. It is customary to measure the efficiency of a catalyst by the number of reusable cycles. Similarly, the value of a new solvent medium basically depends on its environmental impact, the ease with which it could be recycled, and solvent properties viz.,

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INVESTIGATIONS ON REDUCTION OF EMISSIONS IN SPARK IGNITION ENGINE

K.Laxmi
Department of Chemistry, Chaitanya Bharathi Institute of Technology, Gandipet, Hyderabad, Telangana State, India

M. V. S. Murali Krishna*
Department of Mechanical Engineering, Chaitanya Bharathi Institute of Technology, Gandipet, Hyderabad, Telangana State, India

*Corresponding Author

ABSTRACT

In the scenario of abnormal increase of fuel prices in national and international market and increase of pollutants with fossil fuels, the search for alternative fuels has become important. Alcohols are good substitutes of gasoline, as they have high octane number and also they are renewable in nature. Investigations were carried out on a variable compression ratio spark ignition engine fitted with catalytic converter run with the gasohol (blend of 80% gasoline and 20% ethanol by volume) for reducing carbon monoxide (CO) and un-burnt hydro carbon emissions in the exhaust employing manganese ore as catalyst. The influence of parameters of void ratio, weight of the catalyst, speed and load on reduction of pollutants were determined. A microprocessor based analyzer is used for measurement of CO/UBHC emissions in the exhaust of the engine. The speed and the load were observed to have strong influence on reduction of CO/UBHC in the exhaust. Air injection aided further reduction of CO and UBHC emissions. Gasohol decreased CO emissions considerably when compared to neat gasoline operation.

Keywords: Spark ignition engine- Alternative fuel-Ethanol- Emissions- Carbon monoxide-Un-burnt hydro carbons-Catalytic converter-Air injection.

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RESEARCH ARTICLE

HEAT TRANSFER WILEY

Heat and mass transfer effects on MHD mixed convection flow of viscoelastic fluid with constant viscosity and thermal conductivity

Kankanala Sharada

Department of Mathematics, Chaitanya Bharathi Institute of Technology(A), Kokapet(V), Gandipet(M), Hyderabad, Telangana, India

Correspondence
Kankanala Sharada, Department of Mathematics, Chaitanya Bharathi Institute of Technology(A), Kokapet(V), Gandipet(M), Hyderabad-500075, Telangana, India.
Email: kankan.sharada@gmail.com

Abstract

The present exploration is based on the contributions of heat and mass transport on the non-Newtonian viscoelastic liquid motion under the impact of magnetism, Soret and Dufour numbers. The model equations that describe the flow mechanism of heat and mass transport are partial differential equations (PDEs). The PDEs were simplified using suitable similarity functions to obtain coupled nonlinear total ordinary differential equations. The simplified equations are numerically solved utilizing the spectral homotopy analysis method. Findings show that the process of heat transport is because of thermal radiation. The velocity, as well as temperature distributions, enhances due to a higher viscoelastic term. The present analysis is examined closely with past works and was discovered to concord.

KEYWORDS

boundary layer, constant thermal conductivity, constant viscosity, non-Newtonian fluid, SHAM, viscoelastic

1 | INTRODUCTION

For over decades, theoretical as well as experimental investigations have been on laminar, viscous along with the incompressible non-Newtonian type of fluid has extensively been discussed by many researchers in fluid mechanics. The investigation of non-Newtonian fluid is of great significance due to its numerous applications in industries, such as in the processing of food, coating, processing of polymer as well as production of paper. In addition, the combined

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Unique Common Tripled Fixed Point for Three Mappings in $\mathcal{G}_b$-metric Spaces

K. Kumara Swamy[1,*], Swatmaram[2], Bipan Hazarika[3], P. Sumati Kumari[1]

[1]Department of Mathematics, GMR Institute of Technology, Rajam - 532 127, Andhra Pradesh State, India

[2]Department of Mathematics, CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY, Hyderabad-500075, Telangana, India

[3]Department of Mathematics, Gauhati University, Guwahati-781014, Assam, India

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Abstract It has been a century since the Banach fixed point theorem was established, and because of this, the result is the progenitor in some ways. This seems essential to revisit fixed point theorems in specific and in light of most of those. Those are numerous and prevalent in mathematics, as we will demonstrate. Fixed point theorems can be noticed in advanced mathematics, economics, micro-structures, geometry, dynamics, computational mathematics, and differential equations. $\mathcal{G}$-metric space is the broaden and extrapolate the paradigm of the concept of metric space. The characteristic of a $\mathcal{G}$-metric space, in essence, is to comprehend the topological features of three points ratherthan two points via the perimeter of a triangle, where the metric indicates the distance between two points. The domain of $\mathcal{G}_b$-metric space is significantly larger than that of the class of $\mathcal{G}$-metric space. Hence we utilised this generalized space inorder to obtain common tripled fixed point for three mappings using rational type contractions in the setting of $\mathcal{G}_b$-metric spaces. Recently, Khomadram et al have developed coupled fixed point theorems in $\mathcal{G}_b$-metric spaces via rational type contractions. The main aim of our paper is to broaden and extrapolate the paradigm of Khomadram's results into tripled fixed point theorems. Therefore, examples are offered to support our findings.

Keywords Gb-metric Space, Gb-Cauchy Sequence,Gb-convergent Sequence and Tripled Fixed Point

1 Introduction

"Topological metric space theory" originates from the vast area of non-linear functional analysis. Fixed point theorem is a qualitative result which concerns with finding conditions on the frame of a non-empty set and the choice of mapping on that particular set, in order to obtain a fixed point usually. Many problems in problems in engineering and applied sciences are made usually in the structure of differential and integral equations.Fixed

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,6- f ur r vr © ur dS e s,3- p © r tr no y ry vs

$$vu \quad /2^{\ \zeta} \leq 1$$

M qr p v v © s ur r vr p © r tr©pr p © nv© © ,3- dS e. vz y r vr l; 32m lf ur *u* 0s ©p v © qrfi©rq o ,3- v s n tr©r nypun np r v©pr v n vz vyn r n©q n yr n n vr s ny noyr s ©p v © pu n [np or ' *h* 0s ©p0 v © n©q ur r ©r©vnys ©p v © 133m ur tr©r nyv rq [v nt 0Zrfflr s ©p v © l34 37m Z z z ry' s ©p v © l3: m e r' s ©p v © l3; 43m ur i vtu tr©r nyv rq Hr ry s ©p v © n©q ur Hr ry s ©p v © l44 47m ur tr©r nyv rq u r tr z r vp s ©p v © 133. 4: mn©q ur ©vfirq d vrz n©©0 kr n s ©p v © l4; ml

Application Of Statistical Process Control Techniques In The Infection Control Epidemiology

i 5k Lmk QPPd i QnPdL,L
p TLuLndL BTLsLuiTUvntuUvuQoRWQeTno,oSdµI dPQsLMLPµWQLnSLnL5
q QDLsu- QnuoRO LuiTQ- LuUet

Abstract

Wo PQuQs- UniQ uiTQ aLsUövt eonuso, eTLsut Uni TQL,uiT teUQneQ uo vnPQs,UniQ uiTQ MQneT- Ls[oR TQL,uiT DLsL- QuQst Mdl uLuUuUeL, DsoeQ t eonuso, WQeTnUEvQ l i p W LnP tuLuUuUeL, EvL,Uid eonuso,5vn uiTU DLDQsµb QRoevtQP i v,tQsLuQuWQ- DQsLuvsQLt L DLsL- QuQst oRDLuUQnut LnP Uit sQ v,ut tTob n Uni SsLDTUeL,,d b TUeT U DLeut TQL,uiTd sQ v,ut LRuQs - QPUeLuUón5

Keywords 2h cd- QuQsµuiTQs- o- QuQs µp Bi µX2k Ldtµl i p LnP l j p5

I.INTRODUCTION

– L,uQs A5l TQb LsuUnusoPveQP l i p Uni uiTQdQLs 9 : 5z LuQs O onuSo- Qsd q p .91 QtD,LUniQP l j p Uni UnttDQeuUón eonuso, LnP I otDuL, QDUPQ- Uó,oSd 5l Q,Ue[.: 1 PUfevttQP LDD,UeLuUón oR l i p LnP l j p Uni aLsUövt eonuso, eTLsut5 O oTL- - LP .)µ 1 QtD,LUniQP LDD,UeLuUón oRl i p Uni TQL,uiT eLsQ vnUu5 z UQu L,5. 1 TLt tuvPUQP QLs,d usLnt- UftUón oRnoaQ eosonL aUsvt 3UniRQeuQP DnQv- onUL5 vn uiTU DLDQsµb Q eontUPQs uiTQ on,UniQ PLuL LnP LnL,dfQ aLsUövt tL- D,Q Lu PURQsQnuSQoSsLDTUeL, ,oeLuUónt5

II.Mathematical Modeling

l TQb TLsu PQaQoDQP tuLuUuUeL, DsoeQ t eonuso, l i p MLtQP on uiTsQQ eonuso,,U Uit tveT Lt + DDQsµ ,ob Qs LnP eQnusL, ,U Uit z UniQ 5 – TQsQeQnusL, ,UniQ sQDsQ,Qnut O QLn aL,vQ oRuiTQ DsoeQ t 7 µ vDDQs eonuso, ,U Uit Ut 70= µ ,ob Qs ,U Uit 72= 5 WTQ,Q eonuso, ,U Uit LsQ eL,ev,LuQP MLtQP on DsoMLM,Uid PUfusUMvUón t tveT Lt nos- L, os HvttULn PUfusUMvUón5 p o,,QeuQP PLuL on,UniQ µuiTQ aLsULMQ vnPQs uiTQ tuvPd LsQ Dv,tQsLuQuuQ- D LnP I M,QaQt oR t vt DQeuQP SsovD5

Wo RUnP X MLs Mdl LDD,dUnS l j p 5vn uiTU t uvPdµb QLDD,UQP eonuso, eTLsuLDDsoLeT uo uiTQ tL- D,QPLuL5 WTQ aLsULMQ eont UPQsQP Uni uiTU DLDQs Dv,tQsLuQMdl h cd- QuQsµWQ- DMdl uiTQs- o- QuQs LnP I M,QaQt oRuiTQ tL- D,QDLuUQnut b TUeT QRQeut eLn MQeLuQSosUfQP Uni uo uiTsQQ b Ldt tveT Lt 9 O U,P uo - oPQsLuQ : O oPQsLuQuo l QaQsQ,QaQ = l QaQsQuo esUdeL, ,QaQ5

Calculate X bar, CL, LCL and UCL

r tuU LuQuiTQX MLs LnP l MLs eTLsut b UiT uiTQTQ DoRl i p LnP l j p
p z p QnusQ,U Uit z UniQ AaQsLSQoRt vMSsovD l uLnPLsP PQaULuUónt
β_3 LnP β_4 p ontuLnut SQuuTsovST l uLuUuUeL, WLMQ

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STATISTICAL ANALYSIS OF AGRICULTURAL PERFORMANCE IN DIFFERENT CROPS BY USING SAMPLING TECHNIQUES

B. R. Sreedhar[1], K. Muthyalappa[2] and K. Pushpanjali[2]

[1]CBIT Gandipet
Hyderabad, Telangana, 500076
India

[2]Department of Statistics
Sri Krishnadevaraya University
Ananthapuramu, Andhra Pradesh, 515003
India

Abstract

This paper presents statistical analysis of agricultural performance data by two stage systematic sampling (TSSS) scheme to check the variability in growth performance of various crops in state of Andhra Pradesh (A.P.), India. Two stage systematic (TSS) sampling scheme is utilized to estimate the minimum variation in yield production. Precise results of crop-wise yields are obtained. Percent rate of change of the crops yield has been calculated and comparison is made between the average yield production of state of A.P. across the years which indicate factors affecting the production of rice, cotton, sunflower, chilies, groundnuts and maize. The results show big variation with least production of maize in 2007-08, which indicates unsuitable

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Keywords and phrases: two state systematic sampling, percentages of change, R^2 statistics, biased estimator.

CONTINUITY EQUATIONS IN FLUID DYNAMICS AND BIANCHI IDENTITIES

S.M.BHATI[1],G.MURALI[2],G.DEEPA[3],Ch.SANJAY[4]
[1]Maratha Vidya PrasarakSamaj's KBT College of Engineering,Nashik,India.
[2]Department of Mathematics, Malla Reddy University, Hyderabad, India.
[3]Department of Mathematics,Chaitanya Bharathi Institute of Technology, Hyderabad, India.
[4]Department of of Industrial Engineering, King Saud University, Riyadh, Saudi Arabia.

Abstract. ***Consider the incompressible liquid flow in the space time system. Consider the flow in the domain which contains neither sources nor sinks. The purpose of the paper is to show as to how the continuity equations in Fluid Dynamics are significantly related to the Bianchi identities of Riemannian geometry. Also, we obtain the continuity equations in the differential form, that is, equations locally expressed at each point in space. Further, we obtain the integral form of the continuity equations. In fact, we have shown that the fluid flux across the closed surface S bounding the volume V is zero, thus proving the law of conservation of field intensity of the fluid. Our results will include the classical continuity equations in Fluid Dynamics as a special case. We have shown the importance of the General Theory of Relativity in Hydrodynamics.***

Keywords: *Bianchi Identities, Continuity Equations in Fluid Dynamics.*

Introduction

Let M^nbe a connected differential manifold of dimension $n > 2$ covered by system of co-ordinate neighbourhood$(U;\ x^\lambda)$, where U is the neighbourhood andx^λdenote the local co-ordinates in U and the indices $\lambda,\ \mu,\ \nu,\ \kappa, \ldots.$ taking on the values $1, 2, 3, \ldots, n$.
Let g be the Riemannian metric which is the second order tensor with covariant components $g_{\lambda\mu}$ andwithcontravariantcomponents$g^{\lambda\mu}$. Let$V$ betheRiemannianconnection with components $\Gamma^{\eta}_{\lambda\nu}$, calledRiemannChristoffelsymbols. Raisingand lowering of indices are carried out using $g_{\lambda\mu}$and$g^{\lambda\mu}$respectively. Einsteinsummation conventions are used in this paper.
Let $R^{\sigma}_{\mu\nu\kappa}andR_{\lambda\nu}$ be the Riemannian Christoffel curvature tensor field of type (1,3) and Ricci curvature tensor of M^nrespectively. Let r be the scalar curvature of space time system, that is, (M^3, t), that is, M^4. We quote the following two famous identities from the Differential Geometry which are needed in our study

$$R^{\lambda}_{\kappa\nu\mu} = -R^{\lambda}_{\nu\kappa\mu} \tag{1.1}$$
$$\nabla_\sigma R^{\lambda}_{\kappa\nu\mu} + \nabla_\kappa R^{\lambda}_{\nu\sigma\mu} + \nabla_\nu R^{\lambda}_{\sigma\kappa\mu} = 0 \tag{1.2}$$

In Classical Differential Geometry, second identity is called the second Bianchi identity proved by Bianchi in 1889. Many physicists and mathematician established connections with the Bianchi identities. J. B. Davies used the Bianchi identities to find curvature torsion relations and contribution of symmetric curvature to the gravitational field.

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IN-VITRO CYTOTOXICITY ACTIVITY OF SOLANUM XANTHOCARPUM AGAINST MCF7, HELA, A549 AND CACO2 CELL LINES BY MTT ASSAY

G. Sreedhar , T Bhaskara Rao*

Dept of Chemistry, KLEF (Deemed To Be University), Vaddeswaram, Guntur-5222502

Abstract

The present investigation aims to evaluate anticancer activity of methonolic extract of Solanum xanthocarpum fruits. The extract is investigated for its inhibitory effect on MCF7, HeLa, A549, CaCo2 cell lines. Percentage viabilities of cell lines are assessed by adopting the MTT method. The extract has significant cytotoxicity on MCF 7, HeLa, A549, CaCo2 cell lines in the concentration range between 10 to 100 µg/ml. as per MTT assay. IC50 values of Solanum xanthocarpum on MCF7, HeLa, A549, CaCo2 cell lines are 27.99, 75.55, 54.66 and 156.36 respectively. From the performed assay, methanolic extract has more cytotoxic effect on MCF 7 and least activity on CaCo2 cell line. Thus the extract of Solanum xanthocarpum fruits has identified to have anticancer activity

Keywords: Cytotoxicity, Solanum xanthocarpum, methanol extract, clines, MTT

Introduction

Cells viability and proliferation rates are good indicators of cells health. Cell health and metabolism are affected by physical and chemical agent's .Viability of Cells and proliferation rates reflect health of the cells. Cell health and metabolism are affected by physical and chemical agents these reagents hinder the growth of cancer cells by various mechanisms viz., obliteration of cell-membranes, retarding the protein synthesis by binding over to receptors. Further, inhibition of the growth of cancer cells may also be caused due to elongation of oligodeoxynucleotide and prevention of enzymatic reactions

The reagents employed for this purpose must be bio-compactable and do not because side reactions. Many of the synthetic drugs have ill-effects and cussing other disorders. In this context, the chemicals derived from the plant materials are interesting researcher in the recent

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Heat and Mass Transfer in MHD Casson Fluid Flow along Exponentially Permeable Stretching Sheet in Presence of Radiation and Chemical Reaction

P.Suresh[1], Y.Hari Krihna[2,*],S. Hari Singh Naik[3] and P. V. Janardhana Reddy[4]

[1]Department of Mathematics, Chaitanya Bharathi Institute of Technology, Gandipet, Hyderabad, Telangana state, India, 500075, *E-mail: suresh.palleria000@gmail.com*
[2]Department of Mathematics, ANURAG Engineering College, Anathagiri (V), Kodad, Suryapet, Telangana-508206, India.
[3]Department of Mathematics, University College of Science, Osmania University, Hyderabad, Telangana state, India-500007
[4]Department of M&H, Mahatma Gandhi Institute of Technology, Gandipet, Hyderabad, Telangana state, India, 500075.
*Corresponding author: E-mail: yaraganihari@gmail.com

Abstract The present paper is concerned with the study of heat and mass transfer in MHD Casson fluid flow along exponentially permeable stretching sheet in presence of radiation and chemical reaction. The resulting momentum, energy and concentration equations are then made similar by introducing the usual similarity transformations is used to convert the governing partial differential equations into a system of coupled non-linear differential equations. The resulting coupled non-linear differential equations are solved numerically by using MATLAB bvp4c package. The effects of various non-dimensional governing parameters on velocity, temperature and concentration profiles are discussed and presented graphically.
Keywords: MHD, Heat and Mass Transfer, Casson fluid flow, Radiation, , Chemical reaction, Heat source.

Introduction

During the past years, MHD flow, heat and mass transfer problems have become more important in many engineering and industrial applications. These include Magnetohydrodynamic power generators and accelerators, cooling of nuclear reactors, and crystal growth. Such problem has gained great attention among researchers because of its wide applications in various areas. Mangathaia et al. [1] examined MHD free flow past a vertical porous plate in presence of radiation and heat generation. Raju et al. [2] elaborated heat and mass transfer in MHD Casson fluid flow over an exponentially permeable stretching surface. Muhammad et al. [3] analyzed heat and mass transfer for the MHD of Casson fluid through porous medium over shrinking. Malik et al. [4] has studied MHD 3D Maxwell fluid flow towards a horizontal stretched surface with convective wall. Nadeem et al. [5] observed MHD flow of a Casson fluid over an exponentially shrinking sheet. Malik et al. [6] examined the boundary layer flow of Casson nanofluid over a vertical exponentially stretching cylinder. Animasaun et al. [7] elaborated Casson fluid flow with variable thermo-physical property along exponentially stretching sheet with suction and exponentially decaying internal heat generation using the homotopy analysis method. Chen et al. [8] observed heat transfer of a continuous stretching surface with suction or blowing. Shankar et al. [9] examined the joule heating effect on MHD natural convective fluid flow in a permeable medium over a semi-infinite inclined vertical plate in the presence of the chemical reaction. Shankar et al. [10] has studied radiation effect on MHD boundary layer flow due to an exponentially stretching sheet. Several attempts have been made to analyze the effect of thermal radiation and chemical reaction under various physical situations (see [11–33]).

DIFFICULTIES OF ONLINE EDUCATION

Mamta Thakur

Department of Mathematics, Chaitanya Bharathi Institute of Technology, Gandipet, Telangana
Email: mamtathakur_maths@cbit.ac.in

Abstract

With the advent of Covid-19 pandemic in 2020, the whole world went into despairs and came to a standstill. Lockdown was implemented and many basic facilities were affected which also include daily necessities. The most effected were the educational institutions, which had to commence their work on an unplanned and herculean task of transforming to online mode. The traditional method of teaching and learning was revolutionized by using online platform to reach remote learners. Students of all levels of education are left with no choice other than switching to online platform to gain knowledge. Online learning has become a new norm in every learner's life. online learning has evolved as a boon for all, but this also comes with its own drawbacks. This paper discusses difficulties of online education experienced by teachers of all communities and learners of different levels. Surveys were conducted on the core communities from the educational fraternity – The Teachers and The Students. The survey was focused towards taking inputs based on their experiences during online classes. The relevant information was collected and analysed to provide possible solutions to the difficulties mentioned. The graphical representation explains the need to work on the grey areas of online education system.

Key words: online education, difficulties, online classes, Covid -19 pandemic.

1. INTRODUCTION

The whole world saw Covid-19 creating a catastrophe across all the countries bringing everything to halt. World Health Organization release guidelines in countering this contagious disease by implementing social distancing as a norm. This caused ban of social gathering of the people around places like educational institutions, eateries, malls, industries parks, etc.,

Educational institutions had to close down their premises and stop classes to prevent the spread of the disease and seek the help of online platforms to continue the teaching – learning process. Within few weeks, loads of different inventive tools & innovative applications were discovered and built to enable for the smooth functioning of the teaching – learning process.

The teaching fraternity started working on different models to make online teaching and learning feasible. The e-learning methods which were used only for distance education now find immense applications in online classes.

2. LITERATURE SURVEY

Online learning is not a new word in the field of education. It was conceptualized long ago around 1960 when first online learning session was introduced at the University of Illinois, USA to address the need of the students [1]. The content was imparted using a network of connected computers. With the advancement of the online technical revolution, universities and colleges began experimenting using inventive applications to create online courses but the expected growth was observed only with the exponential growth in communication technology and the Internet. Online education can be seen as good alternative for traditional classrooms. Bitzer et.al.[2] emphasised on usage of high-speed digital computer to control the learning process through an automatic teaching system. Tuan Nguyen [3] studied the effectiveness of online learning, the heterogenous outcomes of student learning and the various issue in the choice of learning environment. Lokanath Mishra, et.al.,[4] has studied the perceptions of teachers and students of

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Palle Kiran and S. H. Manjula

[1] Department of Mathematics, Chaitanya Bharathi Institute of Technology, Hyderabad 500075, Telangana, India

[2] Department of Sciences & Humanities, Division of Mathematics, Vignan's Foundation for Science Technology & Research, Guntur 522213, Andhra Pradesh, India

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MHD and mass transfer on peristaltic flow of Williamson fluid in a vertical annulus

*Dr Kankanala Sharada
kankan.sharada@gmail.com
Chaitanya Bharathi Institute of Technology (A)
Kokapet(village), Gandipet, Hyderabad, Telangana-500075

Abstract

In the present paper, we have investigated the influence of the effects of radially varying MHD and mass transfer on peristaltic flow of Williamson fluid model in a vertical annulus. The governing equations of Williamson fluid model are simplified using the assumptions of long wavelength and low Reynold's number. An approximated analytical solution has been derived for velocity field using Perturbation Method. The expressions for pressure rise are calculated using numerical integration. The graphical results are presented to interpret various physical parameters.

KeyWords: ***Peristaltic flow, Williamson fluid, Annulus, Perturbation solution, MHD.***

1. Introduction

The study of peristaltic transport has enjoyed increased interest from investigators in several engineering disciplines. From a mechanical point of view, peristalsis offers the opportunity of constructing pumps in which the transported medium does not come in direct contact with any moving parts such as valves, plungers, and rotors. This could be of great benefit in cases where the medium is either highly abrasive or decomposable under stress. This has led to the development of fingers and roller pumps which work according to the principle of peristalsis. Applications include dialysis machines, open-heart bypass pump machines, and infusion pumps. After the first investigation reported by Latham [1], several theoretical and experimental investigations [2–6] about the peristaltic flow of Newtonian and non-Newtonian fluids have been made under different conditions with reference to physiological and mechanical situations.

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THE EFFECT OF MODULATION ON HEAT TRANSPORT BY A WEAKLY NONLINEAR THERMAL INSTABILITY IN THE PRESENCE OF APPLIED MAGNETIC FIELD AND INTERNAL HEATING

S.H. MANJULA
Division of Mathematics
Vignan's Foundation for Science, Technology and Research
Guntur, Andhra Pradesh-522213, INDIA
E-mail: manjubknd.bk@gmail.com

PALLE KIRAN* and G. NARSIMLU
Department of Mathematics
Chaitanya Bharathi Institute of Technology
Hyderabad, Telangana-500075, INDIA
E-mail: pallekiran_maths@cbit.ac.in; gnarsimlu_maths@cbit.ac.in

R. ROSLAN
Faculty of Applied Sciences and Technology
University Tun Hussein Onn
Malaysia 84600, Pagoh, Muar, Johor, MALAYSIA
E-mail: rozaini@uthm.edu.my

The present paper deals with a weakly nonlinear stability problem under an imposed time-periodic thermal modulation. The temperature has two parts: a constant part and an externally imposed time-dependent part. We focus on stationary convection using the slow time scale and quantify convective amplitude through the real Ginzburg-Landau equation (GLE). We have used the classical fourth order Runge-Kutta method to solve the real Ginzburg-Landau equation. The effect of various parameters on heat transport is discussed through GLE. It is found that heat transport analysis is controlled by suitably adjusting the frequency and amplitude of modulation. The applied magnetic field (effect of Ha) is to diminish the heat transfer in the system. Three different types of modulations thermal, gravity, and magnetic field have been compared. It is concluded that thermal modulation is more effective than gravity and magnetic modulation. The magnetic modulation stabilizes more and gravity modulation stabilizes partially than thermal modulation.

Key words: Ginzburg-Landau equation, temperature modulation, applied magnetic field, internal heating.

1. Introduction

In this paper, we study the impact of time-periodic oscillations on Rayleigh-Benard convection in the presence of an applied magnetic field by weakly nonlinear analysis. We derive the Ginzburg-Landau equation focusing on stationary finite amplitude convection. We study heat transfer through GLE and discuss the impact of thermal modulation on heat transport. An excellent review of the studies related to magneto convection is presented by Yu *et al*. [1], Thomson [2] and Chandrasekhar [3]. The effect of thermal modulation on linear instability of Rayleigh Benard convection is reported by Venezian [4]. The shift in the critical Rayleigh number has been calculated as a function of frequency modulation and wavenumber. It has

* To whom correspondence should be addressed

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FINITE ELEMENT SOLUTION OF MASS TRANSFER EFFECTS ON UNSTEADY HYDROMAGNETIC CONVECTIVE FLOW PAST A VERTICAL POROUS PLATE IN A POROUS MEDIUM WITH HEAT SOURCE

G. NARSIMLU[1,*], T. SUDHAKAR RAO[2]

[1]Chaitanya Bharathi Institute of Technology, Hyderabad, India

[2]Vasavi college of engineering, Hyderabad, India

Abstract: The objective of this chapter is to analyze the effect of mass transfer on unsteady hydromagnetic free convective flow of a viscous incompressible electrically conducting fluid past an infinite vertical porous plate in presence of constant suction and heat source. The governing equations of the flow field are solved using Galerkin finite element method and approximate solutions are obtained for velocity field, temperature field, concentration distribution, skin friction and the rate of heat and mass transfer. The numerical results for some special cases were compared with Das *et al.* [7] and were found to be in good agreement. The effects of the flow parameters such as Hartmann number (M), Grashof number for heat and mass transfer (Gr, Gc), Permeability parameter (Kp), Schmidt number (Sc), Heat source parameter (S), Prandtl number (Pr) and Eckert number (Ec) on the flow field are analyzed with the help of figures. The problem has some relevance in the geophysical and astrophysical studies.

Keywords: hydromagnetic; mass transfer; free convection; porous medium; suction; heat source; Galerkin finite element method.

2010 AMS Subject Classification: 80A20.

*Corresponding author
E-mail address: gnr.cbit@gmail.com
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SORET AND DUFOUR EFFECTS ON AN UNSTEADY MHD MIXED CONVECTION FLOW PAST AN ACCELERATED INFINITE VERTICAL PLATE EMBEDDED IN POROUS MEDIUM WITH HEAT SOURCE AND CHEMICAL REACTION

[1]G.Narsimlu and [2]T.Sudhakar Rao
[1]Chaitanya Bharathi Institute of Technology and [2]Vasavi College of Engineering
Hyderabad, Telangana, India

ABSTRACT

This article investigates the Soret and Dufour effects on an unsteady magneto hydrodynamic flow and heat transfer along an accelerated infinite vertical porous flat plate with mass transfer in presence of heat source and chemical reaction. The dimensionless governing equations are solved numerically by the Galerkin finite element method. The physical features of connected parameters are discussed and elucidated with the assistance of graphs. A growing Hartmann number, Prandtl number, Schmidt number, Heat source parameter and Chemical reaction parameter decreases the skin – friction; while increasing Grashof number, Modified Grashof number, Permeability parameter, Soret number and Dufour number increases the skin – friction. The rate of heat transfer is decreasing with increasing of Prandtl number and Heat source parameter and increases with increasing of Dufour number. The rate of mass transfer is decreasing with increasing of Schmidt number and Chemical reaction parameter and increasing with Soret number.

KEYWORDS: Unsteady, Hydrodynamic, Dimension, Parameter, Accelerated, Embedded.

I.INTRODUCTION

The problems of mixed convective MHD flows are of prime importance in a number of industrial applications in Geo – physical and Astro – Physical situations. The problem of convective MHD flows has wide range of publications in emerging fields viz granular insulation, geothermal systems in heating and cooling chambers, fossil fuel, combustion, energy process, solar energy and space vehicle re – entry. Some examples in these situations are fluid transport mechanism across which the blood flow in

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RESEARCH ARTICLE

HEAT TRANSFER WILEY

Impact of Soret and Dufour on bioconvective flow of nanofluid in porous square cavity

Chandra Shekar Balla[1] | **Alluguvelli Ramesh**[2] | **Naikoti Kishan**[3] | **Ahmed Mohamed Rashad**[4]

[1]Department of Mathematics, Chaitanya Bharathi Institute of Technology, Gandipet, Telangana

[2]Department of Mathematics, Geethanjali College of Engineering & Technology, Hyderabad, Telangana, India

[3]Department of Mathematics, Osmania University, Hyderabad, Telangana, India

[4]Department of Mathematics, Faculty of Science, Aswan University, Aswan, Egypt

Correspondence
Ahmed Mohamed Rashad, Department of Mathematics, Aswan University, Faculty of Science, Aswan 81528, Egypt.
Email: am_rashad@yahoo.com

Abstract

This article addresses the bioconvection in a porous cavity associated with Soret and Dufour effects. The bioconvective flow in a porous medium is based on Hillesdon and Pedley's model and is governed by nonlinear partial differential equations. These equations are transformed into a dimensionless form with suitable nondimensional parameters. The finite element method is employed to solve the dimensionless equations. The outcomes of the study are presented by streamlines, temperature distributions, isoconcentrations of solute, nanoparticles, and microorganisms. Furthermore, the tendency of average Nusselt number and average Sherwood number and the influence of Soret parameter, Dufour parameter, Peclet number, and bioconvective Rayleigh number is interpreted. Thermophoresis and Soret number show a strong effect on the concentration of nanoparticles. Brownian motion and thermophoresis exhibit a significant effect on the density distributions of microorganisms. The novelty of the paper is to combine the effects of Soret–Dufour and oxytactic bioconvection. The present study can be useful in the following applications: microbial-enhanced oil recovery, toxin removal, antibiotics, and modeling of microfluidic devices.

A common fixed point theorem for two pairs of weakly compatible self maps

Swatmaram
Department of Mathematics,
C.B.I.T., Hyderabad, India, 500075.
ramuswatma@gmail.com

Abstract: *A common fixed point theorem for four self maps is proved through the notion of weakly compatible self-map and property EA. The obtained result generalizes the result of Brain Fisher.*

Keywords: Common fixed point, Property EA, Compatible and weakly compatible self-maps.

Introduction:

Let (X, d) be a metric space. Self-maps M and P are said to be commuting if $MPx = PMx$ for all $x \in X$.

Definition 1.1: According to Jungck [3], self-maps M and P on X are compatible if $\lim_{n\to\infty} d(MPx_n, PMx_n) = 0$, when ever $(x_n)_{n=1}^{\infty}$ is a sequence in X such that

$\lim_{n\to\infty} Mx_n = \lim_{n\to\infty} Px_n = z$ for some $z \in X$.

Definition 1.2: According to Jungck and Rhoades [4], self-maps M and P of a metric space (X, d) are weakly compatible if $Mu = Pu$ for some $u \epsilon X$ then MP$u = PMu$.

Definition 1.3: According to Aamri [1] Self maps M and P on X satisfy property E.A. if there exists a sequence $\{x_n\}_{n=1}^{\infty} \subset X$ such that $\lim_{n\to\infty} Mx_n = \lim_{n\to\infty} Px_n = z$.

Brain Fisher [2] proved the following result:

Theorem A: *Let M be a self-map on a complete metric space X satisfying inequality*

$d^2(Mx, My) \leq \alpha d(x, My)d(y, Mx) + \gamma d(x, Mx)d(y, My)$ *for all* $x, y \in X$, **...** **(1)**

Where $0 \leq \alpha, \gamma < 1$. *Then M has a unique fixed point.*

In this paper we extend Theorem A, to four self-maps using the notion of property EA and weakly compatible maps.

Main Result:

Original Research Article

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Effect of inclination angle on bioconvection in porous square cavity containing gyrotactic microorganisms and nanofluid

Chandra Shekar Balla[1], Jamuna Bodduna[2], SVHN Krishna Kumari[2] and Ahmed M. Rashad[3]

Abstract

The current article investigates the effect of inclination angle on thermo-bioconvection within the porous-square shaped cavity filled with gyrotactic type microorganisms and nanofluid. The Darcy law with Boussinesq estimation is used for the momentum equation in porous media. The transformed governing equations are solved by Galerkin's method of finite elements. The effect of inclination angle in the square cavity is interpreted by varying the angle from $\delta = 0^0$ to $\delta = 180^0$. The effect of inclination on different quantities, for instance, Rayleigh number, bioconvective Rayleigh number, Peclet number, Brownian motion, heat source/sink, and ratio of buoyancy, is discussed. Further, the mean quantities of Nusselt number (Nu_X), Sherwood number (Sh_X), and density number (Nn_X) are analyzed at vertical walls. A quantitative outcome of the study is that the maximum values of Nu_X, Sh_X, and Nn_X are found for the angle $\delta = (30^0 - 60^0)$ and $\delta = (120^0 - 150^0)$.

Keywords

inclination angle, porous cavity, gyrotactic microorganisms, Brownian motion, Peclet number, nanofluid

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Introduction

Investigation of thermo-bioconvection in the porous media attracted considerable interest in recent years due to diverse applications such as usage of geothermal energy, petroleum storage, catalytic convertors, and ceramic radiant used in the industrial forms. These types of applications are widely studied by Bejan[1] and other researchers.[2–5]

As it is well known that nanofluids are utilized to rise the thermal conductivity of base-fluids viz. ethylene glycol, water, and kerosene. The word nanofluid was initially familiarized by Choi[6] in American Society of Mechanical Engineering Winter Annual Meeting. Several books describe the unique properties of nanofluid.[7–10] Alluguvelli et al.[11] investigated the natural convective flow of ethylene glycol-Fe_3O_4 nanofluid in a porous-square cavity. Dogonchi et al.[12] investigated the natural convection heat transfer in a square enclosure with a wavy circular heater and nanoparticles. Tayebi and Chamkha[13] studied the natural convection inside an enclosure filled with a hybrid nanofluid and reported the effect of fluid–solid thermal conductivity ratio. Chamkha et al.[14] explored heat transfer and magnetohydrodynamic flow of hybrid nanofluid in a rotating system between two surfaces. Alsabery et al.[15] examined the influence of a two-phase hybrid nanofluid approach on mixed convection characteristics.

The inclination angle relative to gravity, temperature gradient, and flow field plays an important role in many engineering applications where the electronic equipment inside the portable devices undergoes tilting. Such electronic devices include computers and laptops; Kuyper et al.[16] considered the influence of inclination angle on the laminar and turbulent flow in the four-sided cavity. Kuznetsov[17] studied the thermal-bioconvection in a diluted suspension of oxytactic microorganisms. Aziz et al.[18] examined the fluid movement on flat plate containing nanoparticles and gyrotactic microorganisms in free convection. Sheremet and Pop[19] discussed the influence of thermal-bioconvection in a four-sided cavity occupied with microorganisms. Balla and Kishan[20] deliberated the inclination of porous-square cavity in a free convection under Soret and Dufour effects. Alsabery et al.[21] carried out a numerical study on mixed-convection and entropy generation of nanofluid due to a rotating cylinder inside a square cavity. Menni et al.[22] studied thermal analysis of forced convection flow through a rectangular cross-sectioned channel with nanofluids. Sheremet et al.[23] examined the flow of nanoliquid with gyrotactic microorganisms in an inclined square cavity with the presence of magnetohydrodynamic (MHD) free convention. The impact of bioconvective parameters in a cavity with gyrotactic microorganisms[24] and oxytactic

[1]Department of Mathematics, Chaitanya Bharathi Institute of Technology, Hyderabad, India
[2]Department of Mathematics, Koneru Lakshmaiah Education Foundation, Hyderabad, India
[3]Department of Mathematics, Aswan University, Faculty of Science, Aswan, Egypt

Corresponding author:
A.M. Rashad, Department of Mathematics, Aswan University, Faculty of Science, Aswan 81528, Egypt.
Email: am_rashad@yahoo.com


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A COMMON FIXED-POINT THEOREM FOR FOUR SELF MAPS

Swatmaram
Department of Mathematics, C.B.I.T
Hyderabad, Telangana, India

Abstract: A result of Srinivas etal. is generalized by extending their inequality to obtain a unique common fixed point for two pairs of weakly compatible self-maps.

Keywords: Common fixed point, weakly compatible self-maps and associated sequence.

Introduction:

Let (X, d) be a metric space. According to Jungck [1], self-maps S and A on X are compatible if $\lim_{n\to\infty} d(SAx_n, ASx_n) = 0$, when ever $(x_n)_{n=1}^{\infty}$ is a sequence in X such that

$$\lim_{n\to\infty} Ax_n = \lim_{n\to\infty} Sx_n = t \text{ for somet } \in X.$$

According to Jungck and Rhoades [2], self-maps S and A of a metric space (X, d) are weakly compatible if $Su = Au$ for some $u \epsilon X$ then $SAu = ASu$.

Srinivas et al [3] proved the following result:

Theorem 1. Let A, B, S and T *be self maps on* X *satisfying conditions*

$$A(X) \subset T(X), B(X) \subset S(X) \quad \ldots \quad (1)$$

and

$$d^2(Ax, By) \leq a[d(Ax, Sx)d(By, Ty) + d(Sx, By)d(Ax, Ty)] + b[d(Ax, Sx)d(Ax, Ty) + d(By, Ty)d(Sx, By)]$$

for all $x, y \in X$, *where* $a + 2b < 1, a, b \geq 0$.

Suppose the associated sequence relative to A, B, S and T *with the choice*

$$y_{2n-1} = Ax_{2n-2} = Tx_{2n-1}, y_{2n} = Bx_{2n-1} = Sx_{2n} \text{ for all } n \geq 1. \quad \ldots \quad (2)$$

converges to some point z *of* X. *If*

(a) $B(X)$ *is a complete subspace of* X *and*
(b) *The pairs* (A, S) *and* (B, T) *are weakly compatible.*

Then A, B, S and T *have a unique common fixed point.*

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Numerical solution of transient Fe_3O_4-EG nanofluid flow past the Couette channel associated with radiation

Khasim Ali [a], Y Rajashekar Reddy [b] and Chandra Shekar Balla [c]

[a]Department of Mathematics, Nawab Shah Alam Khan College of Engineering and Technology, Hyderabad, India; [b]Department of Mathematics, Jawaharlal Nehru Technological University Hyderabad, College of Engineering Jagtial, Telangana, India; [c]Department of Mathematics, Chaitanya Bharathi Institute of Technology, Gandipet, Hyderabad, India

ABSTRACT

The aim of the present paper is to analyse the transient Couette nanofluid flow of ethylene glycol (EG)-ferrous oxide (Fe_3O_4) between two parallel plates in the presence of pulsative pressure gradient and thermal radiation. Tiwari and Das's nanofluid model is assumed to frame the governing equations. The effects of dimensionless quantities such as radiation parameter (Rd $= 0.1$–0.5), Biot number (Bi $= 1-4$), nanoparticle volume fraction ($\phi = 0.01 - 0.1$), pressure gradient ($A = 1$–3), amplitude pulse ($\epsilon = 1-4$) stretching parameter ($\gamma = 0.1 - 0.3$) and viscosity variation parameter ($\beta = 0.1 - 0.4$) are explored graphically. The main conclusion that can be drawn from the results is that the high velocity region of steady state is strengthened near the upper plate with the growth in the stretching parameter rather than thermal radiation. The temperature near the upper plate enhances with thermal radiation. A vortex is formed in the upper half region of the Couette channel with an increase in the phase angle, amplitude and pressure gradient. The temperature in the upper region of the Couette channel is significantly enhanced by the volume fraction of nanoparticles.

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KEYWORDS
Couette flow; thermal radiation; Fe_3O_4-EG nanofluid; Biot number; stretching parameter

Nomenclature

A	dimensionless steady pressure gradient
A_0	steady component of pressure gradient, Nm^{-3}
A_1	amplitude of pulsatile component of pressure gradient, m
Bi	Biot number
C_p	heat capacitance, J/(Kg.K)
Ec	Eckert number
h	depth of the channel, m
h_f	heat transfer coefficient, $W/(m^2K)$
L	channel length, m
P	pressure, Nm^{-2}
$\bar{P}$	dimensionless pressure
Pr	Prandtl number
q_r	heat flux of radiation, W/m^2
Rd	radiation parameter
t	dimensionless time
T	temperature, K
T_0	initial temperature, K
T_∞	ambient temperature, K
u	velocity, m/s
U	dimensionless velocity
U_0	stretching velocity of the lower plate, m/s
U_h	velocity of the upper plate, m/s
x, y	coordinates, m
X, Y	dimensionless coordinates

Greek symbols

α	thermal diffusivity, m^2/s
β	nondimensional viscosity variation parameter
ε	nondimensional amplitude pulse
γ	stretching parameter
κ	thermal conductivity, W/(m K)
κ^*	mean absorption coefficient
μ	dynamic viscosity, Kg/(m s)
ν	kinematic viscosity, m^2/s
ω_p	angular frequency, rad/s
Ω	phase angle, rad
ϕ	nanoparticle volume fraction
ρ	density, Kg/m^3
σ	electric conductivity, S/m
σ^*	Stefan–Boltzmann constant
τ	time, s
θ	nondimensional temperature

1. Introduction

Couette flow is a classical flow in fluid mechanics. The flow is caused by the motion of the upper plate while the bottom plate is at rest. Many investigators focussed on the Couette flow. Jha (2001) studied the natural convection in magnetohydrodynamic (MHD) Couette flow and concluded that the velocity is more for

CONTACT Chandra Shekar Balla shekar.balla@gmail.com

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LITERATURE AS A PEDAGOGICAL TOOL FOR THE FOSTERING OF ENGLISH LANGUAGE PROFICIENCY AMONG STUDENTS

Dr. Shagufta Parween
Chaitanya Bharathi Institute of Technology, Hyderabad, India. daisyazim@gmail.com

Abstract:
The role and importance of English Language in today's globalized world is increasing every day. Second language learners of English Language, especially those form vernacular backgrounds find it tremendously difficult to cope up with the demands of a foreign tongue. The learning of English when it is imparted through the rote method of learning and only through grammar does not incite the curiosity and enthusiasm among the students. Whereas, when the teaching/learning of English language is done through the use of literature the entire process comes alive. The learning of English through the application of literature not only becomes interesting and easier, but more easily graspable and enjoyable. This paper tries to focus on the use of literature as a pedagogical tool for the fostering of English Language proficiency among the students.

Keywords: English Language, literature, teaching, pedagogy, students "Great literature is simply language charged with meaning to the utmost possible degree." (Ezra Pound)

INTRODUCTION

The role of literature in inculcating knowledge, understanding, insight and wisdom has been an integral part of human society since antiquity. The injunction of the Roman poet, Quintus Horatius Flaccus, provided in Ars Poetica that poetry and by extension art should both 'instruct' and 'delight' has its significance even today. Across all the major world civilizations – Egypt, China, Greece, Rome, and India, literature in the form of fables, tales, dramas, poetry and allegories has played a noteworthy role in entertaining, while at the same time instilling core ethical values and providing knowledge. Literature, since the origin, has been all encompassing as it leads to the overall development by focusing equally on the aesthetic, intellectual and the emotional aspects. It aims to infuse in the pupils the qualities of 'logos' (logic), 'pathos' (emotional appeal), 'ethos' (trustworthiness), 'kairos' (right time or opportune moment), and 'telos' (purpose). From being a part of leisure activity highly sought after by individuals seeking pleasure and escape from the drudgery and monotony of real life it gradually became an inseparable part of human existence as it was made a part of the teaching learning system. The field of literature too expanded to include regional narratives such as popular folktales, ballads and folksongs providing in-depth insight into the lives, languages and the history of the people. These pieces of literature, through the rhythm and emotions of poetics immortalised the popular figures and events and made them live in memories while retaining the charm and intensity of the local dialects and linguistic variations.

However, there has been a colossal civilizational change since the days of our ancients and the contemporary world bears little resemblance to it in matters of demography, lifestyle, attitude, education and needs. Technology has bridged the global gap. It has made it easy and instantaneous for people across different locales and time-zones to come together on a common platform without traversing the miles physically and share their ideas. The net connects today, like nothing else. One profound impact of globalization has been the overcoming of language barriers and the emergence of a common lingua franca or link language which is transnational and comprehensible by people across the borders. The Industrial Revolution in the eighteenth century and Britain's emergence as the leading colonial power, led English to gain the position of the lingua

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REPRESENTATION OF THE QUEER IN THE CONTEMPORARY INDIAN CINEMA

K. NAVEEN KUMAR Asst. Prof. Department of English Chaitanya Bharathi Institute of Technology -500075

Abstract:
Cinema has the potential to be a strong catalyst for social change. A Movie, like other types of art, is both a neighborhood of social reality and a medium for depicting it. Films have a subtle impact on how people think. Cinema has undeniably made a significant contribution to India's queer movement. Gender stereotypes are projected in films, which shape society's view of gender roles. The super saturation of gender stereotypes in films results in the misrepresentation of gender roles that become deep-rooted in the human mind and passed on from generation to generation as a valid point of view.
This paper aims to study the portrayal of the queer in Indian cinema in the selected films released in the last two decades. The study is limited to Lesbian, Gay, Bisexual and Transgender sexualities and it does not study other sexualities of the gender spectrum. It is analysed that the movies had been inclusive but the progress made is not enough. Film makers have to research enough before casting the crew in depicting the marginalized lot of the society.
Keywords: Movies, Cinema, LGBT, queer

Introduction:

Movies hold the power to influence minds to a large extent. Various forms of entertainment are emerging almost every other day with technological advancements, but cinema as a medium continues to enjoy a serious fan following of its own.
Raja Harishchandra, the first feature film in India, was screened in 1913. And, on 3rd May 2013, Bollywood [aka Hindi cinema] turned 100.
A hundred years ago, on 3rd May 1913, an avid, small-town photographer from Maharashtra, Dhundiraj Govind Phalke (aka Dadasaheb Phalke), who is now known as the father of Indian cinema, became inspired by a movie he had seen about the life of Jesus and produced the first full-length Indian feature film, Raja Harish Chandra.[1]
Famous for its upbeat numbers, colourful costumes and flamboyant dances, Indian cinema is not limited to Hindi Bollywood movies but also has a vibrant regional language film industry, especially in southern states of the county where film stars are often worshipped as deities. [2]
Motions pictures are taken as a method of entertainment, an escape from the daily chores, pressures and struggles of life. Due to the magnitude of its impact, representations and portrayal of people or sections of society become crucial. Especially, representation of gender or sexual minorities is imperative within the context of a society.
University of California San Francisco (https://lgbt.ucsf.edu/glossary-terms) defines Lesbian, Gay, Bisexual and Transgender as:
Gay**:** A sexual orientation toward people of the same gender.
Bisexual**:** A person whose primary sexual and affectional orientation is toward people of the same and other genders, or towards people regardless of their gender.
Transgender**:** Used most often as an umbrella term, some commonly held definitions: 1. Someone whose gender identity or expression does not fit (dominant-group social constructs of) assigned birth sex and gender. 2. A gender outside of the man/woman binary. 3. Having no gender or multiple genders.
The purpose of this paper is to study the portrayal of gender in Indian cinema. It specifically aims to study the depiction of queer characters in selected Indian movies released in the last two decades. It further analyzes and ascertains the relationship between the content of the movies and its influence on individuals.
This study is limited to the analysis of Lesbian, Gay, Bisexual and Transgender characters. It will not study other sexualities such as intersexuals, agender, etc.

MAN-WOMAN RELATIONSHIP IN ARUNDHATI ROY'S *THE GOD OF SMALL THINGS*

K. NAVEEN KUMAR Asst. Prof. Department of English Chaitanya Bharathi Institute of Technology -500075

Abstract

The God of Small Things is Arundhati Roy's debut novel that bagged the prestigious Booker Prize for her. The novel has emerged as a protest against the socio-cultural gender issues in South India. The novel has an autobiographic approach as it sheds light into the imperative relationship with the life of the novelist. As Roy is a social activist and novelist, her social commitment helped her to write the novel *The God of Small Things* as a powerful weapon for fighting against the social predicaments of woman with a touch of personal sufferings in the real life. This paper tries to explore the nature of man-woman relationship that is portrayed in the novel. The human relationship has been given a vital part in the thematic structure in the novel as all those relationships are administered by the divergent forces of power and powerlessness and the victims of the social issues. This study concentrates more on the patriarchal social systems in the South Indian society due to the male dominance and caste dominance. It throws light into the fact that the in the modern Indian society, the patriarchal system and its imperialistic and mercantile temperament have caused a huge annihilation to all the human relationships especially man-woman relationship. This paper examines the writer's concern for women and their pangs in their family and in the society and how these major aspects are dealt in her novel since she has an inimitable social vision not only as a writer but also as a social activist.

Keywords: social activist, man-woman relationship, patriarchal system, socio-cultural issues

Introduction

Arundhati Roy is a renowned Indian writer in English who has been using her pen as a great social weapon to fight against the quandaries in the society as he has a very strong social concern related to the human relationships and their relationship to the environment. She has acquired her place in the realm of world literature when she published the debut novel in 1997 namely *The God of Small Things*. Britain's most prestigious award, the Booker prize came in search of Arundhati Roy crossing the limits of boundaries for this novel written by her. John Updike, a great novelist and writer observed her novel and wrote in his review:

> "This is her first novel, and it's a Tiger Woodsian debut, the author hits a long socio-cosmic ball … like a devotionally built temple" (John, 1997).

The novel *The God of Small Things* is an instrument of protest that deals with the theme of socio-cultural disputes in the South Indian society. Numerous divergent themes are dealt in this novel such as women, destitute children, untouchables, political hypocrisy and environment. There is an autobiographical element underlying in this novel as it reflects the real life of the novelist. The two major characters Rahel and Ammu in the novel are created by the literary transformation of the author and her mother who had been struggling in the traditional Keralite society due to the property rights and its norms. The patriarchal customs of the traditional society made them suffer a lot at the time of her earlier age. Arundhati Roy herself suffered from the worries and agony of solitude during her childhood and adolescence. Eventually, the activist cum writer was successful in establishing a new face in the society through this novel which is written with an aim of fulfilling her social commitment with a touch of her personal distress in the real life. According to Lorna Sage,

> "Arundhati acknowledges her mother's fierce independence and free thinking as powerful influences on her life and work" (Sage, 1999).

The women in today's society have been changed and they have become strong enough to refuse to be a puppet for the male. The female characters that are dealt by Arundhati Roy in her novel *The God of Small Things* are such self-asserting women who are occupied in the enthusiastic search of their self identity and they become the role model of the modern society. The female characters in the novel are portrayed as bold and strong who repudiate themselves to be inside the cage of norms and laws set by the society.

Online Teaching As An Alternative To Offline Teaching

Andoju Srinivasulu[1], Dr. Swathi Chikkala[2], Dr. C. Raghavendra[3], A Vijaya Lakshmi[4], Mr.Naga Manikanta Garapati[5]

[1]Sr. Asst Professor, Dept of English, Chaitanya Bharathi Institute of Technology, Hyderabad.
[2]Assistant Professor, Dept. of English, School of Gandhian Studies GITAM (Deemed to be University) Visakhapatnam,
[3]Assistant Professor of English,GSGS, GITAM Deemed to be University, Visakhapatnam
[4]Sr. Asst Professor, Dept of English, Chaitanya Bharathi Institute of Technology, Hyderabad.
[5]Asst. Prof English department K L Deemed to be University, Vaddeswaram.

Email: [1]andoju_english@cbit.ac.in., [2]schikkal@gitam.edu, [3]gsmanikanta77@gmail.com.

Abstract

The ever-evolving science and technology are driving the development of humanity like never before. Modern life helps to be more comfortable and comfortable. It solves many complex unresolved issues in a pinch. Nowadays, science and technology, especially the Internet, are playing a direct or indirect role in the lives of every citizen of the world. It is no exaggeration to say that the public sector is not affected by the Internet. There are no dark sides to even the most sophisticated innovation that is playing a role in changing the course of the world. That is why it is as inevitable for any advanced technology as the darkness surrounding the lamp as the ill effects of medicine cure disease! The role of technology is not uncommon in every case of natural disasters. This knowledge is a beacon even in times of great disasters, such as the corona, that endangers human survival. Everyone stays very close to everyone 'virtually' even in a horrible state where people should not touch each other. Education is no exception. There are many milestones in learning from the educational institutes of yesteryear to today's Massively Open Online Courses. 21st-century technology is terrific. With the help of the Internet, one can sit at home and study courses in prestigious universities of the world and get certificates. Let us see if that is possible.

1. INTRODUCTION

The world itself is locked. The fear of being bitten by a corona if the leg is left out is pervasive. Everything froze. Do not let any group activity take place. The educational institutions at the forefront of them are closed at all levels—the corona holidays are coming to an end of the school year. The schools are unlikely to have much leftover from the curriculum. There is still much to be taught at the general degree level, including engineering, medicine, management, and university education. They have been busy online all the time completing them. There was widespread concern that students' vacancies for more than a month would disrupt the learning process. In this context, online classes and online teaching gained momentum—the exact sequence from KG to PG. Usually, in such activities, the private sector competes with one another and holds too many classes. The online experience is different from the everyday classroom experience, experience. It is necessary and inviting for education to take place in unconventional ways under exceptional

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circumstances. In fact, in many countries and our country, the online examination system has been around for a long time. Continuing teaching with technical aspects will significantly help to complete the curriculum without losing the academic year. Teaching arbitrarily during this crisis can be very useful as a temporary alternative. However, today all the discussions can perpetuate this method and approach. The discussions have gained momentum to make the actual, physical classroom teaching environment no longer feel like the past.

Scientific and technological support and utilization are essential today for the pro… sector. There is no doubt that it will be more beneficial for education. It is pos… home somewhere in a remote tribal area and listen to a sermon in the national ca… The facility will be available to thousands and millions of students simultaneously. … are these now emerging as an effective alternative and effective? Do they take … unique tools for fulfilling educational goals? Many such questions arise. In a broader sense,

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DETECTION OF CYBERBULLYING ON TWITTER USING MACHINE LEARNING

D. Sharath Chander [1] and Dr. B. Indira Reddy [2]
[1] MCA Student, Dept. of MCA, Chaitanya Bharathi Institute of Technology (A), [2] Assistant Professor, Dept. of MCA, Chaitanya Bharathi Institute of Technology (A), Gandipet, Hyderabad – 500 075 , India.

ABSTRACT:

As a symptom of progressively well-known web-based entertainment, cyberbullying has arisen as a significant issue burdening youngsters, youths, and youthful grown-ups. AI strategies make programmed recognition of tormenting messages in virtual entertainment conceivable, and this could assist with building a solid and safe online entertainment climate. Cyberbullying is a significant issue experienced on the web that influences teens and furthermore grown-ups. It has prompted mishappening like self-destruction and wretchedness. Guidelines of content via virtual entertainment stages have turned into a developing need. The going with survey uses data from an unmistakable sort of cyberbullying, hate speech tweets from Twitter to foster a model considering the recognizable proof of Cyberbullying utilizing Natural Language Processing and Machine learning.

Keywords*:* Cyberbullying, Hate speech, Machine learning, Feature extraction, Twitter.

[1] INTRODUCTION

Presently like never before innovation has turned into a fundamental part of our life. With the advancement of the web. Social media is moving nowadays. Be that as it may, as the wide range of various things misusers will jump out at times late at some point early yet there will be for sure. Cyberbullying is normal these days.

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Heart Disease Prediction using Machine Learning Techniques

Ramesh Ponnala*[1], K. Sai Sowjanya[2]

*[1]Assistant Professor, Department of MCA, Chaitanya Bharathi Institute of Technology (A), Gandipet, Hyderabad, Telangana State, India

[2]MCA Scholar, Chaitanya Bharathi Institute of Technology (A), Gandipet, Hyderabad, Telangana State, India

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ABSTRACT

Prediction of Cardiovascular ailment is an important task inside the vicinity of clinical facts evaluation. Machine learning knowledge of has been proven to be effective in helping in making selections and predicting from the huge amount of facts produced by using the healthcare enterprise. on this paper, we advocate a unique technique that pursuits via finding good sized functions by means of applying ML strategies ensuing in improving the accuracy inside the prediction of heart ailment. The severity of the heart disease is classified primarily based on diverse methods like KNN, choice timber and so on. The prediction version is added with special combos of capabilities and several known classification techniques. We produce a stronger performance level with an accuracy level of a 100% through the prediction version for heart ailment with the Hybrid Random forest area with a linear model (HRFLM).

Keywords : Cardiovascular Disease (CVD), Heart disease prediction, Machine learning, Hybrid ML Techniques, Classification, Prediction

I. INTRODUCTION

Health care field has vast amount of data, for processing those data various techniques are used. Heart disease is leading cause of death worldwide. We have also seen ML techniques getting utilized in recent developments in several areas of the online of Things. Various studies give only a glimpse into predicting heart condition with ML techniques. It is difficult to identify heart disease because of several contributory risk factors such as diabetes, high blood pressure, high cholesterol and many other factors. Various techniques in Data mining and Machine learning have been employed to find out the severity of heart disease among humans.

The perspective of life science and data processing are used for discovering various kinds of metabolic syndromes. The nature of heart condition is complex and hence, the disease must be handled carefully. Not doing so may affect the center or cause premature death. Prediction of disorder could also be a critical challenge within the world of clinical data analysis.

Hydroponics Farming using IOT and Temperature Prediction

Dr.B.indira, Sandeep Kalari

Chaitanya Bharathi Institute of Technology (A)
Gandipet, Hyderabad, Telangana, India
Bindira_mca@cbit.ac.in
Sandeepkalari14@gmail.com

Abstract: *In the present world of digitization, technology plays a vital role in solving all real-world applications. Especially, the role of Technology in the agriculture sector is increasing like anything. Technology is playing an important role in replacing the conventional mode of farming practices. However, the agriculture sector is witnessing a lot of problems and has affected the production capacity. In order to overcome this, hydroponics is introduced. There are some limitations in this type of environment. That is we need to maintain the temperature, water level, sunlight, PH, and humidity values at a particular level. Monitoring this manually is a very difficult task. If these parameters are not monitored and maintained properly the plants may die or may yield less production. Our work is to guide farmers to efficient harvesting with the help of modern technology. In this context, we propose an easily accessible IOT (Internet of Things) based monitoring and wireless controlled system. Through this IOT system, farmers can irrigate their crops efficiently by proper water level management, sunlight monitoring, and temperature values and ensure that each and every plant gets sufficient water and sunlight. Various sensors like temperature sensor, water level sensors were installed to monitor these values. IOT is used to transfer the retrieved data from these sensors to the mass storage via the cloud, and a mobile app is used to communicate the current status to the users by using Twilio, Mail gun API's and Telegram- chat bot so that monitoring and maintenance will become easier and also appropriate actions can be taken automatically to maintain these parameters.*

Keywords: **Bolt-IOT module, bolt-cloud, Machine Learning, Twilio, Mail gun, telegram-bot, Temperature sensor, Water level sensor, Buzzer, LED light, VM Virtual Box, Ubuntu, Python3.**

1. INTRODUCTION

Currently in agriculture sector the main problem is insects that eat plants and simultaneously effecting plants with diseases. Because of this problem, farmers have no other option but to use pesticides. The chemical fertilizers are killing bacteria and insects that are effecting plants. These hazardous chemical fertilizers are causing adverse effects. Simultaneously, it is affecting the health of consumers who are consuming those farm products. Other, major problem in today's conventional farming is losing its share of land due to urbanization. On the other hand, day by day the population is increasing and the quality of food products is decreasing. So, to face all these challenges hydroponics system is the best solution in the current situation. Hydroponics refers to the art of growing plants in water without soil. Nutrients for the plants are supplied to the roots in the form of a solution that can be supplied either manually or automatically by using the Bolt-IOT device and Machine learning algorithms. Hydroponics can be cultivated both in greenhouse and glasshouse environment [3]. But in this type of setup, there is a big threat to the whole system or

Figure 1. Sample image for hydroponics Environment [10].

plants when plants do not get sufficient natural resources like sunlight, water, nutrients, and temperature which in turn will affect, quality of the vegetables or fruits. Manually it is hard to maintain this complex setup. So, by using IOT and machine learning technologies, we can create a fully automated environment that will constantly monitor the flow of water, minerals in the water, temperature of indoor system etc., and we can also maintain security with the help of this IOT setup. Finally, this will continuously monitor the whole system, if there is any problem with these readings, immediately IOT based system will notify the farmer with the alert messages. This customized app is used to see all the information that is provided by sensors and the same can be displayed in that app. User can check that mobile app for the information. The data that is sent by

Software Defect Prediction using Machine Learning Algorithms: Current State of the Art

Ramesh Ponnala, Dr.C.R.K.Reddy

Abstract

One of the essential exploratory fields in the software quality field is software defect prediction. Software engineering involves many ways to predict software quality assurance topics such as test effort prediction, cost prevention, error prediction, reusability prediction, prediction for safety, and consistency prediction. Though most of these predictive methods remain in the initial stage, and more study is in the forecast, many academicians and industry people have begun to work on new projects in this field. Mechanisms to increase the efficiency of the assurance activities and allocate resources more effectively are becoming more efficient with Software Defect Prediction (SDP). In this article, the state of the art in software defects with Machine Learning algorithms is discussed.

Keywords- Software Defect Prediction, Machine Learning Algorithms, Static Metrics, Dynamic Metrics, Object-Oriented Metrics, SVM, Random Forest, Decision Tree

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TRIPLE AUTHENTICATION APPROACH FOR ACCURATE VOTING SYSTEM

C. N. V. B. R. Sri Gowrinath[1], S. Durga Devi[2]
[1] Assistant Professor, Department of MCA, CBIT (A), Hyderabad
[2]Assistant Professor, Department of CSE, CBIT (A), Hyderabad

Abstract
The voting process decides a person or team/party to rule an organization, division, state, country, or such others. In democratic countries like India, voting plays a vital role. Voting generally uses manual/semi-automated/automated election mechanisms. As the manual voting process has many drawbacks, most of the countries are transitioning from manual to e-voting.

Although technology has been improved a lot from the ancient world, to till date a lot of demerits existed in e-voting using EVM also such as rigging, deleting votes that are even eligible. In addition to the above drawbacks, improper authentication, storage mechanisms, and security are some of the challenges still facing e-voting.

A lot of research is conducted to attack the challenges and design a fully automated e-voting system. Many researchers are doing hard work regarding this. Some issues identified with the already existing proposals; hence this paper is trying to provide a way to design an automatic e-voting system using an Automatic Decision System [3]. The current study's main objective is to increase the utilization of vote right through remote voting in which the literacy rate is less.

Keywords: *Voting, Elections, Automated Decision System, Democratic, Authentication.*

RELATED WORK

Technology is playing a crucial role in our daily life. Even though technology spreads throughout the world, awareness is not in this proportion about voting/election procedures. A lot of underdeveloped and developing countries are still using manual/semi-automated voting. Some developed countries are gradually implementing automated/remote/e-voting by facing little efficiency due to security, rigging, and other problems. The organizations/countries that are using remote voting are also facing vulnerabilities like malicious software, coercion, vote-selling, and others [1]. In spite of the voting method, various issues and challenges are arising especially in India like large democratic countries [14]. These issues and challenges are definitely changing the results in elections. The verifiability aspect is one of the parameters in e-voting [15]. The verifiability metrics include an identity card, QR code, amount of ballots data, and others.

The traditional voting system suffers from a variety of drawbacks starting from information collection of voters to result from processing [2]. Technology improvement also influenced the old election system and led to the introduction of the E-voting process. Proper implementation of E-elections offers features like reaching of information to voters, avail his/her vote from any constituency and others [3]. Recent research on automation of voting addressed the evaluation of methods like Business Processes of an Election System [2], E-Voting using blockchain [4], E-Voting using Biometrics [5], using ring signature [7], Watermarking in e-voting [6]. These methods are definitely reaching towards efficient electronic voting. Prior predictions on voting results might also change the mindset of people and so clear

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Evaluating Frequency of words and Word Cloud from Astrological sentiments using NLP

C. N. V. B. R. Sri Gowrinath[1], Dr. Ch. V. M. K. Hari[2], Prof. P. G. V. D. Prasad Reddy[3]
[1]Department of MCA, CBIT(A), Hyderabad, Telangana, India
gowrinath_mca@cbit.ac.in
[2]Department of Computer Science, Dr. V. S. Krishna Government Degree College, Visakhapatnam, Andhra Pradesh, India
kurmahari@gmail.com
[3]Department of Computer Science and Systems Engineering, Andhra University, Visakhapatnam, Andhra Pradesh, India
prasadreddy.vizag@gmail.com

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ABSTRACT

The identification of interest/disinterest over a notion is having a huge demand in the current competitive data analytical world. For example, the customer preferences in various seasons, approximate visitors to a tourist place based on scenarios like weather and special occasions in the place, and so on. While giving an opinion on any concept, natural language in form of sentences/words/symbols/ratings plays a vital role. Depends upon the context and usage of natural language, captured opinions can be interpreted as either in a positive or negative sense. The terminology used for providing the opinions is used for analysing the data in an easy way. The evaluation of the word frequencies and word cloud are identified accurately, only after a keen analysis of the collected opinions.

The Term-Document Matrix is one of the techniques that identify the frequency of words in each and every document/row in the given dataset, which can be used to generate the word cloud. In this paper to identify the frequency of words from the opinions given by multi-domain personalities on Astrology, distinct Natural Language Processing (NLP) techniques are used. A word cloud can also be generated from the set of words used for the astrological dataset.

Keywords : Natural Language Processing, Astrology, Word Cloud, COVID-19, Knowledge Management System, Parsing.

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ASPECTS OF MACHINE LEARNING : CONCEPT LEARNING, SUPPORT VECTOR MACHINES, AND GRAPHICAL MODELS

B Srinivasa S P Kumar[1], A.Mohan[2]
[1,2]Assistant Professor, Chaitanya Bharathi Institute Of Technology, Hyderabad, India

ABSTRACT

The basic aim of this chapter is to give, as far as possible, a condensed (but systematic) presentation of a novel learning paradigm embodied in SVMs. Our focus Will be on the constructive learning algorithms for both the classification (pattern recognition) and regression (function approximation) problems. Consequently, we will not go into all the subtleties and details of the statistical learning theory (SLT) and structural risk minimization (SRM) which are theoretical foundations for the learning algorithms presented below. This seems more appropriate for the application oriented readers. This paper provides the aspects of machine learning towards concept learning, support vector machines, and graphical models.

Index Terms: Machine Learning, SVM, models

I. INTRODUCTION

The goal of *Machine Learning (ML)* is to construct computer programs that can learn from data. The *inductive inference* of machine learning, i.e. the generalizations from a set of observed instances, can be contrasted to early Artificial Intelligence (AI) approaches that dealt mostly with deductive inference, i.e., the derivation of theorems from axioms. Although ML is considered a sub-field of AI it also intersects with many other scientific disciplines such as statistics, cognitive science, and information theory[1]. An area, closely related to ML is *data mining* which deals with the discovery of new and interesting patterns from large data sets. Although ML and data mining are often used interchangeably, one might state that ML is more focused on adaptive behavior and operational use, whereas data mining focuses on handling large amounts of data and [illegible] (implicit knowledge, regularities) in the data. [illegible] of this chapter does not cover ML in the context of a formal AI system, although such [illegible] as in the discussion of graphical models, we assume some statistical

UNDERSTANDING THE SOCIAL MEDIA MARKETING STRATEGIES AND BIG DATA

Mrs. T. Vamshi Mohana
Research Scholor,
Carrer Point University

Dr. Baddam Indira
Research Supervisor
Carrer Point University

ABSTRACT

Companies who want to promote their brands, acquire new consumers, and keep them are still using social media networks to their advantage. Social media platforms produce enormous sums of cash for these corporations via upselling, incentives, and new features. Brands are looking for new methods to connect with their customers in today's competitive social media marketing industry. Businesses seek to learn about their consumers' likes, dislikes, and habits so that they may provide personalized experiences that encourage them to buy from them. Big data social media marketing is commonly used to attain this goal. Data sets that are too large to fit on a According to analysts, big data is expected to reach 44 trillion gigabytes by 2020, making social media marketing a popular issue across numerous companies and sectors of the economy. Users' social media activity is a useful source of data. It is possible for marketers to get actionable insights about their target audiences by evaluating the material they create and engage with, as well as their demographics, interests, and activities. Marketers may now use big data to anticipate and assess the efficacy of potential future marketing strategies. Big Data and social media marketing strategies are examined in this study.

Keywords: Social Media Marketing Strategies, Big Data, platforms, customers, etc.

I. INTRODUCTION

The amount of data accessible to marketers for the purpose of strategizing their marketing campaigns has increased dramatically since the dawn of the digital age. Increasingly, consumers use electronics and social media to keep track of their daily routines and communicate preferences. As a result, researchers now have a wealth of information on how consumers think and act. Companies that employ big data have been able to precisely pinpoint their target audience, as well as their preferences and likes, allowing them to better

Study And Analysis of Impact of Bigdata on social media

1. Mrs. T. Vamshi Mohana
Research Scholor,
Carrer Point University

2. Dr. Baddam Indira
Research Supervisor
Carrer Point University

Abstract: The development of online web-based media administrations has made a subjective jump and carried significant changes to different parts of human, social, scholarly, and public activity. These critical big information feeders have further changed the organizations processes by setting up merged and straightforward discoursed among organizations and their clients. Thusly, dissecting the progression of social information content is vital to upgrade strategic approaches, to increase brand mindfulness, to foster experiences on track markets, to recognize and distinguish positive and negative client feelings, and so on, accordingly accomplishing the expected added esteem. This research presents an outline of Social Big Data term and definition and analysis of social media platform and its effects with big data.

Keywords: Bigdata, social media, analytic data

Introduction:

Online media has turned into an indispensable piece of everybody's existence with the broad utilization of Internet. Web-based media isn't simply used to associate with others, however it has turned into a successful stage for organizations to arrive at their main interest group. It is assessed that by 2021 the aggregated volume of large information will be in excess of 44 trillion gigabytes. Online media advertising has arrived [1] at an out and out new level because of the rise of huge information. Applying Big Data Analytics via online media with the assist with machining Learning instruments will help business enterprises to break down the business sectors and the patterns. The information over the online media is developing dramatically, and Big Data investigation will assist manage the gigantic volumes of

ANALYZING DIFFERENT TECHNIQUES OF ANALYZING THE LARGE SOCIAL MEDIA INFORMATION THROUGH BIG DATA ANALYTICS

1. Mrs. T. Vanshi Mohana
Research Scholor,
Carrer Point University

2. Dr. Baddam Indira
Research Supervisor
Carrer Point University

ABSTRACT

In the 21st century, social media has become a defining feature of our lives, monetizing the exchange of information between individuals. There are strong platforms employing artificial intelligence (AI) to efficiently commodify individual attention, with the typical person spending more than two hours a day on social media. Big data applications in a variety of sectors may go beyond the mechanics of engagement to investigate how content included in interactions might affect company success and people's perceptions of a complete. Using content analytics, organizations are able to glean unjust information from the statements that consumers write on social media platforms. In this project, the primary goal is to discover new methods for evaluating enormous amounts of social media data. These tactics may aid in uncovering the competition's marketing plan, as well as their content, audience, and message.

Keywords: Big data analytics, social media data, data mining, social media analysis, etc.

I. INTRODUCTION

People's everyday lives have grown more intertwined with social media as a result of the widespread availability and increasing popularity of the internet. Businesses may use social media to connect with their target audience, as well as to connect with others. Due to a lack of information arbitration and limitations on viral incorrect information, social media is likely a big contribution to the spread of misinformation and anxiety in this pandemic. Big data has transformed social media marketing to a whole new level. Big data is expected to grow to 44 trillion gigabytes by 2020, according to estimates. Having so much data at their disposal, marketers may use it to get actionable insights for developing effective social media marketing plans. As a result of big data, firms are able to tailor their interactions with their consumers by taking into account their preferences and interests. As a result, companies may adapt their communication to their customers in order to keep them engaged and increase their trust.

Today's computerised world provides us with a problem that we have never encountered before.. The Internet of Things (IoT) has made it possible for every little gadget in our homes to gather data, so we can use it to improve our lives. Businesses may get a greater understanding of their consumers' behaviour and purchasing habits thanks to the inflow of

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UPSKILLING OF TEACHERS TO PERFORM EFFECTIVELY IN VIRTUAL MODE OF TEACHING

Authors

N. Rama Devi
M. Kalidas

Abstract

With the online mode of teaching becoming the new normal, students have become smart learners through online learning platforms. Teachers also need to equip themselves to work smart and utilize technology to realize the educational goals. This paper deals with digital age pedagogy, its triggers, its key elements, and instructional strategies which help teachers achieve full potential of information technology in their regular class routines.

Key Words

Online Learning Platforms, Flipped Classroom, Instructional strategies

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Title

ARCHITECTURAL PATTERNS AND FUNCTIONAL PROGRAMMING CONCEPTS SUGGESTED TO HANDLE ISSUES IN WEB SERVICES FOR BIG DATA

Authors

M.Kalidas
N. Rama Devi

Abstract

In today's world, there is a huge increase in the demand for web services and a corresponding need for ultramodern infrastructure and technology to implement them. Part of this demand stems from the explosion of users and their transactions across various devices and social networks connecting them. In this paper, we take a look at the role and importance of web services and their implementations across social networks and processes and examine some of the concerns and issues that arise when they are subjected to present-day and near-future usage scenarios and the suggestions and recommend architectural patterns to address them.

Key Words

Microservices, Data Integrity, Quality of Service

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A REVIEW OF PREDICTIVE AND DESCRIPTIVE DATA MINING TECHNIQUES IN HIGHER EDUCATION DOMAIN

SK Althaf Hussain Basha [1], GNR Prasad [2], Mallikharjuna Rao K [3] M Gnana Vardhan[4]

[1]Professor, Department of CSE, ,Chalapathi Institute of Engineering and Technology, Guntur.

[2]Associate Professor, Department of MCA, Chaitanya Bharathi Institute of Technology, Hyderabad.

[3]Sr.Assistant Professor, Department of CSE, VIT –AP University, Guntur.

[4]Associate Professor, Department of CSE, KITS, Markapur.

ABSTRACT

The detection of unseen patterns in instructive information is a promising study in instructive Data Mining. The students attainment rate were reduced incessantly is the key trouble in higher education. To raise the hit rate of students the premature predict technique will help the managing to counsel the deprived students at right time. To determine the novel patterns from a variety of data the data mining approach is broadly used. Similarly here the data mining is used in didactic field to mine concealed patterns. Cataloging is used to order the minutes based on the training set and also it uses the prototype to sort out the novel minutes. In this paper aims to illustrate and show the various techniques of instructive Predictive and Descriptive Data Mining Techniques that guides the organization to take improved act on students at risk.

Keywords: Predictive Data Mining Techniques, Descriptive Data Mining Techniques

[1] INTRODUCTION

Data Mining can be defined as the process involved in extracting interesting, interpretable, useful and novel information from the data [1]. The amount of data has been increasing in recent years. The field of discovering novel and most useful information from large amounts of data has been applied in different application domains such as Education, business, super market, banking, retail sales, bioinformatics, census data and Telecommunications [2]. Now-a-days the important challenge is to strength the university/Institutions in having more efficient, effective and accurate

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VISUALIZING NETWORK PATH AND DATA LINK ACTIVITY IN MOBILE ADHOC NETWORK BY USING INET

SK Althaf Hussain Basha[1] K R R Mohan Rao[2], GNR Prasad[3], Mallikharjuna Rao K [4]

[1]Professor of CSE, Department of CSE, Chalapathi Institute of Engineering and Technology, Guntur.
[2]Professor of CSE, Department of CSE, Chalapathi Institute of Engineering and Technology, Guntur.
[3]Sr. Asst. Professor, Department of MCA, Chaitanya Bharathi Institute of Technology, Hyderabad.
[4]Sr.Assistant Professor, Department of CSE, VIT –AP University, Guntur.
Email: althafbashacse@gmail.com

ABSTRACT

In this paper, INET, which stands for "Internet networking," is regarded as the premier event in the Internet industry and provides an international platform for advancing the development and implementation of Internet networks, technologies, applications, and policies. With INET simulations, being able to simulate network traffic is also beneficial. For this mission, INET offers several visualizers which operate at different levels of the network stack. We discuss Network Route Visualizer in this showcase, which can provide graphical feedback on network layer level traffic. The showcase consists of four simulation models, each showing different features of the visualizer operation of the network road.

Keywords: INET, Mobile Network, OMNeT++ , Visualizer of the Path, Activity Level of Service

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A Survey on Cloud Forensics Frameworks

[1]Sheena Mohammed, [2]Dr. R Sridevi, [3]Dr. K.S Sadasiva Rao
[1] Research Scholar, CSE Department, JNTUH, Hyderabad, India
[2] Professor, CSE Department, JNTUH, Hyderabad, India
[3] Professor, MCA Department, CBIT, Hyderabad, India
Email - sheenamd786@gmail.com, sridevi.rangu@jntuh.ac.in , sadasiva_mca@cbit.ac.in

Abstract: *Cloud computing is being adopted by practically all commercial enterprises in today's technological era because of its benefits. The flexible environment provides the way to easily perform even malicious activities on the cloud too, and also make the job of investigator very tough. Rendering to numerous readings and surveys, cloud-based data has become the major target for cyber-attacks. . This necessitates the use of forensics on the Cloud .The current cloud forensic investigations face the issues such as lack of standard framework, lack of specific forensic tools etc. There are number of traditional digital forensic tools and techniques are available which are even used in the cloud environment but these tools are discredited because of distributed nature of the cloud. In each level of the forensic investigation, the present frameworks and tools for cloud forensics face numerous problems. This article presents the challenges and comparative analysis on existing forensic frameworks on cloud environment.*

Key Words: *Cloud forensics, CSP, DoS, DDoS, TamForen, LSTM.*

1. INTRODUCTION:

Cloud computing is one of the hotfoot-creating fields in Information Technology. It's not an exaggeration that there is almost every business association has embraced cloud computing into their business applications. Cloud computing permits the people and the associations to send their product foundation on far-off, virtualized conditions which are called clouds. As a rule, the clouds are provided by the trusted parties known as Cloud Service Provider (CSP). The essential characteristics of cloud computing include (a) On-demand self-service (b) Broad network access(c) Resource-pooling (d) Rapid elasticity (e) Measured service [1]. There are three service models offered by cloud computing including [2] (i) Software as a Service (SaaS) (ii) Platform as a Service (PaaS) (iii) Infrastructure as a Service (IaaS). The clouds are categorized into a public, private, commodity, and hybrid cloud based on the ownership and managing capabilities [3].Without exaggeration, cloud computing has progressed to the point that it is difficult to find a company that does not use one of the three service models SaaS, PaaS, or IaaS to host its business applications [4].

2. CRIME AND CLOUD:

As technology advances and businesses become more reliant on IT systems, crime is on the rise, and the cloud is no exception. The versatile nature of the cloud also makes it very easy for criminals to carry out criminal operations. For example, criminals can utilize the cloud as a business platform in the same way that businesses use the cloud to host apps like run software fronts or backend applications, etc. Criminals can also use the cloud to launch DoS (Denial of Service) and DDoS (Distributed Denial of Service) cyber-attacks, which pool millions of susceptible, compromised machines into malware and use it to launch attacks. [5]. Another option is to use a cloud platform that allows you to fast and temporarily increase the victim's processing power and network bandwidth, allowing you to mount an attack to temporarily disable the victim's systems before resuming normal operations. Because cloud systems provide enterprises and criminals with flexibility, ease of use, global access, and low- cost IT resources, they can be used for employee misdeeds. As more businesses move to the cloud, commercial cloud platforms are becoming a primary target for cyber thieves; it has long been known that popular cloud platforms store increasing volumes of vulnerable data. As a result, an attacker's main concern is not locating a single target business, but rather locating a vulnerable cloud location. We can't say that cloud isn't more secure than a company's infrastructure; in fact, well-managed enterprise-class cloud platforms are more resilient, durable, and secure than poorly managed small business networks. However, because of the aggregation of data and common access mechanisms, the cloud will always be a target for criminals [5]. According to the Verizon Business 2020 Data Breach Investigations Report, 86 percent of all cyber- attacks were carried out for monetary gain, up from 71% in 2019, and cloud-based data has become a prime target [6].

Adoptability of Digital Payment Systems in Indian Rural Markets: Strategic need for economic growth and future prospectus

Authors:

S.Tulasi Ram, Research Scholar, Department of Management, Kakatiya University, Warangal**,** ***Telangana, India***

&

Dr.T.Srinivasa Rao, Professor, UCCBM, Kakatiya University, Warangal **,** ***Telangana, India***

Abstract: India is going to became cashless. Indian government launched digital India Campaign to reduce dependency of Indian economy on cash and prevent from money laundering. To making cashless India and increasing trends in using digital payment system various Payment methods are emerging and developing. India is developing country and maximum area is rural and shocking is computer literacy is only 6.5% then question arises that implementation of digital payment system. The research paper is making focus on the problems of digital payment system in India and effects of the system in people and economic system of India. The research is paper also trying to explain the future scope of the Digital payment system.

This paper seeks to identify the present trend towards the adoption of digital payments in India. The term Digital Payment means making payment to other person with the help of internet or through electronic mode instead of paper money. The initiative of Digital Payments was taken by Government of India after the announcement of demonetization on 8th November 2016. Digital Payments was initiated to bring transparency in transactions and eliminating black money. It was actually a move towards cashless economy. Further, digital payments was encouraged to provide sufficient cash availability to the banks for providing credit to people. Till date, a considerable part of society has started using Digital mode of Payments, but still people feel scared of using Internet Banking, debit cards, e-cash etc. Initially the Government was providing considerable incentives for digital payments but now a decline has been seen in this push. This paper tries to identify the reasons for adoption of digital payments by people in India and it also tries to find out the problems faced by people in making Digital Payments.

Key words: adoption of digital payments, Rural public, Economic growth and Development

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Work-life Balance and Organizational Citizenship Behaviour-A study with reference to Bank Employees

B.Lavanya[1], B.Divya Sree[2]

[1]Assistant Professor, School of Management Studies,Cbit- Gandipet- Hyderabad, Telangana, India.

[2]School of Management Studies, Cbit- Gnadipet- Hyderabad, Telangana, India.

divyabilla96@gmail.com[2]

Abstract

Going beyond the job role and exhibiting citizenship behaviour in the current pandemic is really a challenging task. One of the professions who, without getting disturbed and are rendering their services without any distractions are the bank employees. Work life balance in generally is very important to lead a stress-free life. Usually for bank employees, due to the nature of job striking a balance between work and personal life will be an art. Irrespective of the job characteristics the proper balance between work and professional life generally makes an person to showcase discretionary behaviour which called citizenship behaviour. So, the present study was under taken to understand association between work-life integration and Citizenship behaviour of the employees at the bank. The objectives of the study include to studyWorkplace conflicts with personal life ,individual life interference with work life , to examine the citizenship behaviour of the employees and finally find the association between work-life integration andOCB of bank employees. The scope is limited to the Hyderabad city. Primary data is collected thought standard scales from a convenient sample size of 112 bank employees and SPSS is used to analyse the data.It was found out that working beyond hours and occupied with family related thoughts are major reasons for work life imbalance. When analysed the Citizenship behaviour of the employees, is evident that they exhibit in good amounts. Bank employees try to help each other and follow guidelines even if no one monitors them. There was also discovered that there is no impact of work life imbalance on OCB of employees.

Keywords: Work life balance, Stress free life, Organizational citizenship behaviour.

1. Introduction:

Work-life balance is all about having equity (equilibrium) between professional life (working life) and individual life. It includes to what extent an individual prioritizes personal and professional activities in their life. Organizational citizenship behavior (OCB) is also termed as voluntary behavior and at times as extra role behavior. It describes the entire positive and constructive employee that is usuallynot included in their official job specifications. Employees showcase citizenship behavior at their own free will supports their colleagues and this kind of behavior is very much expected from all the workers working for a company.There are several aspects to consider that affect OCB of an employee. Analyzing these would definitely help the Organization to function more effectively. During this pandemic, work life balance of the many employees got affected. So, the present study is taken up to measure work life balance and to examine how it is associated with organization behavior among bank employees.[1-5].

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Article

Mobile Phone Buying Decisions among Young Adults: An Empirical Study of Influencing Factors

Muhammad Tanveer [1,*], Harsandaldeep Kaur [2], George Thomas [3], Haider Mahmood [4], Mandakini Paruthi [5] and Zhang Yu [6,7]

1 Prince Sultan University, Riyadh 11586, Saudi Arabia
2 School of Financial Studies, Guru Nanak Dev University, Amritsar 143005, India; harsandal.usfs@gndu.ac.in
3 Department of Marketing, College of Business Administration, Prince Sultan University, Riyadh 11586, Saudi Arabia; gthomas@psu.edu.sa
4 Department of Finance, College of Business Administration, Prince Sattam Bin Abdulaziz University, Al-Kharj 16278, Saudi Arabia; h.farooqi@psau.edu.sa
5 School of Management Studies, Chaitanya Bharathi Institute of Technology, Hyderabad 500075, India; mandakini_sms@cbit.ac.in
6 School of Economics and Management, Chang'an University, Xi'an 710054, China; Zhangyu19@foxmail.com
7 Department of Business Administration, ILMA University, Karachi 75190, Pakistan
* Correspondence: mtanveer@psu.edu.sa

Abstract: Owing to the novelty and dynamism of mobile phone shopping behavior of adults within the context of contemporary social, technological, and market norms necessitated the need to study this phenomenon frequently. In the same league, there is a pressing need to empirically examine the mobile shopping behavior of young adults in Pakistan. This paper examines the factors influencing mobile phone shopping behavior within the context of young adults in Pakistan. First, a questionnaire-based survey consisting of a five-point Likert scale was conducted. A total of 416 respondents provided their complete responses. Then, we employed the structural equation modeling (SEM) model using AMOS 24 to empirically test the hypothesized model. The empirical results revealed that price and attractiveness positively influence mobile phone buying behavior among young adults in Pakistan. On the other hand, Service Encounter, Convenience, Avoidance of Core Service Failure, and Response have negative but statistically insignificant influences on mobile phone buying behavior in Pakistan. This finding revealed that the mobile shopping behavior of young Pakistani adults is predominantly influenced by the price of mobile phones and their attractiveness. Therefore, it is highly recommended that companies need to offer affordable mobile phone prices. Additionally, the attractiveness of the mobile phone needs to be maintained at competitive prices.

Keywords: shopping behaviors; price; attractiveness; service encounter; convenience

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1. Introduction

In contemporary literature, technology has been termed as the most dynamic and rapidly evolving domain. One of the tremendous improvements relating to communication technology is the development of mobile phones, which are evidence of the rapid change in technological advancements [1]. Remarkable developments in mobile technology and applications have encouraged people to use them in their day-to-day life [2,3]. In recent years, the mobile phone has evolved from essentially an interpersonal communication device to a multimedia machine [4]. The technology of mobile phones has penetrated every aspect of daily life. Mobile e-commerce is considered an alternative approach for comparison and buying products and services anywhere anytime. Mobile phones are used for multi-purposes such as calling and sending messages, capturing pictures, accessing the internet, playing games, socializing, and downloading applications. Academicians and practitioners have recognized the pertinence of accessing health, education-related services virtually and the dire need of getting connected online. Mobile phones enable

Parveen Singh Saini
Manpreet Kaur

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Impact of Collective Bargaining of Employees –A Study

B. Radhika[1], Mr.S. Tulasi Ram[2]
[1]Asst Professor, Department of Management, Malla Reddy Engineering College for Women, Secunderabad.T. S, India, Email: Radhika.yallati@gmail.com.
[2]Assistant professor, CBIT School of Management Studies, Hyderabad, T. S, India
Email: tulasiram.mba2010@gmail.com .

ABSTRACT

The APSRTC and KSRTC syndicates effectively expanded collective bargaining in a few of quarters while long industrial battles in others. At the core of a lot of these campaigns were job security and employee controls and overtime, low pay, bonus and incentive allowance non-payment, hours of work and leave overtime, adverse working conditions. The challenge to the management prerogative has led to some unexpected employer actions. Collective bargaining as the industrial conflict resolution technique has been examined as a decision parameter for the chosen employees/correspondents; the results provided by the employees show the same passion recorded against age, sex, education, employment income. Finding shows the high to very high effect of the collective bargaining technique as a strategy for resolving industrial disputes across all companies chosen for the research. Although variance occurs, it is micro marginal and insignificant, which indicates the strong effect on all companies chosen for the study of the collective bargaining process.

Keywords: APSRTC, ILO, AITUC, HMS, CITU, KSRTC

I . INTRODUCTION

Collective bargaining is a form of self-settlement via direct talks between employers' representatives and workers. It is a process of talks between the companies and union representatives in an effort to achieve agreement on terms of employment, such as salaries, working hours, working conditions, bonuses, health safety, welfare of employees etc. "As negotiations on working conditions and employment terms between the employers, the employers' group or, on the one hand, one or more employers' organizations, and one or more representative workers' organizations, on the other hand with a view to reaching a contract," defined the International Labor Organization (ILO) collective bargaining. Main industrial dispute causes:

- Low salaries
- Bonus and Dearness non-payment Allowance
- Working and leaving hours
- Failure to pay overtime
- Conditions of adverse work
- Workers' retrenchment and victimization
- Favourism

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Factors Influencing Ownership Pattern and its Impact on Corporate Performance of Selected Indian Companies

Janaki S[1] and Dr. P.G. Thirunagal[2]
[1]MBA, School of Management Studies, VISTAS, INDIA
[2]Associate Professor, School of Management Studies, VISTAS, INDIA

[*]Corresponding Author: tnagal.sms@velsuniv.ac.in

ABSTRACT

This study on factors influencing Ownership pattern and its impact on corporate performance has used five industries data viz Automobile industry, IT industry, Banking industry, Oil & Gas industry and pharmaceutical industry for five years from 2017 to 2021. First the factors influencing ownership pattern was identified and later its impact on corporate performance was analyzed. Multiple Regression, ANOVA and Correlation was used in SPSS 24. Percentage of independent directors on the board and size of the company has significant impact on Indian Promoter holding and non-institutional ownership has significant impact on corporate performance.

Keywords:- Asset Utilization Ratio, Ownership Pattern, Public Shareholding, Board Independence, Board Size.

I. INTRODUCTION

Shareholding of a company can be classified as either ownership with individual shareholders mainly as majority of the holding with promoters. Domestic Institutional Investors and Foreign Institutional Investors also form a part of the shareholding pattern of the companies. This is study is very important which focus on identifying the factors that influences the ownership pattern and in turn how it affects the corporate performance. Many literature survey confirmed the impact of shareholding pattern on corporate performance. The objective of the study is to identify the factors influencing ownership pattern, to analyze the impact of ownership

shareholders. This proves that large external shareholders pressurizes affect the agency cost. Cornett, M. M., Marcus, A. J., Saunders, A., & Tehranian, H. (2007). found that institutional investors with potential business relations have significant impact on the operating cash flow returns. Agarwal, S., & Singh, A. (2020) It was found that FII, ISH and Non institutional ownership have significant impact whereas Shares held by the custodian and Indian promoter holding were insignificant with corporate performance. This study was carried out for 30 firms for the period of 2007 to 2019. Jeet, D. (2020) found that there was a positive relationship between women on board of directors and firm performance. ROA and TQBINS Q was used as measure for firm performance. Jeet, D., Bhatia, B. S., & Sharma, R. K. (2020) empirically examined the determinants of shareholding pattern. Indian promoter holding and foreign promoter holding was used as dependent variables. Firm performance and duality has significant positive impact on shareholding pattern. Harsh, A., & Chatterjee, C. (2021), based on the GMM (Generalized Method of Moments, more executive salary led to firm performance and companies with more promoter holding creates more value creation and Domestic Institutional Investors have significant impact on the performance of firms.

Five industries were selected viz Automobile industry, IT industry, Banking industry, Oil & Gas industry and pharmaceutical industry. In Automobile industry, Maruti Suzuki India limited, TVS motor company limited, Tata motors limited, Eicher motors limited and Ashok Leyland limited were selected. In IT

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Full Length Research Paper

Business Analytics Application for Crop Prediction-An Empirical Study

B. Lavanya[1] and M. Hem Kumar Reddy[2*]

[1-] *Assistant Professor, SMS- Chaitanya Bharathi Institute of Technology (Autonomous), Hyderabad, India.*
[2-] *MBA II Year Student, SMS- Chaitanya Bharathi Institute of Technology (Autonomous), Hyderabad, India.*

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M. Hem Kumar Reddy

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Key words:
Crop Prediction ,Clustering , Logistic Regression.

ABSTRACT

Agriculture is one of the most essential occupations as it meets the daily requirement of us and widely practiced occupations in India. It has a vital role in the development of our country. Around 60 percent of the total land in India is used for agriculture to meet the needs of 1.2 billion people, so improving the crop production is an important need for the country .Production of crop depends on various factors like soil type, temperature, humidity, pH value, etc. The objectives of the study are to develop a Machine Learning Model for crop prediction by using Python Coding, various Statistical Concepts and to predict the best crop to be grown based on Soil Composition, Temperature, Ph-Value and Rainfall. The proposed project will increase the productivity, profits and reduce loss. Our project is a recommendation system which make uses of different machine learning Methodologies such as Clustering, Logistic Regression that it recommends the suitable crops based on the input soil parameters and climatic conditions. This entire process is known as "Crop Prediction". This system thus reduces the financial losses faced by the farmers by planting the incorrect crops and it also helps the farmers to churn to plant new crops if needed. Finally, I conclude that a machine Learning Model has been developed, which predicts the correct crop to be grown. The model has been developed by using secondary data. Real-time data can also be then revenue for the farmer's increases, decreases farmer's suicides,etc.

Introduction

Data analytics is the science of analyzing raw data in order to make conclusions about that information. Many of the techniques and processes of data analytics have been automated into mechanical processes and algorithms that work over raw data for human consumption. As the process of analyzing raw data to find trends and answer questions, the definition of data analytics captures its broad scope of the field. However, it includes many techniques with many different goals. The data analytics process has some components that can help a variety of initiatives. By combining these components, a successful data analytics initiative will provide a clear picture of where you are, where you have been and where you should go. The Significance of this research paper is to get more insights related to application of Data Analytics in Agriculture Industry and to develop a Machine Learning model to predict the most suitable crop for the land based on the soil composition, Climatic conditions and assure good yield and profits to the farmers. There are numerous advantages using Data Analytics Techniques for Crop Prediction.

They are as follows:

a) Receiving Useful Data to Help Fight Food Scarcity and Empower Small Farmers.
Ex: - Paddy, cotton in few districts of Telangana (Jowar, wheat)

b) Managing Crop Diseases and Pests.
Ex:- Crop images were analyzed with Advanced ML Algo.

c) To Make Yield Predictions. So that,Farmers can choose the suitable crop to the field.
d) To Cope with Climate Change

The objectives of the study are as follows

1. To develop a Machine Learning Model for crop prediction by using Python Coding and various Statistical Concepts.
2. To predict the best crop to be grown based on Soil Composition, Temperature, Ph- Value and Rainfall

Review of Literature

Pavan Patil et al., [2020] in their study emphasized that decision tree shows poor performance when dataset is having more

A STUDY ON PECKING ORDER THEORY OF CAPITAL STRUCTURE OF SELECT FIRMS IN NSE

Mrs.K.Bhagyalakshmi[1]

[1] *Assistant Professor, School of Management Studies, Chaitanya Bharathi Institute of Technology, Gandipet, Hyderabad, Telangana State.*

Dr.S.Saraswathi[2]

[2] *Head of the Department, School of Management Studies, Chaitanya Bharathi Institute of Technology, Gandipet, Hyderabad, Telangana State.*

Dr.Y.Ramakrishna[3]

[3] *Associate Professor of Finance Department of Accounting & Finance*
ICFAI Business School, ICFAI University, Hyderabad, India

Abstract

The Pecking Order Theory of capital structure is one of the most prominent theories of corporate finance. The objective of the study is to examine whether Indian firms follow the pecking order theory of capital structure while constituting financial decisions. According to this theory, firms follow a hierarchical financing preference where internal financing is preferred first, followed by debt and equity as last resort. The data was collected from annual reports of companies during the period from 2015 to 2020 taking into consideration 30 companies listed in NSE based on market capitalization. Correlation and regression are used in the analysis model. The results of the research prove that the selected firms did not prefer internal financing as a source of finance in the years considered for the study which indicates that these firms are not profitable and growth firms, as they are not aware of the costs of information associated with debt and equity and did not prefer to use their earnings to finance business activities. The result of this study shows that the listed firms do not follow the Pecking Order Theory in their capital structure decisions.

Keywords: Pecking order theory, Capital Structure, Market Capitalization, ownership, debt, and Equity.

I. Introduction

The amount of debt and/or equity used by a company to fund its activities and finance its assets is referred to as capital structure. A business's activities, capital expenses, acquisitions, and other investments are funded by debt and

AN EMPIRICAL EXAMINATION OF ASSOCIATION OF ORGANIZATIONAL COMMITMENT, PERCEIVED ORGANIZATIONAL SUPPORT AND ORGANIZATIONAL CITIZENSHIP BEHAVIOUR

B.Lavanya
Assistant Professor
CBIT-SMS
CBIT-Hyderabad

Dr. S.Saraswathi
Head of the Department
CBIT-SMS
CBIT-Hyderabad

Dr. M. Sudhir Reddy
Special Officer-CETs
A.P.State Council of Higher Education
Guntur-Andhra Pradesh

Abstract:

This research papers aims to makes an attempt to understand the association of organizational commitment and perceived organizational supportwithOrganizational Citizenship Behaviour (OCB) in higher educational institutions. OCB is voluntary and discretionary behaviour exhibited by an employee. This behaviour results in numerous benefits like productivity, attracting and retaining right talent and increased adaptability to environmental changes. In order to fulfil the purpose of the study, the data collected from convenient sample of 116 academicians was analysed using SPSS 26.The study revealed that the faculty members exhibited very good citizenship behaviour along all the dimensions. From the results it was also found that there is significant relationship, i.e., positive correlation between Organizational Commitment with OCB and Perceived Organizational Support with OCB.So, it can be concluded that increase organizational support and organizational commitment would enhance the employee citizenship behaviour.

Key Words: Commitment, Organizational support, Citizenship behaviour, productivity, adaptability

INTRODUCTION:

In the ever-changing business environment, where disruptive technologies never stop to evolve, the Organizations can be successful only when they can sustain the tough competition. In order to stay so, Organizations look for the employees who can go beyond their role requirements and contribute their services by owning the organization. OCB is one such effort where employees put extra efforts, by using the resources efficiently and by not complaining against the difficulties faced in the workplace.In earlier studies carried out on OCB,many antecedents are found out, among which Organizational Commitment (OC)and perceived Organizational support (POS) exist. Only when employees have extra interest,

A Comparative Study On Store Services Satisfaction With Reference To Ikea And Home Centre

S Tulasi Ram[1],

Assistant Professor, SMS, Chaitanya Bharathi Institute of Technology, Hyderabad

Dr.M.Anil Kumar[2],

Assistant Professor, SMS, Chaitanya Bharathi Institute of Technology, Hyderabad

Abstract

The behaviour of customer while buying a product different from person to person. Pre purchase customers have their own parameters to purchase in a store. This research has the objective to examine the factors influencing customer satisfaction to buy products at IKEA as well as Home Centre stores. A sample of research of 226 respondents who are walk-in customers, where 113 respondents are of IKEA and 113 respondents are of Home Centre taken for the survey; administrated a structured questionnaire and analysed by using a descriptive statistics and regression methods which was analysed through SPSS program and Ms Excel to obtain results. Finally results were demonstrated that there was a strong positive relationship between independent factors (Factors affecting store shopping, Brand and customer expectations, entertainment in the shopping environment, associate responses towards customer) and customer satisfaction towards the store service of IKEA and Home Centre.

Keywords: Customer Satisfaction, Home Decor stores, Store Services

1. INTRODUCTION TO CUSTOMER SATISFACTION

Customer satisfaction is a business term, is a measure of how products and services supplied by a company meet or surpass customer expectation. It is seen as a key performance indicator within business and part of the four prospective of balanced score card. In a competitive marketplace were businesses compete for customers, customer satisfaction is seen as a key differentiator and increasingly has become a key element of business strategy customer satisfaction drives successful private sector business. High performing businesses have developed principles and strategies for achieving customer satisfaction.

2. REVIEW OF LITERATURE

Vlatislavkaputa, A P Barcic, et al.(2016), Consumer preferences for wooden furniture in Croatia and Slovaka. study found that wood as furniture material, compared with surveyed substitutes, was widely preferred based on safety, brand, warranty and environmental furniture attributes and the preferences of the respondents had different preferences for furniture materials as well as for the factors that influence their purchasing decisions when buying interior and exterior furniture.

AdillaAnggraeni and et.al. (2015), in their study about effect of brand experience, level of satisfaction, trust on customers' loyalty was analyzed using regression analysis. The primary data has been collected using a structured questionnaire. The findings of the research was to develop effective branding strategy so as to enhance the customer experience, satisfaction, loyalty and trust for the brand of the organization. Perception for the brand is developed when the customers prefer to buy the product and experience the positive for the same. Experience regarding the brand means feeling, emotion, cognitive evaluation, sensations, behavioral senses which stimulates the consumer for the brand design, structure, quality, etc. and making them to buy the product. Whereas satisfaction leads to the brand

An Empirical Study on the Relationship Between Institutional Ownership and Capital Structure

A Sai Kiran and M Narender***

In the present study, the authors have attempted to investigate the relationship between institutional ownership and capital structure of the companies listed in India. The authors have taken companies that are part of NIFTY 100 as the sample for the study for the period FY2009-10 to FY2018-19. Debt of companies has been considered in two ways: one in relation to the equity, Debt to Equity Ratio (D/E Ratio); and the other one in relation to the total assets, Total Debt to Total Assets (TD/TA). This study used a few variables in the form of control variables, which include return on assets, size, business risk, sales growth and tangibility. Using fixed effect ordinary least squares regression model, the study found negative association between institutional shareholding and leverage levels of companies, and it was also found that institutional investors preferred to invest in companies with low debt levels.

Introduction

Raising debt is one of the crucial financial decisions taken by the management of any company to expand business operations or to fund their new investment opportunities. Companies choose debt policy based on tax advantages associated with debt financing and possible bankruptcy costs for employing excess debt proportion in capital structure, according to traditional finance theory. Pecking order postulates that companies first prefer to utilize internal funds as the primary liquid source of capital followed by raising debt which is less risky and then go for riskiest source of finance i.e., issue of equity, when no other means of finance is available (Myers and Majluf, 1984). Agency theory suggests, the employment of debt can alleviate the agency problems (Jensen and Meckling, 1976). According to Agency theory, the lower managerial holdings necessitate the need to monitor the actions of management as managements mostly have incentives linked to performance and invest in big and risky projects. This problem may get mitigated by the employment of debt in capital structure of a company as debt acts like an external monitoring mechanism. The problem gets worsened with companies that are in mature stage with less growth opportunities, and the companies with surplus cash flows with less growth opportunities will resort to debt as a source of finance to monitor the actions of management (Jensen, 1986).

* Assistant Professor, Hyderabad Business School, GITAM University. E-mail: saavula@gitam.edu

** Assistant Professor, CBIT, Hyderabad, Telangana, India; and the corresponding author. E-mail: narendermiryala_sms@cbit.ac.in

Authors, pl reconfirm the info provided

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A Study on Corporate Social Responsibility, Firm Value of Nifty 50 Companies

Dr. M Anil Kumar[1], Mr. S. Tulasi Ram[2]

[1,2]ChaitanyaBharathi Institute of Technology, Hyderabad

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ABSTRACT

The main objective of this study is to find out the impact of corporate social responsibility spent on firm performance and also find out the variables which have more impact on firm value. The companies which are considered in this study are NSE 50 companies and the data taken for 4 years i.e. from 2014-15 to 2017-18. Correlation and Regression analysis is carried out and the variables taken for correlation analysis were CSR spent, book value per share, ROA, firm value, net income. And the variables taken for regression analysis were firm value (Dependent Variable), book value, total assets, total income, ROA, CSR spent. The results showed that there is a high degree positive correlation in between CSR spent and firm value, net income. And regression analysis showed that there is a significant relationship in between firm value and total assets, CSR spent.

INTRODUCTION

Corporate Social Responsibility:
Corporate Social Responsibility(CSR) is also knownas Corporate Sustainability, Corporate Citizenship. Corporate Social Responsibility (CSR) is defined as it is the management of the various organizational activities to get or to make the positive impact on the society.Corporate Social Responsibility mainly covers the sustainability, ethics and social impact. Now a day the corporate social responsibility is playing very important role for any organization in getting more profits. If the corporate social responsibility is managed very properly that will definitely increase the competitiveness of the business and that will increase the value of business in society and generate more profits.

Depending upon the company and industry corporate social responsibility(CSR) is a broad concept that can take many forms. Businesses can benefit society while boosting their own brands and value through CSR programs and Philanthropy and volunteer efforts.And also as important as the CSR activities for the society, it is equally important for a company also to increase company brand or value. CSR activities also help in increase the bond in between employee and company. Through the Corporate Social Responsibility activities, the employees and also employers both will be in contact with the society.

All together for an organization to be socially responsible, it first should be mindful to itself and its investors. Regularly, organizations that embrace CSR programs have developed their business to the point where they can offer back to society. Accordingly, CSR is principally a procedure of substantial companies. Likewise, the more unmistakable and effective a company is, the greater duty it needs to set principles of moral conduct for its peers, rivalry, and industry.

Corporate Social Responsibility is a concept which have many definitions and practices. Understanding and implementation of CSR is different for each organization and nation. Moreover, Corporate Social Responsibility is a very broad concept that addresses many and various topics such as health and safety, human rights, environmental effects, corporate governance, working conditions and contribution to economic development. Whatever the definition of CSR is, the main purpose of CSR activities is to drive change towards sustainability.

According to the Section 135 subsection 1 of Companies Act, 2013 The companies are eligible for the CSR activities if the firm have Net worth of Rs.500 or more or Turnover Rs.1000crores or more or Net Profit of Rs. 5 crore or more. If any one of the condition mentioned here are satisfied to any company, then the company is eligible for the CSR activities.

If the company is eligible for CSR activities the it should spend the 2% of the average net profit of the last three financial years.
The companies are mainly concentrating on the CSR activities which are related to Education, Water supply, Health care organizations, Environment, Social Empowerment, Sports and Culture etc.

E Learning: A substitute for classroom learning in times of Social Distancing Norms

Dr. Razia Sehdev

Associate Professor at Lovely Professional University, Jalandhar, Punjab, India

Dr. Mandakini Paruthi

Assistant Professor (Marketing) at Chaitanya Bharathi Institute of

Technology, Gandipet, Hyderabad, India

Arpit Sharma (11609058)

MBA Student at Lovely Professional University, Jalandhar, Punjab, India

Tejashvi Kumar (11612874)

MBA Student at Lovely Professional University, Jalandhar, Punjab, India

ABSTRACT

During COVID-19 pandemic, E-learning have emerged as a mandatory component for all educational institutions like schools, colleges, and universities all over the world. This crisis has changed the mode of teaching from offline to online teaching process. E-learning method provides everyone an effective teaching method that brings out the best from students in such social distancing required times. In this research paper, a survey has been conducted to find out about teacherviews and perception towards the E-Learning.Primary data has been taken from teachers' fraternity of various schools, colleges, and universities through Google forms to know their perspective about E-Learning. The findings of the study throw light on how E-learning is becoming popular among teachers all around the world particularly after the pandemic crisis COVID-19.

Keywords: *COVID-19 Pandemic, Online Learning, Online Teaching.*

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IndiGo - In the Times of Pandemic

N. Narender [1], A. Arun Kumar [2*]

Affiliations

1. Assistant Professor, School of Management Studies, CBIT, Gandipet, Hyderabad - 500 075, India
2. Assistant Professor, Centre for Management Studies, ICFAI Law School, The ICFAI Foundation for Higher Education (A Deemed-to-be University u/s 3 of the UGC Act, 1956), Donthanpally, Shankerpally Road, Hyderabad - 501 203, Telangana, India

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Abstract

Over the years now, the Indian aviation has seen a lot of difficulties, and recently, the players in aviation started working towards competing with global players in the industry in terms of quality of service and making the balance sheet look stronger. All this enthusiasm boiled down due to the COVID-19 pandemic, which impacted all the economies across the globe. This pandemic has thrown a lot of challenges like whopping decrease in the revenues but not the costs to the same extent, uncertain changes in the regulations by the state governments on imposing quarantine for the domestic passengers, which resulted in impacting the survival of some of the weak players. IndiGo suffered its biggest losses since it went public in the year 2015, and these losses can be attributed to the pandemic. However, there are certain measures that can be put in place sooner rather than later. These are to do with attracting other forms of services like cargo and access to competent and quick investors to pump in capital. These two factors must be the subject of urgent police measures for Indigo to be ahead of the pack.

The Relationship Between Women Directors on Board and Firm Performance: Indian Scenario

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Damain Jeet
Chaitanya Bharathi Institute of Technology (CBIT)

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Abstract

The inconclusive studies on ownership pattern and its effect on profitability of firms make it compulsory to learn about the impact of women directors' ownership on the performance of Indian firms. Studies have been conducted on the mechanism by which the ownership structure is formed and is being premeditated for interassociations amidst corporate ownership and physiognomies of board structure. Previous studies have investigated the relationship among various parties within a firm and the impact on performance through Agency theory, as this theory leads to separation of ownership and control. But the results are rather mixed. Taking a proportional sample of companies from four major industries, this study attempts to find the impact of women directors on the board on the performance of firms. Based on women directors' ownership, i.e., taking the number of women directors, independent women directors, non-executive women directors, qualification, age and marital status as independent variable, its impact on the performance of Indian firms was measured, using ROA, Tobin's Q and Net Worth. The study concludes that there is a positive relation between women directors on board and firm performance.

Risk Optimisation Analytics: A Case Study on Brown Research Associates India (BRAI)

Puneet Kumar (Xavier Institute of Management and Entrepreneurship (XIME), Bangalore, India), Annaraavi Rao (Faculty of Management, Sri Ramachandra Institute of Higher Education and Research (DU), Chennai, India) and M. Anil Kumar (School of Management Studies, Chaitanya Bharathi Institute of Technology, Hyderabad, India)

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Abstract

Risk optimization using business analytics is gaining momentum in India over the last decade. In order to tap this huge opportunity, most of the startups are getting into the analytics field engaging in financial market survey to provide their customers with valid data. The objective of this study is to help "Sol Bidders" in solving their portfolio investment problem as well as solving funds problem using linear programming and to obtain the total optimum returns by satisfying all constraints. The authors solve the problem of minimizing portfolio risk measures. In addition, the expected return of the portfolio is maximized subject to the aforementioned risk measures. By using numerical experiments, they illustrate the impact of these risk measures on portfolio optimization. The analysis is done by using Excel Solver, and the optimum solution is achieved.

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A STUDY ON RELATIONSHIP BETWEEN LIQUIDITY AND CAPITAL STRUCTURE DECISIONS OF SELECT COMPANIES

Mrs.K.Bhagyalakshmi Assistant Professor, School of Management Studies, Chaitanya Bharathi Institute of Technology, Gandipet, Hyderabad, Telangana State.
Dr.S.Saraswathi Head of the Department, School of Management Studies, Chaitanya Bharathi Institute of Technology, Gandipet, Hyderabad, Telangana State.
Dr.Y.Ramakrishna Associate Professor of Finance Department of Accounting & Finance ICFAI Business School, ICFAI University, Hyderabad, India

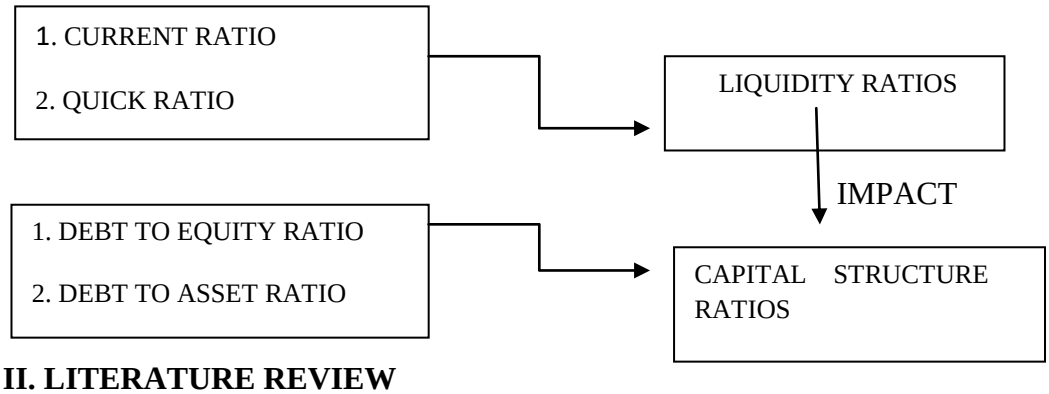
Abstract
The objective of the paper is to study the impact of liquidity on the capital structure of the select firms in NSE. The present paper takes into consideration the analysis of 30 companies in five sectors listed on NSE which are selected for 5 year period (2016-2020). The main source of the study is secondary data from the firm's financial reports. Correlation and regression analysis is used for the present analysis. The study proves that there is a statistically significant correlation between the current ratio and debt to asset ratio that is leverage ratios. But, there is a significant negative correlation is between the debt to asset ratio and debt to equity ratio, and quick ratio. Findings of the study revealed there is an impact of liquidity (CR and QR) on debt to asset ratio while there is no impact of liquidity (CR and QR) on debt to equity ratio.
Keywords: liquidity, capital structure, leverage, Current ratio, and Quick ratio.

I. INTRODUCTION

Capital structure means it is a combination of shareholder funds and long-term debt of the firms. Liquidity means the conversion of current assets into cash. Thus, capital structure refers to the proportions or combinations of equity share capital, preference share capital, debentures, long-term loans, retained earnings, and other long-term sources of funds in the total amount of capital that a firm should raise to run its business. The capital structure of a company refers to the make-up of its capitalization and it includes all long-term capital resources viz., loans, reserves, shares, and bonds. Liquidity describes the degree to which an asset or security can be quickly bought or sold in the market without affecting the asset's price. Liquidity means how quickly you can get your hands on your cash. In simpler terms, liquidity is to get your money whenever you need it.

Relationship between liquidity and capital structure:

The relationship between liquidity and the capital structure of a firm can be explained using the model.



II. LITERATURE REVIEW

Manjit Kaur Sidhu (2018) analysed the relationship between leverage and stock market liquidity firms included in the S&P BSE 500 index from 2009 to 2013 to study on the effect of company leverage on stock market liquidity in the Indian market. Used fixed effects panel regression model to analyze the relationship. The results show that lower level of debt results in higher stock market liquidity of the firm, there is a negative relationship between stock market liquidity and firm

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Customer Retention and Survival During COVID-19 Recession – A Study on the Shift in the Retail Industry in India

Dr. E. Jalaja
Associate Professor, School of Management Studies
Chaitanya Bharathi Institute of Technology, Hyderabad, India

Abstract: *COVID-19 situation has made life difficult for everyone around the world. So is the case with retail industry. Indian Retail Industry has come across major issues when they faced the pandemic situation as the customers are not tech savy and they are not much fond of ordering online especially groceries. So, survival is one of the important problems and customer retention This article highlights the strategies the Indian Retail Industry is adopting and how they are able to retain customers. The study has adopted descriptive research methodology and has conducted personal interviews and followed observation methods to collect the data.*

Keywords: Customer Retention, Retail Industry, Survival, COVID-19, Retail Strategies

I. INTRODUCTION

In the eight months duration of COVID-19, everyone still is facing many problems to lead day to day life comfortably. Leaving aside the free movement of people outside and attending regular duties it is hard for all to even get the groceries well and full.

First few months is very hard for everyone to have even met the necessities. But thanks to retail shops, supermarkets, and small grocery shops nearby neighborhood. Many have changed the way they function regularly. There was a drastic strategic shift in the way they conducted business during COVID-19. Indians customers are never fond of online shopping for groceries and all. They always preferred physical verification and wanted to check and compare the price before purchase. But this COVID-19 situation has changed the way customers shop and have leveraged the purchasing behaviors of customers online.

Online purchase has increased these days and the main point of discussion is how retail industry is accepting this scenario and is making the offline customers go online and retain the existing customers through which they can survive.

II. NEED FOR THE STUDY

Customer Retention always is the primary concern of any business as it has proved that it is more effective and profitable than customer acquisition. It is well known and proven fact that 80% of the business is done by the 20% of the customers. But gaining this 20% is hard and retaining that 20% is harder. Customer Retention helps the business to gauge their relations with the customers for a long period. This itself will advocate the issue of customer acquisition.

During this COVID-19, doing business is hard for everyone, but who tries to retain the customers they already have is the first thing to do. As customer need groceries to lead their lives in every worst to worst situation, the retail industry just needs to adjust themselves in dong their business. This paper highlights those adjustments retailers have done to meet the customers requirements and how they have planned their survival in the current scenario and successful they are in retaining the customers they have.

III. OBJECTIVES

1. Understanding the importance of Customer Retention in general and during COVID-19.

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An Analysis on Attritional Factors in the IT and ITES Organizations

Dr. E. Jalaja
Associate Professor, School of Management Studies
Chaitanya Bharathi Institute of Technology, Hyderabad, India

Abstract: *In the IT & ITES sector, human resources are crucial resources. Indian organizations are dependent on crucial resources very much. The Indian IT & ITES companies are hiring nearly 300 personnel every working day of the year. This is providing very good opportunities for everyone and is also posing challenges for the HR managers in retaining the employees. Because of the talent gap existing in the current talent pool, organizations are suffering majorly to fill the middle management positions and senior-level positions. The reason behind the supply gap is not just the employability skills but there are many reasons why employees leave the organizations. This has resulted in increased levels of poaching and attrition cases. Employee turnover is making the organizations to fail in attaining the objectives set. So, there is a need to understand the impact of attrition and additional factors. Because attrition cause a huge cost to the company. Many are having the difficulty in estimating emotional costs, loss of morale, experience, and continuity. There is a significant economic impact when an organization loses any of its critical employees for any reason. This is why the organizations need to delve deep into the reasons and factors, which may influence the employee's decision to leave the organization. So, the present study will examine the relationship between organizational practices and their influence on the employees' decision to leave the organization. This paper highlights those factors which have maximum impact on attrition.*

I. INTRODUCTION

In the present competitive business environment, when all the other resources are so prone to imitation and adoption by the competitors, Human Resources is the only asset, which if selected, developed, and retained keeping in view the organizational goals, can prove to be a reliable differentiating factor. With the help of this differentiating factor, organizations can strategically position themselves and sustain that position for the competitive advantage in the longer run. To successfully derive maximum out of the pool of human skills existing in the organizations, one of the greatest business challenges that exist is to retain the valuable employees in the organization.

The new age economy, with its attendant paradigm shifts concerning the human capital, in terms of its acquisition, utilization, development, and retention, has placed a heavy demand on today's HR professionals. Today HR is expected to comprehend, conceptualize, innovate, implement and sustain relevant strategies and contribute effectively towards giving the corporation its winning edge. With a dynamically changing and volatile demand-supply equation, especially against erratic attrition trends and cutthroat competition which is no longer restricted to local or regional boundaries, a need for strategizing and putting in place a robust mechanism for attracting and retaining top talent becomes vital for the company's very survival and growth.

II. EMPLOYEE ATTRITION

Staff attrition increases the cost to organizations and will drive up training costs, recruitment costs, and productivity costs. Many organizations even faced problems like customer service, quality issues, project issues, etc because of attrition. The survey's revealed that most of the attrition is because of employee turnover as they leave their jobs for many unspecified reasons in want of more money, recognition, working conditions, advancements, satisfaction, family issues, and many more. As per the NASSCOM study, nearly 80% change their job for a better opportunity. Much research is going on to identify the reasons and their impact and identify the solution for such problems.

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Women Employee's Work and Life - Striking the Right Balance

Dr. E. Jalaja
Associate Professor, School of Management Studies
Chaitanya Bharathi Institute of Technology, Hyderabad, India

Abstract: *Work life balance is the current issues with everyone. This topic is attracting many now a day. Everyone has to accept that profession is a part in our lives; it is not possible to lead life without any earning. Interest in work and family matters has arisen on account of changes in the way in which work has been defined and it has been fuelled by mechanization and modernization of production processes, industrialization and the entry of increasing numbers of women in to the world of paid work. In a Developing Country like India the issue of work life balance is a matter of concern. These days you cannot find a field where women have no entrance. Recently women have much more reach in the in every field of Business. They are proving to be the best in their respective fields. Previously she used to be a more house wife and less professional. But after the reforms in 1991 the scenario has changed as the India economy is liberalized. Because of necessity and the desire to augment income, both the spouses started working. This has raised curtains to new problems to the working women community. Today's career women are continually challenged by the demands of full-time work and when the day is done at the office, they carry more of the responsibilities and commitments at home. So a great need has aroused to balance both. Initially this is the problem of working women only. But now a days this is an issue which has been taken seriously even by the companies. The reason behind this is that women have proved equal to that of the men counterpart. So the human resource professionals are seeking options to positively impact the bottom line of their companies, improving employee morale, retain employees with valuable company knowledge, and keep pace with workplace trends. So, this paper concentrates on few issues like how does women balance her work with life at home? How is she managing all these responsibilities? What type of support she is getting from the family members and from the employer? Like this we can have many questions to ask. Let us see how the IT and ITES women employees are handling the issue of Work Life Balance.*

I. INTRODUCTION

Striking the right balance is the key to a fulfilling life. Whether you are spiritually inclined or not, the truth is that, balance is central to our very universe. From the Upanishads to The Bible, from The Talmud to The Koran, numerous passages call upon individuals to lead balanced lives.

Yet, in the rat race of our present-day existence, especially in the long-working-hours of our industry, we forget to maintain a balance between work and family. The result is devastating; High levels of stress, trauma and even nervous breakdowns. Numerous world bodies including the International Labor Organization (ILO) have in recent years prescribed balance coupled with honoring workers' rights, to create the right working atmosphere, especially in countries that have latched onto the services bandwagon. In short, the industry buzz, whether in low-tech or hi-tech industry, is about creating Work-Life Balance (WLB).

The phrase Work-Life Balance was coined in 1986 in the USA and until 1999 remained on the fringes of corporate usage and public dissemination. Post 2000, WLB has gone mainstream, with hundreds of dedicated Internet sites, including those of mega corporations, helping spread its usage. There has even been legislation enacted in many countries making WLB crucial to the functioning of a corporation. Work-life balance is now the second most important driver of employee attraction and commitment This makes the HR departments paying more and more attention to the

An In-situ Design for Carbon Capture and Storage in Process Industries

Sai Nitheesh Magasani[1], *Harish reddy [2], Naga Prapurna P [3,*]

[1]B.Tech 4th year student, Chemical Engineering Department, Chaitanya Bharathi Institute of Technology, Hyderabad, Telangana, India; email-ugs17042_chem.sai@cbit.ac.in

[2]B.Tech 4th year student, Chemical Engineering Department, Chaitanya Bharathi Institute of Technology, Hyderabad, Telangana, India; email-ugs17026_chem.harish@cbit.ac.in

[3]Associate professor, Chemical Engineering Department, Chaitanya Bharathi Institute of Technology, Hyderabad, Telangana, India.;email- nagaprapurna_chem@cbit.ac.in

* Corresponding author: ugs17026_chem.harish@cbit.ac.in

Abstract: *The emissions of greenhouse gas component, carbon dioxide, has increased ten times in the past few years, with industrial emissions being the major contributor. Through this study, the existing processes for capture of industrial emissions of carbon dioxide in its carbon form was explored. The authors aimed to design a carbon capture and storage method applicable to Indian industries based on the current scenario. The existing transportation methods for storage of the captured carbon to exclusive locations in India was analyzed. India is an agricultural country with huge population and scarcity of land for carbon storage is always an issue and it is difficult to find appropriate and suitable geological location for storage of the captured carbon. Government support and public opinion matters the most. Non-conventional renewable energy sources cannot accomplish today's energy demands. Energy from coal comes with a price of increased greenhouse gas emissions. An in-situ sustainable technology for capture, storage and reuse shall be a promising way for Indian industries like thermal power plants and fertilizer industries.*

Keywords: **carbon dioxide; carbon capture; energy sector; thermal power plant; process industries**

1. Introduction:

Carbon dioxide, the primary contributor of the green house effect is accountable for the global warming. Over the past few years, the total carbon dioxide emissions have increased by 10 times.In India due to the rapid industrialisation and urbanisation, the demand for energy and fuel has reached new heights.

This demand for energy and fuel has made a drastic change in the overall CO_2 emissions. Industries in the energy sector and industrial sector are accountable for the rise in global CO_2 levels.It is high time to capture the carbon from the industrial emissions by using a suitable Carbon Capture and Storage (CCS) technology to reduce the global temperature rise and reduce the CO_2 content in the atmosphere. Storage of the captured CO_2 is the supreme task in CCS technology.