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COMMITTED TO
RESEARCH,
INNOVATION AND
EDUCATION

44 years

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3.4.4 Number of books and chapters in edited volumes/books published per teacher during the last five years (5)

Year	2021-22	2020-21	2019-20	2018-19	2017-18
Number	85	139	66	57	55

3.4.4 Number of books and chapters in edited volumes/books published per teacher during the last five years (5)

3.4.4.1: Total number of books and chapters in edited volumes / books published, and papers in national/international conference-proceedings year wise during last five years

Sl. No.	Name of the teacher	Title of the book/chapters published	Title of the paper	Title of the proceedings of the conference	Year of publication	ISBN/ISSN number of the proceeding	Whether at the time of publication Affiliating Institution Was same Yes/NO	Name of the publisher
1	P Sriravali, J Balakrishna, P Chandrasekhar, N. Alivelu Manga	"Design and Implementation of Low Noise Amplifier forIrnss Receiver",	International Conference on Inventive Research in Computing Applications (ICIRCA 2018) [IEEE conference]	NA	2018	978-1-5386-2456-2	Yes	IEEE
2	T. Sridher, A.D. Sarma, N V Koteswara Rao, P.Naveen Kumar and Tarun Kumar Pant	'Indoor Propagation of IRNSS Signals: Priliminary Results	IC4, IEEE conference	NA	2018	978-1-5386-4966-4	Yes	IEEE

3	.A.V. Narashimha Rao	"A Comparative Study of Famous Image Compression Methods Based on Bits per Pixel: A Survey"	IEEE International Conference on 'Electrical, Electronics, Computers, Communication, Mechanical and Computing'	NA	2018	978-1-5386-4304-4	Yes	IEEE
4	Dr. Md.Aleem Pasha	Friction Stir Welding of Magnesium Alloy AZ31B	Friction Stir Welding of Magnesium Alloy AZ31B	NA	2018	978-613-9-58742-1	Yes	LAMBERT Academic Publishing
5	Dr. Md.Aleem Pasha	Friction Welding of Brass and statistical Modelling	Friction Welding of Brass and statistical Modelling	NA	2018	978-6139583935	Yes	LAMBERT Academic Publishing
6	Dr. Md.Aleem Pasha	Reinforced and Unreinforced Friction stir welding of Aluminium Alloy 6061	Reinforced and Unreinforced Friction stir welding of Aluminium Alloy 6061	NA	2018	613957773 X,	Yes	LAMBERT Academic Publishing
7	Dr. Md.Aleem Pasha	Strengthening and Joining Plastic Deformation	SiC and Al2O3 Reinforced Friction Stir welded joint of Aluminium Alloy 6061	AIMTDR 2016	2018	978-13-0377- 7	Yes	Lecture Notes in Multidisciplinary Industrial Engineering, Springer

8	Dr. K. Jaganadha Rao	NA	Experimental investigation on utilization of RCA in low, medium and high strength self-compacting concrete	IOP Conference Series: Material Science Engineering	2018	ISSN 1757-899X (Online)	Yes	IOP Publishing Ltd
9	Dr. K. Jaganadha Rao	Bond Strength of HYSD Bars and SCC with and without Recycled Aggregate-An Experimental Study	Bond Strength of HYSD Bars and SCC with and without Recycled Aggregate-An Experimental Study	IOP Conference Series: Material Science Engineering	2018	ISSN 1757-899X (Online)	Yes	IOP Publishing Ltd
10	Sri. T Vasudeva Rao	Study on Mechanical Properties of Recycled Coarse Aggregate Concrete with Stone Dust	Study on Mechanical Properties of Recycled Coarse Aggregate Concrete with Stone Dust	National Conference On Innovations in Civil Engineering through Sustainable Technologies (NICEST-18	2018	NA	Yes	MGIT, Hyderabad

11	Sri. P. Srinivas Reddy	Seismic Response Study of Multi-storied Reinforced Concrete Building with Fluid Viscous Dampers	Seismic Response Study of Multi-storied Reinforced Concrete Building with Fluid Viscous Dampers	National Conference On Innovations in Civil Engineering through Sustainable Technologies	2018	NA	Yes	MGIT, Hyderabad
12	B. Suresh Kumar	Power quality improvement using custom power devices	Power quality improvement using custom power devices	Current Trends towards Converging Technologies (ICCTCT)	2018	978-1-5386-3702-9	Yes	IEEE
13	M. Balasubba Reddy, P V Prasad	Multi objective optimal power flow with generalised interline power flow controller using NSHCSA	Multi objective optimal power flow with generalised interline power flow controller using NSHCSA	Electrical, Electronics, Computers, Communication, Mechanical and Computing	2018	978-1-5386-0814-2	Yes	IEEE

14	G. Suresh Babu T .Muralikrishn a	Simulation and Analysis of Single Phase Full Bridge Diode Rectifier with Different Passive Power Factor Correction Techniques	Simulation and Analysis of Single Phase Full Bridge Diode Rectifier with Different Passive Power Factor Correction Techniques	Resent Innovations in Electrical, Electronics and Communicat ions Engineering	2018	978-1-5386-5995-3	Yes	IEEE
15	B. Suresh Kumar	Modeling and simulation of dual Redundant power inverter stage to BLDCM for MEA Application	Modeling and simulation of dual Redundant power inverter stage to BLDCM for MEA Application	Innovations in Electronics and Communicat ion Engineering	2018	978-981-13-3765-9	Yes	Lecture Notes in Networks and Systems
16	N V PhanendraBa bu	A New Technique for Designing Restoration Based Reliable WAMS Structure	A New Technique for Designing Restoration Based Reliable WAMS Structure	National Power Systems Conference	2018	978-1-5386-6159-8	Yes	IEEE

17	K. Krishnaveni	Modeling, analysis and simulation of two level, three level voltage source converter for HVDC system	Modeling, analysis and simulation of two level, three level voltage source converter for HVDC system	Resent Innovations in Electrical, Electronics and Communications Engineering, ICRIEECE-2018	2018	978-1-5386-5995-3	Yes	IEEE
18	Morarjee Kolla, T. Venugopal	Efficient Classification of Diabetic Retinopathy using Binary CNN	Efficient Classification of Diabetic Retinopathy using Binary CNN	International	2018	ISBN:978-1-6654-2922-1	Yes	IEEE
19	Padmalatha E., Sailekhya S., Athyaab S.A., Harsh Raj J	ICT Analysis and Applications	Feature Selection Optimization Using a Hybrid Genetic Algorithm	International	2018	978-981-15-8354-4	Yes	Springer
20	Kavita Agarwal	Essentials of Blockchain Technology for Modern World Applicati	Essentials of Blockchain Technology for Modern World Applicati	International	2018	NA	Yes	VCE, Warangal

21	Madhurima Rana, Swathi Edem	Machine Learning Technologies and Applications	An Efficient Deep Learning Based Approach for Malware Classification	International	2018	978-981-33-4046-6	Yes	Springer
22	G Jhansi Rani,G Shanmukhi Rama,K Ranganath, Tarun Kumar Juluri , Ch Vinay Kumar Reddy	NA	Face detection authentication analysis on smartphones	IOP Conference Series: Materials Science and Engineering,	2018	ISSN: 1757-8981	Yes	IOP Publishing Ltd
23	G Jhansi Rani,G Shanmukhi Rama , Ranjith Kumar Marrikukkala , Y Srikanth , Ch Vinay Kumar Reddy	NA	An IOT Based Environmental Monitoring System	IOP Conference Series: Materials Science and Engineering,	2018	10.1088/1757-899X/981/3/032025	Yes	IOP Publishing Ltd

24	M Venkata Krishna Reddy, Dr.R.Ravinder Reddy	A Trust Based Method for Providing Secure Data Transmissions in Mobile Adhoc Networks	A Trust Based Method for Providing Secure Data Transmissions in Mobile Adhoc Networks	National	2018	978-1-68576-062-5	Yes	NA
25	M Venkata Krishna Reddy, Dr.R.Ravinder Reddy	Ground Water Level Analysis & Prediction	Ground Water Level Analysis & Prediction	National	2018	978-81-953418-4-9	Yes	MANUU
26	B.Deepthi, G.Ramani, R.Deepika	Hybrid Secure Cloud Storage data based on improved Encryption Scheme	Hybrid Secure Cloud Storage data based on improved Encryption Scheme	International	2018	ISBN:978-1-7281-8520-0	Yes	IEEE
27	Krishnaveni B, Sridhar S	Computational Intelligence in Data Science	Role of Distance Measures in Approximate String Matching Algorithms for Face Recognition System	International Conference on Computational Intelligence in Data Science	2018	ISBN: 978-3-030-63466-7	Yes	Springer

28	Kumar, G. Kiran	Advanced Techniques for IoT Applications	Food Calorie Estimation System Using ImageAI with RetinaNet Feature Extraction	International Conference on Emerging Applications of Information Technology	2018	978-981-16-4434-4	Yes	Springer
29	T. Satya Kiranmai	ICCCE 2020	Deep Learning in IVF to Predict the Embryo Infertility from Blastocyst Images	3rd International Conference on Communications and Cyber Physical Engineering (ICCCS 2020)	2018	978-981-15-7961-5	Yes	Springer
30	T. Satya Kiranmai	NA	Instrument Recognition in Polyphonic Music Using Convolutional Recurrent Neural Networks	Proceedings of International Conference on Intelligent Computing, Information and Control Systems	2018	978-981-15-8443-5	Yes	IEEE

31	T. Satya Kiranmai	NA	Cloud-based Internet of things for Smart Water Consumption Monitoring System	International Conference on Communication and Electronics Systems (ICCES)	2018	978-1-7281-5371-1	Yes	IEEE
32	R Govardhan Reddy	NA	A Review on Machine Learning Trends, Application and Challenges in Internet of Things	international conference on advances in computing communications and informatics	2018	978-1-5386-5314-2	Yes	IEEE
33	Mr. K. Prasad Babu	Recovery of Copper by Using Flotation Techniques and microbe- mineral surface interaction"	Recovery of Copper by Using Flotation Techniques and microbe- mineral surface interaction"	International Conference held at BVRIT, Narsapur,	2018	ISBN: 978-81-937041-9-6	Yes	Institute For Engineering Research and Publication
34	N. Alivelu Manga, K. Lakshmanna, A.D. Sarma , N.V. Koteswara Rao and TarunK.Pant	" Effect of Amplitude Scintillations on the Tracking Error of IRNSS Receiver for Indoor Navigation Applications"	IEEE International WIE Conference on Electrical and Computer Engineering (WIECON-ECE)2017	NA	2017	978-1-5386-2621-4	Yes	IEEE

35	Syed Ali Imran Quadri, Mohd Ziauddin Jahangir	"Design, Implementation and Performance Comparison of different Branch Predictors on Pipelined-CPU"	International Conference on Computer, Electrical & Communication Engineering	NA	2017	978-1-5386-1176-0	Yes	IEEE
36	Uttama G., Sarma A.D., Javeed, M.Q. and Koteswara Rao N.V	"Selective Suppression of IRNSS S- band Signals for Specific Applications"	Women in Engineering CONference (WIECON-2017),	NA	2017	978-1-5386-2621-4	Yes	IEEE
37	B.Prabhakar and D.Krishna Reddy	"Video Enhancement Using Contrast Limited Adaptive Histogram Equalization"	Proceedings of International Conference on Latest Trends in Electronics and Communication (ICLTEC) under the Auspices of International Conference on Trends in Information, Management, Engineering and Sciences (ICTIMES) -2017	NA	2017	NA	Yes	NA

38	Bharath R, Subba Rao K, Das KC, Raja Kumarich, Neeharika P	"RLG Dither signal removal using wavelet transforms",	Proc. of the 7th International conference on Advances in computing, Electronics, and Electrical Technology, ICEET 17 help in Kuala Lumpur	NA	2017	978-1-63248-126-9	Yes	IRED
39	Supraja Reddy A	"Investigation of Anomalous Ionospheric Gradient Effects on the Performance of Indian GBAS"	IEEE International Conference on Computing Methodologies and Communication (ICCMC-2017)	NA	2017	978-1-5090-4890-8	Yes	IEEE
40	M. Rajendra Prasad, B. Santosh Pawan Kumar, A Swarnamani, A Lahiri, P. Prathyusha and D. Krishna Reddy	"Investigation on Performance of Distributed Autonomous Sensors on Embedded Platforms"	2017 International Conference on Recent Trends in Electrical, Electronics and Computing Technologies	NA	2017	978-1-5090-6266-9	Yes	IEEE

41	M.Rajendra Prasad, D. Krishna Reddy	"System Level Performance Analysis of Embedded System for GSM Applications"	Proceedings of the International Conference on Nano-electonics, Circuits & CommunicationSystems-2017	NA	2017	978-981-10-2999-8	Yes	Springer
42	M.Rajendra Prasad, D. Krishna Reddy	NA	"Development of System Level Computational Platform for IP-BTS Telecom Application"	IEEE 7th International Advance Computing Conference 2017	2017	978-1-5090-1560-3	Yes	IEEE
43	Dr. N.V. Srinivasulu	Extraction Of Cellulose Nano Fibers And Development Of Nano Cellulose Fiber Composites - A Review,	Extraction Of Cellulose Nano Fibers And Development Of Nano Cellulose Fiber Composites - A Review,	ISME-MM-95	2017	NA	Yes	ISME Conference
44	Sri. A Balaji Rao	Effect of plan shape on the wind pressures on buildings: A CFD Approach	Effect of plan shape on the wind pressures on buildings: A CFD Approach	2nd International Conference on Innovations in Structural Engineering (IC-ISE 2017)	2017	ISSN 2250 – 2459	Yes	IJETAE

45	Dr. K. Jagannadha Rao	NA	Effect of Recycled Aggregate on Fresh and Hardened State Properties of Self-Compacting Concrete	Two Day National Conference on Recent Innovations in Civil Engineering	2017	ISBN: 978-93-5279-269-6	Yes	GRIET
46	Dr. K. Jagannadha Rao	NA	Studies on strength characteristics of Self-curing concrete	Two Day National Conference on Recent Innovations in Civil Engineering	2017	ISBN: 978-93-5279-269-6	Yes	GRIET
47	Ch.V. KrishnaReddy	Object classification using SIFT algorithm and transformation techniques	Object classification using SIFT algorithm and transformation techniques	Computer, Information Security and Cryptology	2017	978-981-13-0617-4	Yes	Cognitive Informatics and Soft Computing
48	N.VasanthaGowri	Probabilistic Analysis of Partial Discharge in Power Transformer due to the Presence of Spherical Particle	Probabilistic Analysis of Partial Discharge in Power Transformer due to the Presence of Spherical Particle	Energy, Communication, Data Analytics and Soft Computing	2017	978-1-5386-1887-5	Yes	IEEE

49	M. Balasubba Reddy	A solution to the Multi-objective Optimization Problem with FACTS devices using NSHCSA including practical constraints	A solution to the Multi-objective Optimization Problem with FACTS devices using NSHCSA including practical constraints	Power, Control, Signals & Instrumentati on Engineering	2017	978-1-5386-0814-2	Yes	IEEE
50	M. BalasubbaRe ddy	Multi-objective OPF Problem Analysis with Practical Constraints in the Presence of FACTS Devices using NSHCSA	Multi-objective OPF Problem Analysis with Practical Constraints in the Presence of FACTS Devices using NSHCSA	Computation al Intelligence Theories, Applications and Future Directions	2017	2215-0986	Yes	Engineering Science and Technology
51	B. Suresh Kumar	Performance of Custom Power Devices for Power Quality Improvement	Performance of Custom Power Devices for Power Quality Improvement	Power, Control, Signals & Instrumentati on Engineering	2017	978-1-5386-0814-2	Yes	IEEE
52	Dr. S.Pradeep, Dr. Sreeram G, M Venkata Krishna Reddy	Online Mail Junk Penetration by using Genetic Algorithm probabilistic weights and word compute	High Performance Computing and Networking	International	2017	ISBN: 978-981-16-9884-2	Yes	Springer

53	Shareef, Sk Khaja, IV Sai Lakshmi Haritha, Y. Lakshmi Prasanna, and G. Kiran Kumar	NA	Deep Learning Based Hand Gesture Translation System	5th International Conference on Trends in Electronics and Informatics (ICOEI)	2017	ISBN: 978-1-6654-1571-2	Yes	IEEE
54	Kumar, G. Kiran	Advanced Techniques for IoT Applications: Proceedings of EAIT	Word Sense Disambiguation System for Information Retrieval in Telugu Language	International	2017	ISBN: 978-981-16-4435-1	Yes	Springer
55	Ms. E. Ramalakshmi	NA	Multi-threading image processing in single-core and multi-core CPU using R language	Proceedings of the 2017 2nd IEEE International Conference on Electrical, Computer and Communication Technologies, ICECCT 2017	2017	978-1-5090-3239-6	Yes	IEEE

Design and Implementation of Low Noise Amplifier (LNA) for IRNSS Receiver

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Abstract—The Low Noise Amplifier (LNA) is the important design in the receiver architectures. Amplification is one of the most basic functions in modern RF and microwave systems. In order to amplify the signal received from the antenna in a RF system, LNA is required. The main function of LNA is to amplify signals without degrading its Signal-to-Noise Ratio (SNR) at extremely low power levels. The front end of any receiver is typically a LNA, whose function is to provide enough gain to overcome the noise of subsequent stages. Aside from providing this gain while adding as little noise as possible, an LNA should receive large signal without distortion and frequently must also prevent specific impedance, such as 50Ω to the input source. As the present LNA's have the Noise Figure greater than 6dB and the consumption of power is more. The following paper illustrates the design of an LNA for Noise Figure $\leq$ 4dB and Forward Gain$\geq$10dB.

Keywords—*LNA, Narrow Band,RF Front End.*

I. INTRODUCTION

Wireless Operations permit services, such as long range communications that are impossible and impractical to implement with wires. The rapid increase of wireless services and other telecom applications has forced the semiconductor industry towards complete system-on-chip solutions. As we know wireless systems comprise of a front-end and a back-end section. The front-end section consists of all the filters, Low Noise Amplifiers (LNA's), down to conversion mixers and processes analog signals in the high Radio Frequency (RF) range while the back-end section processes analog and digital signals in the low frequency range. The band of Radio Frequency (RF) in the electromagnetic spectrum is from 100 KHz to 100 GHz and this band is used for radio communication.

In general, the frequencies less than 1GHz are represented as baseband frequencies while those greater are described as RF. The process of analog signals in RF circuits must be done with a considerable dynamic range of high frequencies. The received RF signal from the antenna contains noise as the signal travels in air which acts as wave guide and this makes the signal weak. So we need to amplify the RF signal for further subsequent stages. Therefore, an amplifier with a high gain and good performance in noise is needed to amplify the signal before it can be fed to other parts of the receiver. Such an amplifier is mentioned as a Low Noise Amplifier (LNA)

and forms an essential component of any RF integrated circuit receiver. The performance of receiver depends on Low noise amplifiers (LNA's) because the signal which is received contains noise which represents the amplifier noise and this noise should be minimized. As the received signal might be very weak due to propagation of signal in air, an LNA is used to amplify the signal and the noise associated with the signal. The total noise performance of the receiver depends on the Gain and Noise Figure of the Low Noise Amplifier (LNA), as can be seen from the Friss formula. As defined by IEEE, L band is from 1 to 2 GHz range of radio spectrum. This frequency band is widely used for Indian Regional Navigation Satellite System (IRNSS) applications.

IRNSS is an independent regional navigation satellite system being developed by India. It is designed to provide accurate position information service to users in India as well as the region extending up to 1500km from its boundary, which is its primary service area. An Extended Service Area lies between primary service area and area enclosed by the rectangle from Latitude 30° South to 50° North, Longitude 30° East to 130° East. IRNSS will provide two types of services, namely, Standard Positioning Service which is an encrypted service provide only to the authorised users such as defence and military.

II. LOW NOISE AMPLIFIER

A. Topology

The primary stage in the RF receiver design is Low Noise Amplifier (LNA). The frequency of operation of an Low Noise Amplifier (LNA) is in RF frequency band, the circuit should be as flexible as possible, especially for the RF path. Otherwise, if the circuit path is too complicated, the noise of the circuit becomes too high. If the noise is too high the Signal to Noise ratio of the system degrades. Therefore, the parasitic effects may distort the amplified signal. In order to prevent these effects, there are several fundamental Low Noise Amplifier (LNA) topologies for single ended narrow band low power low voltage design, such as resistive termination common source, common gate, shunt series feedback common source, inductive degeneration common source, cascode inductor source degeneration. There are techniques in topologies for Low Noise Amplifier (LNA) design.

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Indoor Propagation of IRNSS Signals: Preliminary Results

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Abstract— With latest technologies most of the smart devices are expected to work in all types of environments including indoor scenarios. But, conventional Global Navigation Satellite System (GNSS) receivers when used in indoor environments face difficulty in dealing with the propagating signals, hence channel modeling of signals in indoor is necessary. In this paper, experiments are carried out using IRNSS S1 and L5 signals at three indoor locations to compare their performance with the corresponding outdoor locations only differed by altitude. The experimental environment and effect of signal obstructions are explained using C/No and system specifications. The results would be useful in designing indoor applications of IRNSS.

Keywords— Indoor propagation, IRNSS, S1 Band, L5 Band

I. INTRODUCTION

Indoor positioning systems are becoming more popular because of increasing number of electronic devices and applications relating to telecommunications and Internet-of-Things (IoT). System designers need to understand the effects of various environments on the propagating signals. The statistics of propagation effects keeps on changing with respect to the size, shape and construction materials of the building and operating frequency. Several models are designed and developed for characterizing the signals in indoor scenario [1-2]. Limited work has been done to statistically characterize the propagation effects inside the buildings for signals in the frequency range of 800 MHz to 5.8 GHz with respect to satellite signal applications [3]. Indian Regional Navigation Satellite System (IRNSS) S1 signals are new for satellite applications, thus investigation of IRNSS S1 and L5 band signals in indoor and outdoor environment is interesting. This work investigates the IRNSS S1 band signal behavior and compares with L5 band signal in a particular indoor/outdoor environment. For this, we have performed several experiments in indoor and outdoor scenarios.

II. IRNSS

Indian Regional Navigation Satellite System (IRNSS) is India's own regional independent navigational satellite system. The constellation consists of three Geo Stationary (GEO) and four Geo Synchronous (GSO) satellites. The IRNSS is expected to provide the positional accuracy of 10m over Indian landmass under open sky environments. The satellite navigation system has several applications and the positional accuracy of IRNSS can be further improved by using latest error modelling techniques [4-5]. Under a Memorandum of Understanding (MoU) with Space Application Centre (SAC), Indian Space Research Organization (ISRO), Ahmedabad, IRNSS receiver was installed at CBIT, Hyderabad, (17.39°N, 78.31°E). The receiver data is stored in two different formats, namely, raw data and NMEA data. Raw data is a binary file that can be converted to the two data formats Receiver Independent Exchange (RINEX) and Comma Separated Value (CSV) format. The user can convert the CSV files into different spreadsheet programs. The files contain several parameters including 3D RMS user position (ECEF), satellite position (elevation, azimuthal in degrees) and signal strength (dB-Hz). Minimum operating received Carrier to Noise Power (C/N$_0$) for both S1 and L5 signals is 28 dB-Hz. Signal acquisition sensitivity is -165dBW. Receiver self-error contribution is very nominal and is approximately <0.15m at C/N$_0$ > 42dB-Hz [6]. Frequency tracking range is ±10 KHz.

III. INDOOR PROPAGATION MODELS

For better designing of systems, understanding of the indoor propagation characteristics of a radio wave signal in terms of channel model is required. For indoor applications, several path loss models are available in the open literature. Prominent among them are: Motley and Keenan model [7], Scott model [8], Partition Attenuation Model [9-10] and Log-Distance or Log-Normal shadowing model [12]. Each one of these models has certain benefits and drawbacks. For example, Motley Kenn Model has worked on multifloor environment. Signal strength, transmitting antenna and receiving antenna power levels are important considerations for this model and it is a general model without considering wall attenuations. Similarly, Pechac and Klepal has developed Partition Attenuation model, which is useful for successfully modelling the WLAN systems in 2.4GHz ISM Band. But these systems are highly dependent on average signal strength in a specific location and also on fading statistics.
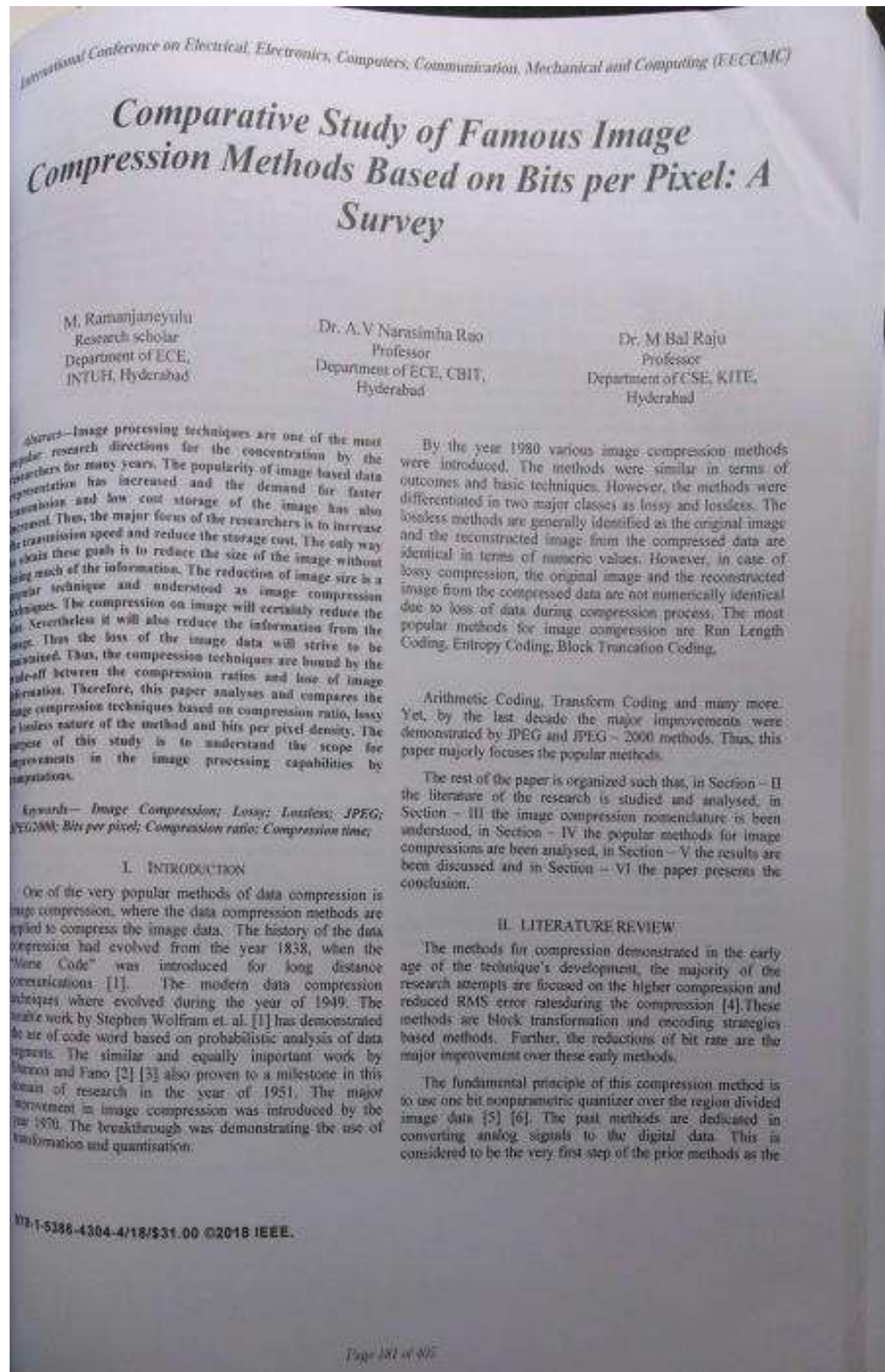
Comparative Study of Famous Image Compression Methods Based on Bits per Pixel: A Survey

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Abstract—Image processing techniques are one of the most popular research directions for the concentration by the researchers for many years. The popularity of image based data representation has increased and the demand for faster transmission and low cost storage of the image has also increased. Thus, the major focus of the researchers is to increase the transmission speed and reduce the storage cost. The only way to attain these goals is to reduce the size of the image without losing much of the information. The reduction of image size is a popular technique and understood as image compression techniques. The compression on image will certainly reduce the size. Nevertheless it will also reduce the information from the image. Thus the loss of the image data will strive to be minimized. Thus, the compression techniques are bound by the trade-off between the compression ratios and loss of image information. Therefore, this paper analyses and compares the image compression techniques based on compression ratio, lossy or lossless nature of the method and bits per pixel density. The purpose of this study is to understand the scope for improvements in the image processing capabilities by computations.

Keywords— *Image Compression; Lossy; Lossless; JPEG; JPEG2000; Bits per pixel; Compression ratio; Compression time;*

I. INTRODUCTION

One of the very popular methods of data compression is image compression, where the data compression methods are applied to compress the image data. The history of the data compression had evolved from the year 1838, when the "Morse Code" was introduced for long distance communications [1]. The modern data compression techniques where evolved during the year of 1949. The notable work by Stephen Wolfram et. al. [1] has demonstrated the use of code word based on probabilistic analysis of data segments. The similar and equally important work by Shannon and Fano [2] [3] also proven to a milestone in this domain of research in the year of 1951. The major improvement in image compression was introduced by the year 1970. The breakthrough was demonstrating the use of transformation and quantisation.

By the year 1980 various image compression methods were introduced. The methods were similar in terms of outcomes and basic techniques. However, the methods were differentiated in two major classes as lossy and lossless. The lossless methods are generally identified as the original image and the reconstructed image from the compressed data are identical in terms of numeric values. However, in case of lossy compression, the original image and the reconstructed image from the compressed data are not numerically identical due to loss of data during compression process. The most popular methods for image compression are Run Length Coding, Entropy Coding, Block Truncation Coding,

Arithmetic Coding, Transform Coding and many more. Yet, by the last decade the major improvements were demonstrated by JPEG and JPEG – 2000 methods. Thus, this paper majorly focuses the popular methods.

The rest of the paper is organized such that, in Section – II the literature of the research is studied and analysed, in Section – III the image compression nomenclature is been understood, in Section – IV the popular methods for image compressions are been analysed, in Section – V the results are been discussed and in Section – VI the paper presents the conclusion.

II. LITERATURE REVIEW

The methods for compression demonstrated in the early age of the technique's development, the majority of the research attempts are focused on the higher compression and reduced RMS error ratesduring the compression [4].These methods are block transformation and encoding strategies based methods. Further, the reductions of bit rate are the major improvement over these early methods.

The fundamental principle of this compression method is to use one bit nonparametric quantizer over the region divided image data [5] [6]. The past methods are dedicated in converting analog signals to the digital data. This is considered to be the very first step of the prior methods as the
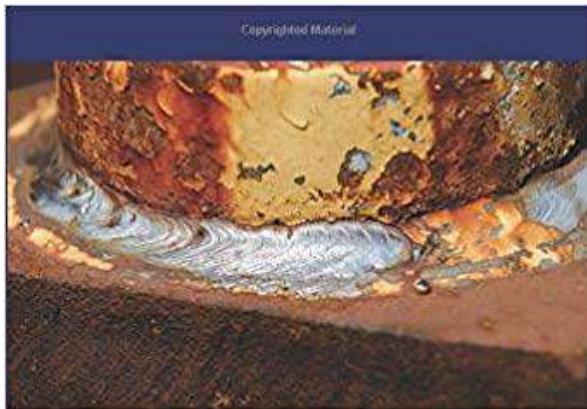
FSW is a joining process that employs a cylindrical shouldered tool with a probe (pin), rotates and plunges into the two consecutive parts of workpieces and furthermore traverses slowly along the joint line to produce weldment. The use of magnesium alloy as the structural material has been generally increasing in automobile, electronics and other industries due to many advantages such as light weight, high specific strength. In this book a detailed description of friction stir welding of Magnesium Alloy AZ31B is discussed. This book explains the how to add the silicon carbide and aluminium oxide as a reinforcement at weld interface to enhance the mechanical properties of welded portion. How to create the geometries for different volume proportions of reinforcement at weld interface is available. This book explains the relation between type of reinforcement, percentage of reinforcement by volume and mechanical properties of welded portion. How to perform the finite element analysis of reinforced and unreinforced friction stir welded joints is included. It gives the clear information of how to enhance the mechanical properties of friction stir welded joints of Magnesium Alloy AZ31B.

Md. Aleem Pasha

Friction Stir Welding of Magnesium Alloy AZ31B

I have completed my B.Tech in Mechanical Engineering in 2004 from JNTUH. I have done my Masters in Mechanical Engineering with specialization of CAD/CAM in 2010 and Ph.D in Mechanical Engineering on friction stir welding of Aluminium and Magnesium Alloys from Osmania University in 2017. Present I am working as Assistant professor at CBIT, Hyderabad

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Friction Welding of Brass and statistical Modelling

FRICTION WELDING is widely used for welding of similar and dissimilar materials. This book emphasizes on Industrial use of non ferrous materials as they are significant in the different engineering applications. Brass joints are inevitable for certain applications due to unique performances such as higher electric conductivity, heat conductivity, corrosion resistance and high strength but Joining of brass with friction welding is very difficult because it has low coefficient of friction. A detailed description of friction welding brass specimens is discussed. This book explains the effect of process parameters of friction welding on mechanical properties of welded portion. Design of experiments using taguchi technique is elaborately discussed and the usage of minitab software for statistical analysis and optimization is explained.

Md. Aleem Pasha

Friction Welding of Brass and Statistical Modelling

I have completed my B.Tech in Mechanical Engineering in 2004 from JNTUH. I have done my masters in Mechanical Engineering with specialization of CAD/CAM in 2010 and Ph.D in Mechanical Engineering on friction stir welding of Aluminium and Magnesium alloys from Osmania University in 2017. Present working as Assistant professor at CBIT, Hyderabad.

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Reinforced and Unreinforced Friction stir welding of Aluminium Alloy 6061

Md. Aleem Pasha

Reinforced and Unreinforced Friction stir welding of AA6061

Reinforced and Unreinforced Friction stir welding of AA6061

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This book presents the enhancement of mechanical properties of friction stir welded portion of Aluminium alloy 6061 by incorporating additional reinforcing particulates of silicon carbide and aluminium oxide at weld interface. Silicon carbide and aluminium oxide has been added as reinforcement by creating separate geometry, at the edges, where the welding is interface with four different volume proportions such as 10%, 15%, 25% and 30%. Tool steel of H13 grade is used as friction stir welding tool. Quality assessment is carried out by visual inspection and non-destructive testing using florescent and radiography to reveal the surface and volumetric defects. Mechanical testing including tensile test, impact test, bend test and hardness test were conducted to study the behavior of reinforced and un-reinforced friction stir welded joints. Metallurgical evaluation has been performed by capturing the microstructures of base materials and at different zones of nugget, heat affected zone (HAZ) by optical microscope to reveal the grain size and grain refinement at different zones.Finite element analysis has been carried out by ANSYS software to know the temperature distribution.

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SiC and Al2O3 Reinforced Friction Stir welded joint of Aluminium Alloy 6061

Strengthening and Joining by Plastic Deformation pp 163–182

SiC and Al$_2$O$_3$ Reinforced Friction Stir Welded Joint of Aluminium Alloy 6061

Md. Aleem Pasha ✉, P. Ravinder Reddy, P. Laxminarayana &
Ishtiaq Ahmed Khan

Abstract

This research presents the enhancement of mechanical properties of friction stir welded portion of aluminium alloy 6061 by incorporating additional reinforcing particulates of silicon carbide and aluminium oxide at weld interface. Friction stir welding (FSW) of AA6061, each plate of 200 mm × 100 mm × 4 mm thickness with silicon carbide and aluminium oxide as reinforcement at weld interface in four different volume proportions and without reinforcement are performed on vertical milling machine. In the present research, comparison has

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Experimental investigation on utilization of RCA in low, medium and high strength self-compacting concrete

Experimental investigation on Utilization of RCA in Low, Medium and High Strength Self Compacting Concrete

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Abstract. Self Compacting Concrete (SCC), owing to its advantages, is now a buzz word in the present construction industry. The application of recycled aggregates in concrete mixes is widely investigated. The present investigation focuses on the use of RCA in SCC. The variables of study include grade of concrete (Normal, standard grade and high strength), RCA content (0 to 100%) and age of concrete (7 and 28 days). The parameters of investigation are fresh and hardened state properties, viz. compressive, split tensile and flexural strengths. The mix design was carried out based on modified Nan Su method. The fresh state properties were satisfied for all RCA contents in all the three grades of concretes tested. The test results were encouraging and the target mean strength could be attained in M30 concrete even with 50% RCA as replacement of natural aggregate. However, a reduction in strength was observed as the grade of concrete increased. Optimum RCA content was arrived at based on the strength for different grades of concretes tested.

1. Introduction

The experimental investigations on the recycling of Construction and Demolition Wastes have long been accepted to have the possibility to conserve natural resources and to decrease energy used in production. In some nations it is a standard substitute for both construction and maintenance, particularly where there is a scarcity of construction aggregate. Researches on Construction and Demolished Waste (CDW) reveal that the behaviour of structural concrete with recycled aggregate is comparable to that of the concrete with conventional natural aggregate Manzi et al. [1,2] (2013) The use of such materials solves the disposal problem, apart from reducing the cost of construction materials.

The Indian construction industry today is amongst the five largest in the world and the supply of natural aggregate has also emerged as a problem in some of the metropolis in India. The requirement of natural aggregates is not only required to fulfil the demand for the upcoming future projects in India but also the needs of extensive repairs or replacements required for the existing infrastructure. The future of construction industry sector seems to be in dark with the likely shortage of natural resources as seen today. Several market constraints and technical challenges exist when developing markets for new products. Notable among these barriers is consumer uncertainty about the quality and consistency of products due to the lack of practical performance and engineering data on recycled materials A.R.Khaloo. et al. [3-5] (1996). Such data is necessary to assist with the development of appropriate design codes to guide product specification and performance information on recycled materials.

Bond Strength of HYSD Bars and SCC with and without Recycled Aggregate-An Experimental Study

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Abstract. Self Compacting Concrete (SCC) has become inevitable in the current scenario of construction of large and complex structures with heavy reinforcement and complicated shapes. Using normal concrete in such situation may often result in inadequate compaction, affecting performance and long-term durability of structures. In addition, the use of Recycled Concrete Aggregate (RCA) is gaining importance throughout the globe due to the depleting sources of natural aggregate and disposal problem of demolished waste. There is a little work done on the behaviour of SCC with RCA. Therefore, a comprehensive experimental investigation on bond strength and modes of failure of Self Compacting Concrete (SCC) with and without Recycled Concrete Aggregate (RCA) was carried out and the results are presented. The variables studied include grade of concrete (M20, M40 and M60), Percentage of RCA (0% to 100%), diameter of bar (10, 12 and 16) and percentage embedment length. All specimens were tested by conducting pull out test on UTM after 28 days of curing. The bond strength was found to vary with the increase in diameter and the failure mode was observed to change from rod pull out to splitting or rod fracture with increase in percentage of embedment length. The experimental results were compared with the theoretical bond strengths using the authors' formula and the formulae suggested by earlier researchers.

1. Introduction

The concept of sustainability is widely used in the construction industry due to the concern about the future of the planet as this industry consumes huge quantities of natural resources. There has been considerable research carried out on the use of recycled aggregates in concrete over the past 20 years, and this has grown extensively over the past five years as industry and Government have recognised the need for greater sustainability in construction. Research has shown that coarse recycled aggregates can be used in concrete up to a compressive strength of 80 MPa although there is a loss in strength when recycled aggregates are used as a direct replacement of natural aggregate. However, most researchers report that a certain proportion of coarse recycled aggregates (usually in the range 20-30% by mass of coarse aggregate) can be added as partial replacement to natural aggregate without affecting performance. The reason for the loss in strength is usually associated with the weaker interfacial transition zone between aggregate and mortar, due to recycled aggregates having a coat of weak mortar already attached which raises the porosity of the concrete. In general, the flexural strength and modulus of elasticity of recycled aggregate concrete have been reported to be proportional to the loss of compressive strength.

Study on Mechanical Properties of Recycled Coarse Aggregate Concrete with Stone Dust

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Abstract - In the recent times, usage of recycled coarse aggregate (RCA) as replacement of natural aggregate in concrete is gaining popularity all over the world. In the process of preservation of the environment and sustainable development, recycled coarse aggregate (RCA) is playing a major role in the construction industry. RCA is obtained by crushing the construction rubble obtained from demolished structures. Many countries are giving many infrastructural laws relaxation for increasing the use of recycled aggregates. River sand is most commonly used fine aggregate in the production of concrete. Using river sand in large quantities poses the problem of acute shortage in many areas. In this regard, stone dust can be an economic alternative to the river sand. In the present study mechanical properties of the recycled coarse aggregate concrete with stone dust are compared with that of conventional concrete made of natural aggregates and river sand. M20 and M30 grades of concrete are designed as per IS 10262-2009 and IS 456-2000. Tests were conducted on cubes, cylinders and prisms to study the strength of concrete made of stone dust and recycled aggregate. Recycled coarse aggregate (RCA) used in this work is obtained from crushing old tested concrete cubes to replace the natural coarse aggregates (NCA) in different proportions. Experiments were conducted using 0%, 30%, 60%, 90% replacement of natural coarse aggregate with recycled coarse aggregate and 0%, 50%, 100% replacement of fine aggregate with stone dust. Concrete specimens were tested after 7 and 28 days of curing. Results shows that the concrete with 100% stone dust and upto 60% recycled coarse aggregate qualifies as a substitution of conventional concrete

KeyWords: Recycled aggregate, stone dust, compressive strength, split tensile strength and flexural strength.

I.   INTRODUCTION

In the world of construction, concrete, like other materials is playing an important role in development. Concrete is a composite material which is a mixture of cement, fine aggregate, coarse aggregate and water. The major constituents of which is natural aggregate such as gravel, sand, alternatively, aggregates such recycled aggregate, manufactured sand furnace slag, fly ash, expanded clay, broken bricks and stone dust may be used where appropriate. It has many advantages including low cost, general availability of raw material, adaptability, low energy requirement and utilization under different environmental conditions. It is most common practice in all over the world that most of the materials are being recycled to save the natural resources and environment. Concrete is such a costly material but waste concrete is only being used as a landfill material instead of recycling the concrete as a recycled concrete aggregate (RCA) to use for the construction purposes. There is need to improve its properties like workability, strength and durability. The research has been executed in order to utilize smaller quantities of fine aggregate and coarse aggregate, also to conserve our natural resources and reduce the cost of construction. The goal of sustainable construction is to reduce the environmental impact.

II.   LITERATURE REVIEW

Mamery Serifou, et al., (2013) It is observed that the compressive strength decreases gradually with increase of the percentage of recycled aggregates. This relationship can be approximated by a polynomial function with $R2=0.92$. The substitution of natural aggregates with 25%, 50%, and 100% of recycled aggregates decreases the compressive strength by about 15%, 25%, and 32%, respectively. The decrease in tensile strength is by 18% when 100% of the recycled aggregates are incorporated.

Seismic Response Study of Multi-Storied Reinforced Concrete Building with Fluid Viscous Dampers

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Abstract-Damping plays an important role in design of earthquake resistant structures. It reduces the response of the structure when they are subjected to lateral loads. There are many different types of dampers in use. In the present study Fluid Viscous Dampers (FVD) are used to evaluate the response of RC buildings. One of the important properties of structure is to receive the effect of lateral loads and transfer it to the foundation. Since the lateral loads acting on a structure due to earthquake are dynamic in nature, they cause vibrations in it. In order to handle these vibrations, fluid viscous dampers are used in the design of earthquake resistant structures. In this study, structures of square and rectangular shaped floor plan with columns of square and rectangular shaped cross-sections are analyzed. ETABS 2015 software is used for finding the response of the structures with and without FVD by performing push over and time history analyses. It is observed that the performance of the structures with square columns is better in terms of response when compared to the structures with rectangular columns irrespective of the shape of floor plan. In Time History analysis, up to 90% decrease in the time period is observed when FVD's are used. FVD-250 reduced the base shear of the structures by 70%. Displacements of top storey are minimized by 90% with the use of FVD's. Hence FVD's can be used in RC multistoried structures to reduce the response effectively.

Keywords: Earthquake resistant structures, Fluid Viscous dampers (FVD), ETABS, push over analysis and time history analysis.

I. INTRODUCTION

The viscous fluid dampers (VFD) are used to control response of the structures. They are used based on different construction technologies in order to decrease the structural response due to the seismic excitation. The devastative effects of the recent earthquakes such as Northridge earthquake (1994), Kobe earthquake (1995), and Taiwan earthquake (1999) on the buildings of cities adjacent to fault and with regard to the close location of many of the cities of India to the active faults indicate the significance of the research.

In last few years, many essential developments in seismic codes have turned up. Seismic isolation and energy dissipation are widely recognized as effective protection techniques for reaching the performance objectives of modern codes. However, many codes include design specifications for seismically isolated buildings, while there is still need of improved rules for energy dissipation protective systems. [1]

II. LITERATURE

Y. Zhou, et al.,2012 [2] "A practical design method for reinforced concrete structures with viscous dampers" shown how compared to the retrofitting technology of seismic isolation, the installation of viscous dampers to those existing buildings are more realistic because of easy construction. However, the design of viscous dampers, which provides a high level of damping in a structure, was relatively new application in China for a well-established and proven technology in other seismically active regions in the world.

V. Umachagi, et al.,2013, [3] "Applications of dampers for vibration control of structures: An overview" has briefly explained that viscous dampers works based on fluid flow through orifices. Viscous damper consists viscous wall, piston with a number of small orifices, cover filled with silicon or some liquid material like oil, through which the fluid pass from one side of the piston to the other.

Liya Mathew & C. Prabha, 2014, [4] published "Effect of fluid viscous dampers in multi-storied buildings" in which they mentioned that special protective systems have been developed to enhance safety and reduce

Power Quality Improvement using Custom Power Devices (AVC, DVR, APC)

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Abstract—Power Quality exertion has happen to more complex at all stages of power system. Nowadays a new concept of custom power is used for customer's satisfaction. This paper presents a wide-ranging survey of custom power devises in order to get better quality of power. Custom power devices (CPDs) with DVR, AVC and APC be replicated on the customized IEEE 16 bus radial division scheme by Matlab to examine efficiency of every device in a variety of PQ disorders together with voltage sags, harmonic distortions and voltage disturbance. Results of this work show that the application of every apparatus to recompense dissimilar PQ disorders depend on the device's features.

Keywords— Active voltage conditioner, Dynamic voltage restorer, Active power Conditioner, Custom power devices, Power quality, Power quality disturbance.

I.INTRODUCTION

As per consistency deliberation in power system generation unit must spawn acceptable quantity of power, transmission unit should provide highest power to each consumer's location form immensity power systems. Distribution system is situated at the end of consumer. The reason for this is fall down in the electric distribution network accounts for about 91% of the average consumer's intrusion. Earlier, power system consistency decisive on generation and transmission. But today, distribution system is receiving more attention as dependability is anxious. Power quality issues are achieving a chief anxiety due to the augment in number of responsive loads. Also the wide-ranging service of information technology equipment, adjustable speed drives (ASD), arc furnaces, electronic fluorescent lamp ballasts and programmable logic controllers (PLC) have entirely altered the exciting masses scenery. These masses are the foremost sufferers of power quality trouble. the non-linearity of these loads cause disturbances in the voltage waveform. The utility will likely to deliver a low deformation unbiased voltage to its consumers, particularly those with responsive loads. For the enhancement of reliability and power quality of system, the custom power devices are introduced into the power system. DVR, AVR, APC etc. are some of the major devices used for the improvement of voltage sag and swells. With the help of these FACTS devices[12], we are competent of decrease the trouble related to power quality.

This document presents a swot on the most popular CPDs[1] counting AVC, DVR, APC under unlike PQ conflict. every tool is modelled on the adapted IEEE 16-bus [2] radial circulation scheme using Matlab. Numerous PQ issues are generated for investigation and compared.

II.POWER QUALITY DISTURBANCES

Electricity consumers face power quality problem at all stages of usage. Actually, Power quality[3] defines the assets of power supply distributed to the user in standard working conditions. New electronic equipments and devices are more prone to power quality problems[10,11]. Reduced PQ has become a major problem for both power suppliers and customers. Poor PQ means there is enough variation in the power supply to affect equipments and may lead to their mis-operation or failure. It is unfeasible to entirely manage conflict on the delivery scheme but labours and hoard are made by utilities to avoid interruption. standard operation for instance switching loads and capacitors or faults and opening of circuit breakers to apparent faults mainly cause disturbances. significant PQ issues those need realistic solutions are explained below:

A. Voltage Sag or Dip

Voltage sag Fig.1 is defined as a drop in the regular voltage stage linking 10 and 90% of the supposed rms voltage at the power incidence, for durations of 0. 5 cycle to 1 minute. It is clear from Fig:1 that voltage sag reduces the scale of voltage. association of heavy loads, activate of huge motors and faults in consumer's installation are the main reasons for voltage sag. initial of bulky induction motors can result in voltage dip as the motor draw a current up to 11 times the full load current throughout the starting. The Consequences of voltage sag are separation and loss of competence in electric revolving equipment, tripping of electro-magnetic relays and break down of in sequence knowledge apparatus namely micro-processor based control systems.

1

Multi objective optimal power flow with generalised interline power flow controller using NSHCSA

Multi-Objective Optimal Power Flow with Generalized Interline Power Flow Controller using NSHCSA

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Abstract— A novel power injection model based on voltage sources for the latest multi-line controller namely, Generalized Interline Power Flow Controller (GIPFC) is proposed. The complete modeling is performed in two stages, one is for series voltage sources and the other is for shunt voltage source. In this modeling the switching losses of the converters are considered. The most commonly used power system objectives namely generation fuel cost along with device investment cost of IPFC and GIPFC, emission and total transmission power losses are optimized individually and as well as simultaneously while satisfying equality, in-equality, device constraints and practical constraints. For this, a new evolutionary algorithm by combining Genetic Algorithm (GA) along with Cuckoo Search Algorithm (CSA) is implemented as Hybrid Cuckoo Search Algorithm (HCSA) to improve the convergence characteristics of the single objective optimization problem and along with this a Non-dominated Sorting Hybrid Cuckoo Search Algorithm (NSHCSA) is proposed for multi objective optimal power flow problem. The proposed methodology is tested in standard IEEE-30 bus system with supporting numerical results.

Keywords— *Generalized Interline Power Flow Controller; Power Injection Model; Ramp-rate limits; Prohibited Operating Zones; Non-dominated Sorting.*

I. INTRODUCTION

Latest development in FACTS technologies, two or more series and shunt converter combination devices are used to form the hybrid FACTS device. In [1] the basic topology and working principle of Generalized Interline Power Flow Controller (GIPFC) are discussed. GIPFC model is developed by using d-q coordinates for controlling the direct and quadrature components of the ideal source converters in [2]. In this [3], a newly surfaced nature-inspired optimization technique called moth-flame optimization (MFO) algorithm is utilized to address the optimal reactive power dispatch (ORPD) probl...

other objective is compromised Optimal Power Flow (MO-OPF) problem has been formulated in [5] paper. Swarm Intelligence methods, such as Particle Swarm Optimization (PSO) and Glowworm Swarm Optimization (GSO) have been used to solve the OPF problem with generation cost and emission minimizations as objective functions.

Further, on observation it is revealed that the power injection model (PIM) of FACTS devices is a powerful model than other models [6, 7]. A steady state control of power system parameters with current and voltage operating constraints has been presented by X.P.Zhang [8] in which it uses a multi control functional model of SSSC.

Mathematical models of generalized unified power flow controller (GUPFC), IPFC and their implementation in Newton power flow are described by X.P.Zhang [9] to demonstrate the performance of GUPFC and IPFC.

S. Teerathana et al. [10] proposed OPF method with IPFC to solve load flow problem and the power and the power generation with the minimum cost. An injection model for congestion management and total active power loss minimization in electric power system was developed Jun Zhang and Akihiko Yokoyama [11]. Suman Bhowmick et al. [12] have given an indirect unified power flow controller model to enhance reusability of Newton power flow codes. A current based model of static synchronous series compensator (SSSC) and interline power flow controller (IPFC) has developed by Vinkovic A and Mihalic R [13, 14].

In this paper presents the power injection model of GIPFC. To prove the effectiveness of the device, considered objectives are optimized individually and simultaneously by satisfying the equality, inequality, device and practical constraints. In this a novel optimization technique hybrid cuckoo search algorithm is proposed by combining basic cuckoo search algorithm with GA based crossover operation. Same

Simulation and Analysis of Single Phase Full Bridge Diode Rectifier with Different Passive Power Factor Correction Techniques

Simulation and Analysis of Single Phase Full Bridge Diode Rectifier with Different Passive Power Factor Correction Techniques

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Abstract— It is needless to say that many industrial applications invariably demand DC power supply. As AC power is abundantly available it is economical to convert it into DC and to used for industrial loads. Converter circuitary being fabricated with solid state components, the supply gets distorted with the harmonics injected. This problem can be overcome by placing proper passive filters in the input side which is evident from simulation analysis carried out in this paper by using different techniques The entire analysis is carried out in MATLAB/SIMULINK environment.

Keywords—single phase diode bridge rectifier, capacitive filter, passive power factor correction technique,THD

I. INTRODUCTION

For control of electric power it is required to convert power from one form to other form. As AC power more cheaper than DC power, so available AC power is converted to DC by using rectifiers. These rectifiers are part of many industrial applications. At low power levels, the application is in the area of computers, air-conditioning etc. At high power levels the application is in AC to DC drives. The output obtained from these drivers are given as input to inverters. Traditionally single phase AC-DC converters are developed by using diodes and thyristors to provide controlled and uncontrolled, unidirectional and bidirectional DC power. These rectifiers suffer from problems such as poor power quality in terms of current harmonics, voltage distortions, poor power factor, low efficiency at input ac mains. Various filters are used at input side and output side to reduce the ripple content in DC output, to improve efficiency, to reduce harmonics in Line current[1]

In this paper a Single-phase full bridge diode rectifier with capacitive filter and its drawbacks are analysed and techniques used to overcome the problems of capacitive filter are studied and simulated in MATLAB/SIMULINK.

II. CONVENTIONAL 1-Φ FULL BRIDGE DIODE RECTIFIER

Single phase diode rectifier with R-Load is shown in Fig-1. It consists of 4 diodes D1, D2,D3,D4. During positive half cycle of supply voltage the diodes D1, D2 conducts and during negative half cycle the diodes D3,D4 conducts and it's voltage and current waveforms are shown in Fig-2. It is observed from waveforms for both positive and negative cycles current flows through load is unidirectional. The ripple frequency is twice the supply frequency. The Peak Inverse Voltage(PIV) of the diode is V_m The output voltage of Rectifier contains rippled i.e it contains both AC and DC components. These AC componenets are undesirable due to which efficiency reduces. So inorder to minimize ripple content filters are used, which leaves DC component to appear at output. Some important filters are capacitor, inductor, combination of capacitor and inductor. In most of industrial applications single phase diode rectifier with capacitive filter is used at input stage as it is cost effective solution and highly reliable in low power ranges[2]

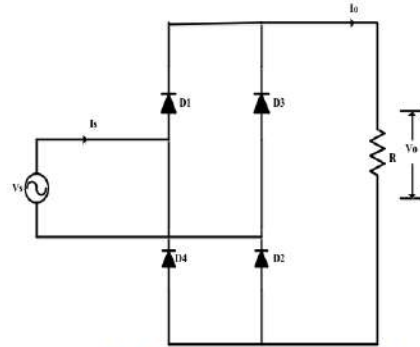The average output voltage $V_o = \dfrac{2 \times V_m}{\pi}$ (Volts)
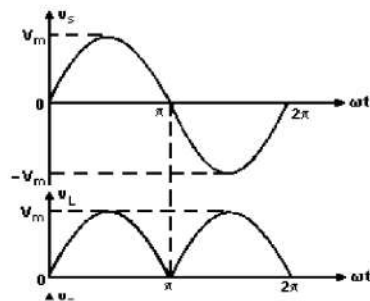

Fig-: 1-Φ Full bridge diode rectifier without filter

Fig-2 waveforms for rectifier without filter

III. SINGLE PHASE FULL BRIDGE DIODE RECTIFIER WITH CAPACITIVE FILTER

The rectifier without filter produces ripples due to which efficiency and power factor are low. So inorder to reduce ripples in the output, some of the energy is stored in capacitor and is allowed to discharges during pulses. Fig-3 shows the single phase full bridge diode rectifier with capacitve filter.. It is observed from Fig-3 a large capacitor is placed directly across the load terminals. The pulsating voltage from the rectifie without filter as shown in Fig 2 is applied to this capacitor. As we know that capacitor will

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Modeling and simulation of dual Redundant power inverter stage to BLDCM for MEA Application

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Innovations in Electronics and Communication Engineering pp 167–174

Modeling and Simulation of Dual Redundant Power Inverter Stage to BLDCM for MEA Application

B. Suresh Kumar, B. V. Ravi Kumar & K. Sindhu Priya ✉

Abstract

The increasing demand for electrification functions on control surfaces of aircraft leads to a new concept of new advancement "more electric aircraft (MEA)". In the aviation industry, an electromechanical actuator (EMA) is used to maintain the orientation of aircraft, landing gears, and braking systems. As the electrical components such as inverter and BLDC motor are key components in EMA, the designing of these components became a critical issue. To enhance the reliability in actuation system in aircraft, this paper proposes dual redundant power inverter system to

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A New Technique for Designing Restoration Based Reliable WAMS Structure

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Abstract— Wide-Area Measurement System (WAMS) plays a significant role in recovering the historical data for power system post-mortem analysis. For this purpose, the paper presents a new methodology for partitioning a WAM network into number of WAMS regions. It enables restoration process easier. Later, it also suggests a reliable placement of Phasor Data Concentrators (PDCs). For this, transformer equivalent bus constraint, generation-load balance and observability constraints are considered. An IEEE-30 bus system is used for demonstrating the proposed scheme.

Keywords— *Power system Restoration, PMU, Reliability, PDC, WAMS.*

Nomenclature:
S_p: observability function for bus p, $S_p > 1$.
c_{pq} : Binary connectivity parameter.
r: the total number of regions.
n_r: the number of buses in each island,
P_{Gi}: The maximum generation at i^{th} bus
P_{Li}: the load at i^{th} bus
A_p : system connectivity matrix of pth region.
x_p: PMU placement vector of pth region
k :number of buses in p^{th} island.
A: system connectivity matrix.

INTRODUCTION

In general, power system is highly prone to interruptions in power supply even though many attempts were made to reduce the chances for the occurrence of failures. Sometimes, the power to a complete network will be lost and causes complete outage of network elements like generators, transformers and loads. This phenomenon is called Blackout, which is the most dangerous outage than any normal outage [1]. So, the power system elements need to be restored after blackout. The Build-up strategy achieves this restoration. This power system restoration should be effective as the latency in restoration leads damage to loads, and incurs economic and political costs. The build-up strategy proposed in [2] is followed in this work as it interconnects the islands after being restored separately.

The planning and importance of Build-up strategy are clearly explained in [2-5], but they failed in introducing ideas to sectionalize a network into separate islands. Reference [6] has suggested a method for sectionalizing the power system into islands but as it doesn't consider Generation-Load constraint during initial partitioning, it was failed in producing stable islands in initial partitioning and more number of islands for larger systems. The proposed technique has partitioned without disturbing the observability of every bus in every island.

A model based algorithm for partitioning the WAMS into different regions is proposed in this paper. Unlike [6], it considers generation-load constraint initially, and applies the observability constraint in the final stage of partitioning. Interestingly, this will improve the stability and the number of all the feasible islands. Hence, by separating the faulty islands, it protects the power system from the most dangerous events such as blackouts. Later, it suggests a new placement technique for placing Phasor Data Concentrators (PDCs). The proposed methodology is explained with the help of an IEEE-30 system.

This paper is organized as follows: the optimal PMU placement for the completed network is presented in section I. Section II discusses the constraints of restoration. Sections III and IV describe network partition and final modification. PDC placement is presented in section VI. Section VII concludes the paper.

I. OPTIMAL PMU PLACEMENT

The PMU uses Kirchhoff's laws to calculate different electrical quantities of all the buses connected to the bus where it is located. This section identifies the number of PMUs required for observing the system completely. Initially, the optimization problem was introduced in [7]. After, many heuristic method based approaches were presented to solve the optimization problem.

The proposed Optimal PMU Placement problem uses Binary Cuckoo Search (BCS) method for identifying the minimal PMU locations for complete observability. The locations of PMUs obtained using BCS are listed in Table 1. The problem can be formulated as:

Minimize

$$\sum_{q=N} x_q \qquad (1)$$

Subjected to $\quad s_p(X) \geq 1, \quad \forall p \in N \qquad (2)$

Where $\quad s_p = \sum_{q=N} c_{pq} x_q , \quad \forall p \in N \qquad (3)$

1

Modeling, analysis and simulation of two level, three level voltage source converter for HVDC system

Modeling, Analysis and Simulation of Two-level and Three-level Voltage Source Converter for HVDC System

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Abstract—With the development of power electronics technologies, control techniques and equipment, a new generation of HVDC technology based on Voltage Source Converters (VSC-HVDC) has evolved and becoming popular for power transmission under the sea and with underground cable. VSC-HVDC converters consist of Insulated Gate Bipolar Transistors (IGBT'S) switches, these IGBT switching devices work with high frequency Pulse Width Modulation (PWM) to get high-speed control of both active and reactive power and to create the desired output voltage waveform. This paper presents modeling, current control scheme and results of simulation studies on two–level and diode clamped three level inverter based VSC-HVDC system. Comparison of %THD for two-level and three-level VSC-HVDC system is also presented at the end.

Index Terms—VSC-HVDC, Two-level, Three-level,

I. INTRODUCTION

High Voltage Direct Current (HVDC) technology is an efficient and flexible method to transmit power compared to conventional AC transmission [1]. HVDC uses power electronics technology with high voltage and power ratings. HVDC usage instead of High Voltage Alternating Current (HVAC) for high power transmission is advantageous [6] for long distance power transmissions, long submarine power crossing, bulk power delivery with low line cost and losses [4]. HVDC offers an economical and reliable technique for asynchronous interconnections [1] between AC networks, renewable resources integration, fast and dynamic power flow control, and power system stability improvement [5]. As a result of using VSC technology and PWM, the VSC-HVDC has a number of potential features compared with classic HVDC [2].

The features allow VSC-HVDC converters to be suitable for a large range of applications related to power flow flexibility, fast response and recovery after the disturbances being cleared. As a result of these merits VSC-HVDC has been an area of growing interest, and it is also expected that VSC-HVDC will play an important role in future power systems. Hence, modeling, simulation and control aspects are essential for power system studies and interactions.

II. VSC-HVDC

HVDC system based on VSC shown in Fig.1 normally uses the six-pulse connection. This converter produces lesser harmonics compared to LCC 12 -pulse converter that in turn reduces the circuit complexity. By this, the construction of the converter transformer is becoming simple [3].
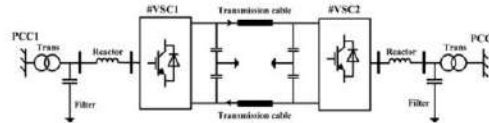
Fig. 1. VSC-HVDC system

A. Control strategy

In case of VSC-HVDC transmission systems, the transfer of power is controlled in the same approach as in the case of a classic HVDC transmission. The rectifier side controls the DC voltage, while the inverter side controls the active and reactive power [8]. With classic HVDC the reactive power cannot be controlled separately as of as the active power. VSC-HVDC makes it achievable to control the reactive and active powers independently. The reactive power flow can be controlled autonomously in each converter by the AC voltage that is requested set manually without changing the DC voltage. Thus, the active power flow, the reactive power flow and the DC voltage can be controlled using VSC-HVDC.

B. Current controller scheme

Current control scheme is the most popular control method used for VSC-based HVDC. The basic principle of the current controlled VSC method is to control instantaneous active and reactive powers independently [8]. The current control technique is shown in Fig. 2.

By employing synchronously rotating dq reference frame in current control scheme, the active and reactive powers are controlled independently. PLL is used to synchronize the turning on or off the power devices, calculate and control the flow of active power or reactive power by

Efficient Classification of Diabetic Retinopathy using Binary CNN

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Abstract— Diabetic Retinopathy (DR) is a fastly spreading disease that may lead to loss of vision if not quickly detected and treated. Early-stage detection is beneficial to restrict the progress of disease and reduces the recovery expenditure. The current detection process of DR heavily depends on domain experts. Machine-dependent approaches are gain attention with large-scale fundus image repositories to overcome this difficulty. Recent techniques with deep learning are successful in getting noticeable results with pre-trained networks. However, the increase of memory occupancy and runtime with existing models is the bottleneck. We propose Binary Convolutional Neural Networks (BCNN), which drastically reduces memory consumption and faster the execution process to combat this problem. Our model is hardware friendly and efficient in DR classification with large scale fundus images. Experiments conducted using the Kaggle dataset reduce memory consumption by 37% and increase runtime by 49% compared to the base model.

Keywords—Binary CNN, Deep Learning, Diabetic Retinopathy, Kaggle

I. INTRODUCTION

Diabetic retinopathy is the result of long-term diabetes that affects the eyes and causes blindness. DR usually introduces the blood vessels into the larynx (that is, the retina), which is the main reason of vision loss nowadays [1]. While the current results may be positive, it will take time and confidence in a trained employee's knowledge. Existing DR identification solutions are time-consuming and rely on trained professional experience. Several efforts have been made in recent years to develop automated solutions for DR detection to address this issue. In the early stages, various learning and traditional mechanical methods are use to test for DR. Most of the solutions described have two components: feature extraction and detection algorithm [2]. These features components depend on the parameters of the activation tools used, such as displaying objects, lighting, objects, sound, external attention, and sensitivity to background images' quality. These feature-based methods use to execute a particular project. The color fundus photography is more complicated than traditional images. The main images are reduced in the background and are often based on discrimination between sound and objects [3].

Diabetes Mellitus Edema (DME) is a DR-related complication that occurs at any stage of DR, usually due to fluid retention or vascular edema of the macula [4]. Structures such as microvascular, hemorrhage, heavy ejaculation, and low bowel movements are near related to DR. Each of these abnormalities indicates levels of DR in the patient. The severity of DME depends on the shortening of the main enzymes in the macula. The main reason for using a learning tool is to load the processing algorithm directly. This method works well, but it can also cause some problems. With a lot of knowledge and tools, everyone has helped to improve the DR recognition tool. However, high blood sugar levels, in the long run, destroy blood fats and nerves, causing complications such as cardiovascular disease and blindness. Early detection and treatment of DR hindered its development as progression. Automated Retinal Image Analysis Systems (ARIA) systems today are not sophisticated enough for DR classification with different stages [5]. This identification of a subtle change between classes is a daunting task for the retinal imaging technique. The diagnosis of DR depends heavily on observations and evaluation to photograph procedures that may take time, even for experienced professionals. Therefore, computer-aided automated diagnostic methods have great potential for accurate detection of DR in the clinic quickly, which can help improve the screening frequency of DR and reduce blindness [6].

Deep learning approaches have recently played an essential role in recognizing DR with Convolutional Neural Networks (CNNs) [4, 7]. The concepts of existing DR methods can be dividing into three main categories. (1) Machine learning-based approaches: Knowledge-based jobs are channel into distributor training, then distributors select candidates and further determine whether the candidate's position is damaged or not. (2) Machine learning with Deep learning approaches: These methods use deep learning to create jobs and are commonly used in machine learning. (3) Pure Deep learning approaches: With large amounts of tagged data, the pre-prepared network type can automatically display the original images with end-to-end training [7].

II. RELATED WORK

The research carried on classifying DR using Pretrained models and customized models described in this chapter. Some of the crucial contributions relevant to the quantized features and model optimizations are discussed below.

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ICT Analysis and Applications pp 411–421

Feature Selection Optimization Using a Hybrid Genetic Algorithm

E. Padmalatha ✉, S. Sailekhya, Saif Ali Athyaab & J. Harsh Raj

Abstract

The curse of dimensionality plays a vital role in data mining and pattern recognition applications. There are two methods which can address curse of dimensionality namely—feature reduction and feature selection (FS). The application of FS is such that it selects the most relevant subset of features with the less redundancy. Main objective of the proposed method is to manipulate irrelevant features and redundant features in (high–medium–low) dimensional data. We will aim to provide higher classification accuracy. In this proposed method, it is

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Machine Learning Technologies and Applications pp 193–201

An Efficient Deep Learning Based Approach for Malware Classification

Madhurima Rana ✉ & Swathi Edem

Conference paper | First Online: 16 March 2021

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Abstract

With the advent of new age computing and swift development of electronic devices that are connected over the network is a biggest challenge in the field of computer science and information security. Malicious software or malware can compromise any user's sensitive data like stealing, hijacking, altering, encrypting, stealing, and tracking the activity, and so on without permission. With the mounting level of complexity of Malware detection, defense in real time is the biggest challenge in the information security domain. In the last few years, many machine learning

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Face detection authentication analysis on smartphones

Face detection authentication analysis on smartphones

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Face detection authentication analysis on smartphones

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Abstract: Smartphones are the absolute very most widely known in addition to significant personal systems. Along with their traditional make use of, that is, referring to as and also texting, they have also been used to do multiple security-sensitive activities, including electronic banking in addition to purchasing, social networking, taking pictures, and also e-mailing. On a positive side, smartphones have boosted the quality of life by offering multiple services that customers need, for example, anytime-anywhere processing. Nonetheless, on the other side, they also pose safety as well as private privacy hazards to the customers' saved data. Consumer authentication is the preliminary series of defense to avoid unwarrantable accessibility to the mobile phone. New smartphones using Apple and additionally Samsung have utilized face features to understand their individuals. These smartphone distributors assert that this present-day technology is actually among the most risk-free and also safe and secure in addition to trusted biometrics methods. This paper checks out the functional components of the face identity method installed in these smartphones. Completion results of this particular questionnaire have presented that the majority of cell phone individuals are fulfilled with the face detection strategy while opening their phones. Nevertheless, 59 per-cent of smartphones carry out not utilize face detection approach while doing getting in the app store, offering much a lot less trust fund on this function where economic packages are consisted of.

1. Introduction

Face Recognition has become a brand-new means for secure and safe and secure authentication for cellular telephones. As cellular phones are coming to be substantially solid, the security of the records kept in cellphones is a subject matter of concern; the data may be e-mail handles, sensitive as well as essential information, and so on. Although today phones possess regulation protection to fund, a face recognition system is a lot extra guarded and pliable. In the face recognition component, just through examining the show screen one might open their phone display. Although figure printing is one of the

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An IOT Based Environmental Monitoring System

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An IOT Based Environmental Monitoring System

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Abstract: In this paper, Our team organized an autonomous robot system that is made as well as executed to note environmental standards like temp, moisture, sky premium, and also hazardous gas attention. The robot possesses GPS coordinates as well as it may always keep files on the ThingSpeakIoT system. The mobile robot is regulated with a cell phone that runs an application built on the Android system. The whole system is discovered using a cost-efficient ARM-based inserted system called Arduino as well as additionally Raspberry Private detective which is consistent via a wireless network to the IoT system, where files are conserved, fine-tuned as well as may be accessed making use of a pc or any clever device originating from anywhere. The system might boost sensor details to IoT servers every 15 secs. The kept details might be utilized for extra customer review of the decline of pollution, additional energy and likewise supply a general dwelling establishing enlargement. The robot system has produced for cost-effective remote monitoring environmental guidelines with no human treatment to stay clear of health and wellness and also wellness threat properly. A proof-of-concept model has been established to reveal the performance of the proposed system.

1. Introduction

Mobile robots possess a lot of requests including monitoring as well as also security, cargo of items, house goals, in addition to, etc. These robots utilize outlook for picking up as well as steering clear of obstacles. In

A Trust Based Method for Providing Secure Data Transmissions in Mobile Ad hoc Networks

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Abstract— Now a days Mobile Ad hoc Networks (MANET) are being part of many other heterogeneous networks including "Internet of Things (IoT)". Because of lack of Infrastructure, dynamic topology, Constraints on resources, sharing of bandwidth, security is always a great challenge and critical concern in Mobile Ad hoc Networks. A number of security solutions are proposed but they are not sufficient to provide security to Mobile Ad hoc Networks effectively. In this paper, a trust based approach is proposed which takes into consideration the direct observations of the node and neighbor recommendations about the node under consideration for evolving the final trust. This approach calculates trust based on the behavior of the node by considering network parameters. Simulation results under various performance metrics show that the proposed model performs efficiently.

Keywords— MANET, Dynamic Topology, Security, Direct Trust, Neighbor Trust, Resultant Trust, Routing

I. INTRODUCTION

Mobile Ad hoc Networks are infrastructure less, self organizing and consists of dynamic topology. These networks will not have any centralized control. They usually forms with set of mobile nodes and exchange data dynamically with one another in the range of one hop directly [1]. In recent years, the widespread usage of cheaper and powerful wireless nodes for communication, mobile ad hoc networks have gained much more attention and emerged as most promising area [2]. Due to their growing importance because of their wireless medium, mobile ad hoc networks are used in many heterogeneous networks like Internet of things (IoT) that also includes other networks like wireless sensor networks, ad hoc networks and ZigBee. In present days, the usage of IoT devices has been increased significantly. The areas include homes, organizations, offices, industries etc.

In MANETs, all the nodes involved within the range of one hop can communicate directly and those nodes that do not fall within the range should depend on intermediate nodes for communication. Each node in the network can work as a intermediate node as well as terminal node, that means each node may generate the traffic while forwarding the packets of data received from source nodes to its neighboring nodes. The intermediate nodes has to dissipate their energy for forwarding others data packets. Due to the infrastructure less and dynamic topology, links between the nodes can change at faster mode and suddenly. Therefore, the nodes in a MANET have to help each other for transmission of data in multi hops.

Security is critical concern in MANET due to frequent connection interruptions, bandwidth and resource constraints, and high mobility of the wireless nodes. The nodes may behave selfishly and maliciously due to the energy constraints in forwarding other nodes packets as they have to use their own energy[3]. Another significant problem in MANETs is malicious nodes can wontedly drop or alter the packets contents. Due to this nature, packet transfer to the destinations can be interrupted, which in turn decreases packet delivery ratio, throughput and reliability [4]. Trust is augmented with Security. Trust can be used as important factor in providing secure transmission in Mobile ad hoc networks. Trust worthiness of all neighboring nodes should be evaluated well before involving them in any routing decision. Finding trustworthiness of a node is always a good measure to make sure the availability of the trusted and dependent nodes for secure path and to ensure secure communication between source and destination. Conventional procedures may not help in order to find such misbehaviors that occur randomly which causes threats to the network security. Trust-based Methods that involves in detecting and isolating untrusted and selfish nodes in MANETs, has been always treated as efficient measure to encounter the security threats caused by pernicious nodes[5].

In this paper, a novel and efficient security model based on trust that combines Direct trust values and Neighbor trust values is proposed. The direct trust value is evaluated through a quantifiable model by considering network parameters. Neighbor trust is calculated by taking into consideration the weights assigned to the neighbors depending on the distance. The proposed scheme combines direct observations of the node and recommendations from various neighbors collected for calculating final resultant trust. In order to provide good performance and trustable links for secure transmission of data, the proposed solution depends on the trust factor.

The remaining part of the paper is arranged as follows. Review of related literature work is presented in Section II. A trust model is proposed in Section III and Section IV shows results obtained through the simulation and shown the effectiveness of the proposed method in terms of performance metrics. Finally, Section

Ground Water Level Analysis & Prediction

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Abstract: Management of ground water in India always suffered with serious problems like extensive irrigation in major canal commands and overexploitation of groundwater for all purposes. Exhaustion of water tables, saltwater infringement, drying of aquifers, groundwater contamination, water logging and saltiness, etc. are major results of overexploitation and serious water systems.. In India, the highest category of groundwater is the irrigation field. This field uses almost 88 per cent of groundwater which in turn drastically decreases levels of groundwater. The goal of the proposed approach in such cases, is to predict groundwater levels based on inputs like history of groundwater and surface water level data, weather forecasts, usage of water, extraction of groundwater, other geographical data and target outputs which includes groundwater level scenario.

Keywords: Central Ground Water Board, Receiver Operating Characteristic, MLE-Maximum Likelihood Estimation.

1. INTRODUCTION

Groundwater is the one available under Earth's surface in the layers of soil and in the cracks of rock layers. An aquifer is defined as the part of rock that yields a usable amount of water. A water table this called the depth at which the water availability in the soil or rock layers under the earth get saturated completuly.. Groundwater gets recharged from the rainfall on the surface It may dry out in the summer due to humid heat. Groundwater is extracted for agricultural, household, and industrial usages by means of digging and operating wells. The study involved in the extraction, movement and distribution of groundwater is hydrogeology[1].

Groundwater is freely available, more natural and less affected by vulnerabilities than surface water. That's why it is generally used for providing drinking water. As an example, among all the states of the United States, California extracts large amounts of groundwater annually as a part of usable water storage. In the US, Underground reservoirs are used for storing more water than all surface reservoirs and tanks, including the Great reservoirs. In general, many municipalities in India rely on groundwater availability for day to day water supply. Earth's freshwater is almost groundwater. Groundwater is the water that exists underneath the surface of the ground within the spaces between particles and layers of soil. or in holes, breaks and cracks in rocks. Usually groundwater is available not less than 100 meters of the surface of the Soil. Groundwater can contain numerous constituents counting microorganisms, gasses, inorganic and natural materials.

2. RELATED WORK

Groundwater Management in India is facing a lot of problems due to huge extraction and extensive irrigation. Saturation of water tables, increase in saltwater, dry out of aquifers, contamination of groundwater, non availability of water etc. are major consequences.. It has been detailed that in numerous parts of the nation the water table is declining at the rate of 1-2 m/year. At the same time in some areas, the water table rise is as huge as 1 m/year. Degrading the quality of groundwater by several reasons is another problem. Groundwater users of West Bengal become panic due to Increased arsenic content in shallow aquifers. Because of all these problems, the freshwater availability for all purposes like irrigation, industrial, municipal and domestic uses is reducing. Solution is to be provided for all these groundwater problems otherwise India will face a major water crisis in the near future. Looking into this situation, the Government of India has started various protective and useful measures to reduce the groundwater management issues. But the above measures do not create any impact because of political and administrative reasons and lack of awareness. Among all the countries across the world, India is the largest user of groundwater. Groundwater satisfies more than 50% of the total requirement of fresh water in the country. It withdraws more groundwater than the US and China - the next two biggest countries to pull groundwater – combined[2]. The central water resources standing committee identified that groundwater forms the major share of agriculture and drinking water supply in India in the year 2015. Irrigation occupies the major portion of the groundwater extraction which is about 89 per cent, marking it as the largest sector user in the country. Household usage sector becomes second in use of groundwater with 9 per cent. Next is the industry sector which uses only two per cent of it. Totally, groundwater satisfies 80 percent of rural domestic water supply and 55

Hybrid Secure Cloud Storage data based on improved Encryption Scheme

Hybrid Secure Cloud Storage data based on improved Encryption Scheme

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Abstract - Cloud computing is a utility for data storage. Data storage security has become a primary challenge. The users can access, share &transacts the data as the cloud offers services based on the user demand. The Cloud data is originated from various sources, how secure the data is? Data security issues are increasing rapidly as data is flowing across the internet. To protect sensitive information there are many encryption techniques to hide the data from unauthenticated users. To secure the data encryption and decryption methods are used by which only authorized users can only retrieve the data. But sometimes Brute force method can recognize the hidden data. To enrich data confidentiality and authentication problems, a proposed method is used in which combination of AES and proxy re-encryption with Honey encryption is used. The system improves the data security for outsourced data. Honey encryption with hybrid cryptography can make unauthorized users to access only plausible looking messages.

Keywords – Cryptography, Honey Encryption, AES, Proxy Re-encryption.

I.   INTRODUCTION

Cloud computing proved to storage information with many users like organizations, government bodies and enterprises. As data consists of sensitive data security and privacy acts as a crucial role for hiding sensitive data with unauthorized parties. Many existing methods adopted for securing data in cloud but still there are many limitations. Researchers had developed algorithms to protect sensitive data such as posing with Access control and fine-grained like attribute-based encryption, identity-based encryption, homomorphic encryption, role-based encryption, proxy re-encryption, searchable encryption algorithms.[16]

As data is growing every user is storing the data in cloud storage. In which data consists of all personal sensitive data. Cloud providers should secure the sensitive data. For securing the data from unauthorized user's data should be encrypted before uploading into the cloud the data and the secret key will be only given to an authorized user.[6] Encryption methods are used to hide sensitive information from unauthorized users. Protecting private data by encrypting them and retrieve them only when a user has its key to decrypt it.[2]

In this paper, Honey Encryption is combined with AES and proxy Re-Encryption algorithm by which more security is provided to the sensitive data and improves data confidentiality and integrity. Combining two algorithms which give better security.

Honey Encryption is a way in which encrypted data is stored under a password using DTE. When an attacker tries to open with a wrong password doesn't allow him to open the correct data. It gives fake Honey terms looks like a real data. Thus, users who tries for guessing password to open the file will not be able to recognize whether given output data is correct or wrong data.[3]

II.   RELATED WORK

To protect data from unauthorized users the common method used to hide data is used to encrypt the data before uploading into the cloud storage.[6] Many symmetric and asymmetric encryption algorithms are used for encryption. In which symmetric encryption is used with only on key at senders and receiver's side. Asymmetric keys are used with two keys one for encrypting with public key and another secret key I used for decrypting it.

For cloud storage proposed a combination of ABE and secret key with fine grained access control [15]ABE and proxy re-encryption provide more security to cloud data. PRE is a third-party server to re-encrypt the file again when the files are uploaded in encrypted format.[6]

To overcome the brute force attack from protecting sensitive information used Honey encryption. With the other encryption techniques, it has limitation with brute force method. Thanda. W et.al [4]. To find unauthorized users in online banking applications used Honey encryption SooF. T, et.al [5]. The proposed system explained about the hybrid encryption with fully homomorphic with additive RSA encryption. Zainab. H. M et.al [6]

According to symmetric encryption cloud storage is used by adopting multiple keys and file partition techniques Li et al. [16]. Proposed a method of "combined encryption with ABE and fine-grained access control in cloud storage data" [4]. In health applications ABE and PRE is used for securing sensitive information of a patient. In this method all health-related data is encrypted and re-encrypted using PRE [9]

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Role of Distance Measures in Approximate String Matching Algorithms for Face Recognition System

B. Krishnaveni ✉ & S. Sridhar

Abstract

This paper is based on the recognition of faces using string matching. The approximate string matching is a method for finding an approximate match of a pattern within a string. Exact matching is impracticable for a larger amount of data as it involves more time. Those issues can be solved by finding an approximate match rather than an exact match. This paper aims to experiment with the performance of approximation string matching

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Food Calorie Estimation System Using ImageAI with RetinaNet Feature Extraction

G. Kiran Kumar, D. Malathi Rani, K. Neeraja & Jeethu Philip

Conference paper | First Online: 03 August 2021

426 Accesses

Abstract

People across the world are being more health conscious in their weight, having a healthier diet and avoid obesity. A system that estimates calories and nutrition in food which can be differentiated depending upon its used ingredients can be very useful. So, we propose a system of design and implementation of food calorie estimation system using ImageAI which can recognize the food and gives the list of ingredients and measure of calories before consuming. We propose estimation of category of food type simultaneously along with the

Dr. Debashis De

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ICCCE 2020 pp 1507–1515

Deep Learning in IVF to Predict the Embryo Infertility from Blastocyst Images

Satya kiranmai Tadepalli ✉ & P. V. Lakshmi

Conference paper | First Online: 12 October 2020

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Abstract

In Vitro Fertilization (IVF) is used to solve infertility problem caused due to damaged, blocked, weak, total absence of fallopian tubes and issues in sperm or endometriosis. Successful IVF depends on assessment of embryo quality. In visual morphology, assessment produced by embryologists are different, as an outcome low success rate of IVF is seen. To develop the success rate multiple embryos are planted which lead to several pregnancies and complications. Artificial Intelligence (AI) method can be followed to analyze embryo quality apart from

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Instrument Recognition in Polyphonic Music Using Convolutional Recurrent Neural Networks

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Proceedings of International Conference on Intelligent Computing, Information and Control Systems pp 449–460

Instrument Recognition in Polyphonic Music Using Convolutional Recurrent Neural Networks

Bhargav Ram Kilambi ✉, Anantha Rohan Parankusham &
Satya Kiranmai Tadepalli

Conference paper | First Online: 25 January 2021

392 Accesses

Abstract

Sounds or music usually occurs in an unstructured
environment where their frequency varies from time
to time. These temporal variations are one of the
major problems in the music information retrieval.
Additionally, polyphonic music or polyphony is
simultaneous combination of two or more tones or
melodic line, where each line is an independent
melody of an instrument. As a result, identifying
various instruments from recordings of polyphonic
music is difficult and inaccurate using conventional

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Cloud-based Internet of things for Smart Water Consumption Monitoring System

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Abstract - The levels at which groundwater is depleting around the world is alarming and there is an impending necessity to be judicious with water usage. This led to the formulation of a consolidated architecture to monitor water consumption at the household level. Internet of Things (IoT) is combined with the Thingspeak Cloud Computing platform and Android Studio to facilitate an efficient dashboard for consumers. The proposed model aims at imbibing a sense of responsibility in the citizens as it helps keep a track of water usage periodically using visually appealing charts, lays down the monthly water utility costs as well as provides tips with all in the form of a compact android application in their phones that is needed to be proactive and conserve resources. This paper presents a tested prototype and the pipeline connecting the hardware and software components responsible for streamlining the process of data transfer from IoT to cloud and from cloud to the android application. An overview of the promising technologies and frameworks that have been orchestrated in the development of the system as well as results obtained are thus provided.

Keywords - Water Consumption Monitoring System, Internet of Things(IoT), Thingspeak Cloud, Android Studio

I. INTRODUCTION

Water is one of the primary sources of survival for all life forms on earth. A lot of our day to day activities such as bathing, cooking, washing is dependent on the use of water. The community needs water for various activities beginning with the production of food [6] and irrigation. But now the world is heading towards a water crisis due to the excessive and uneconomical use of water by the large human population[8]. The World Economic Forum has announced in 2015 that the water crisis ranks the eighth global risk with the highest likelihood of occurring within 10 years[4]. This has left many fearing that the shortage of water is probably going to be the most important cause of conflict in the coming years[1]. The importance of groundwater conservation practices has undergone a gradual increase as it can lessen wastewater discharge which can further result in improved water quality. They also diminish the necessity to search for or create new water sources, leaving them in reserve for future use. Hence it is extremely important to conserve groundwater by constantly monitoring and regulating usage starting at the individual household level. The designated system strives to achieve just that. One of the main objectives of the system is to imbibe a sense of responsibility in the citizens by preaching the importance of water and its conservation. The monitoring dashboard provides tips for being conservative with the daily usage consumption and also allows them to set limits on the same. Once the limit is approached or has reached, the consumer receives an alert regarding the same, leaving room for usage reduction.

Some of the real-time applications of the system in the domestic/household-front include -

i. Track units of water consumed hourly/daily/weekly/monthly.

ii. View live analysis of consumption statistics in the form of interactive charts.

iii. Set limits on water consumption and receive alerts when the limit approaches or has reached.

iv. Receive monthly water utility cost bills and log reports based on the units consumed.

v. Be mindful of the usage by receiving tips on conservation timely.

vi. Educate residents as well as house help personnel.

The organization of the rest of the paper is as follows. Section II briefly overviews the technology involved

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A Review on Machine Learning Trends, Application and Challenges in Internet of Things

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Abstract: The rapid growth of the internet and its connecting devices makes the things connected to the entire world. In these days, the world is running on the internet of things (IoT), with the increased communication capability and most effective way of communication and transmission lines many of things are connected to the internet. The advent and revolution in smart sensor technology attracts many of the users and most of the devices are connected to the internet. Internet connected sensors and devices generate exponential data. Knowingly or unknowingly IoT is generating lots of data. This data is significant in decision making system, but the problem is how to segregate this data for the future analysis purposes. The Internet of Things (IoT) offers engineering teams an innovative way to collect data and observe the status of their products, services and equipment in the field. Machine learning techniques are used to learn from these data to make the device or thing intelligent. For example, using the machine learning identifying the abnormalities from our wearable and taking necessary actions like calling doctor and ambulance automatically when it necessary.

Keywords: machine learning, data analytics, Internet of things, smart city.

1. INTRODUCTION

The significance of automation of the industry makes the life of the person more comfortable and easy. With the advent technologies like artificial intelligence and machine learning makes the apathetic things likes computer, robot, mobile phone etc., are able to learn and intelligent. It has been anticipated that very soon all the different things that are going to be connected, that we are seeing around us. They are all going to be interconnected. Unification of technologies such as low-power embedded systems, big-data, cloud computing, machine learning and networking is required to enable the powerful technologies. The enormously generated data will be the biggest problem in these days, how can we utilized these generated data and what is the purpose of this data are the big questions. Fortunately, there is an emergent technology growing concurrently with the IoT that has the potential to stave off the hypoxia in these stagnant data lakes and instead turn them into a healthy ecosystem of usable information. By funneling big data into machine learning algorithms, engineers can breathe life into their development cycles, operations, manufacturing and more. In this work we are trying to identify the scope of the machine learning for IoT. The main challenges and trends of the machine learning techniques in deriving the knowledge for the IoT community to make the devices more automated.

The major share of the IoT comes from its connectivity, connecting anything, anytime anyplace, it make sure what is going to be observed in this new era of ubiquitous computing [3]. It makes the digital world, that is going to result in billions and trillions of things are connected. it means,

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Recovery of Copper Ore by Using Flotation Techniques and microbe- mineral surface interaction

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Abstract:--

In this study, the recovery of copper from a high grade ore was attempted employing a chemolithotrophic micro organism, a bacteria named Acidithiobacillus ferrooxidans.The aim of the present study is to understand the changes in Copper ore beneficiation based on surface chemical properties of bacteria during adaptation to high grade copper minerals and the projected consequences in flotation and bio-flotation processes .The utility of bio processing in the beneficiation of Copper ore through bio-flotation is demonstrated in this work. An autotroph Thiobacillus ferroxidans bacteria is adapted to high grade mixed copper ore sample, which was supplied from HCL Malanjkhand Copper Plant, Open cast mines .The first step in the procedure was the collection and activation of the bacterial strains of Acidithiobacillus ferrooxidans.The bacteria were raised in a culture of 9K media supplied with adequate calculated amount of nutrients and were shaken continuously in a shaker cum incubator to fully activate them at room temperature. Copper sample was adapted by repeated subcultures of bacteria. The surface characteristics were studied Zeta Potential by analysis at different Ph values and different time

" Effect of Amplitude Scintillations on the Tracking Error of IRNSS Receiver for Indoor Navigation Applications"

Effect of Amplitude Scintillations on the Tracking Error of IRNSS Receiver for Indoor Navigation Applications

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Abstract— Indoor navigation has become increasingly important for various applications such as emergency services and consumer devices. The performance of Indian Regional Navigation Satellite System (IRNSS) receiver degrades in indoor environment due to attenuation of signal levels in addition to ionospheric scintillations. For indoor navigation applications such as position finding in a multi-story building, the effect of scintillation may result in the loss of lock signal rather than reduced accuracy. The objective of this paper is to investigate the effect of ionospheric scintillations on IRNSS receiver performance for indoor navigation by estimating the receiver phase lock loop (PLL) and Delay locked loop (DLL) tracking error variance (jitter). Our initial results indicate that severe scintillation could cause loss of lock.

Keywords—DLL, Indoor position, Ionospheric scintillations, IRNSS, Jitter and PLL.

I. INTRODUCTION

Indoor navigation has become increasingly important for various applications such as emergency services and consumer devices [1]. Global Navigation Satellite System (GNSS) comprises several satellite systems that can be used to locate the geographic location of a user's receiver anywhere in the world. GNSS receivers, using the GPS, GLONASS, Galileo or Beidou system along with regional systems are used in many navigational applications. Recently, the Indian Regional Navigation Satellite System (IRNSS) has become operational and is undergoing field trials for various applications. The satellite constellation consists of 3 geostationary and 4 geosynchronous satellites and operates in L and S band signals. Position finding of a person/fire in an indoor environment such as inside a multi-story building is very important. The IRNSS in combination with Geophysical Information System (GIS) is expected to give a very good position information in indoor environment. But, the quality of the IRNSS signals severely degrades in the indoor environment due to attenuation such as 10 to 20dB introduced by the obstructions such as walls etc. In addition,

several errors including ionospheric scintillations will further limit the performance of GNSS/IRNSS receiver [2]. Ionospheric scintillations are random rapid variations in the intensity and phase of received signals resulting from plasma density irregularities in the ionosphere [3][4]. Amplitude scintillation directly affects the carrier to noise ratio (C/No), as well as the noise levels in code and phase measurements [5][6]. Amplitude scintillation can be sufficiently severe that the received IRNSS signal intensity from a given satellite drops below the receivers tracking threshold, causing loss of lock on that satellite, and hence the need to re-acquire the IRNSS signals [7]. Therefore, research into the performance of IRNSS receiver in signal-degraded indoor environments under ionospheric scintillation is required.

II. TRACKING ERROR VARIANCE AT OUTPUT OF PLL FOR L5 BAND IRNSS

The carrier phase tracking error variance is often considered as an indicator of receiver performance. In the evaluation of receiver performance, one of the important parameters is the tracking threshold point[8]. This corresponds to the value where the PLL stops working stably and loses the lock and is given as,

$$\sigma_{\varphi e/lim}{}^2 = \left(\frac{\pi}{12}\right)^2 (rad)^2 \qquad (1)$$

Assuming no correlation between phase and amplitude scintillation, tracking error variance at the output of the PLL is expressed as,

$$\sigma_{\phi e}{}^2 = \sigma_{\phi S}{}^2 + \sigma_{\phi Th}{}^2 + \sigma_{\phi osc}{}^2 \qquad (2)$$

where $\sigma_{\phi S}{}^2$ is phase scintillation error component, $\sigma_{\phi Th}{}^2$ is the thermal noise component and $\sigma_{\phi osc}{}^2$ is the receiver oscillator noise. The receiver oscillator noise is assumed to have a standard deviation of 0.1 rad and it is ignored in this work. For the low latitude region like India, the values of $\sigma_{\phi S}{}^2$ are considerably low and well behaved [9].

Under normal ionosphere conditions thermal noise is the main factor causing tracking error. Under severe irregular ionospheric conditions, ionospheric scintillations become an

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"Design, Implementation and Performance Comparison of different Branch Predictors on Pipelined-CPU"

Design, Implementation and Performance Comparison of different Branch Predictors on Pipelined-CPU

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Abstract— Branch predictors are implemented on pipelined CPUs having different types of instructions. Both unconditional and conditional branches are implemented utilizing different instruction set formats of the CPU. A basic pipelined CPU consists of three stages Fetch, Decode, and Execute. All the instructions are executed in parallel, hence every stage is busy with an instruction which saves the wastage of time and increases the performance. Hazards will occur because of Conditional branches in the pipeline which changes the sequential flow of execution. To overcome these hazards, the pipeline should be made empty and loaded with appropriate instruction which avoids the wastage of time. Hence Branch predictors are essential in CPUs as it saves the wastage of time by guessing the correct sequence of instruction as the conditional branches changes the sequence of instructions. Three types of Branch Predictors are implemented on pipelined CPUs separately which are simulated, synthesized and bit-files are generated using Xilinx ISE tool, the bit-files are later dumped on Xilinx SPARTAN-6 board and the results are analyzed using CHIPSCOPE.

Keywords— Branch predictors; pipeline; CPU; Xilinx ISE; Xilinx SPARTAN; CHIPSCOPE.

I. INTRODUCTION

A Central Processing Unit (CPU) is an essential hardware within any computer that executes all the instructions of a computer program by performing the basic logical, arithmetical and input/output operations of the system. The two vital segments of a CPU are the arithmetic logic unit (ALU), which performs arithmetic and logical operations, and the control unit (CU), which extracts instructions from the memory then decodes and executes them, calling on the ALU when necessary [1]. An Intel core i7 processor is shown in Fig.1.

Pipelining is an implementation technique in which multiple instructions are processed at same instance of time [3]. It is the process of executing the instruction in an overlapped manner to increase the rate of flow of instructions, hence, improving the speed of a processor and reducing the number of cycles required to execute an instruction. The execution of an instruction will be done in three stages Fetch, Decode, Execute at consecutive three clock cycles together known as execution cycle or instruction cycle [10]. In Instruction pipeline there is no waiting of next instruction, the first stage in pipeline fetches the instruction and buffers it while the second stage is free. The first stage passes the buffered instruction to decode stage, while the second instruction is fetched in to the first stage (Fetch stage). When the first and second instructions are in Execute and Decode stages, the third instruction will be fetched into the Fetch stage and then it is send to the next succeeding stage, this process repeats. Since every stage is busy, it saves the wastage of time and enhances the overall performance of the CPU.

Nowadays every processor is implemented with pipeline to improve its performance, but a problem arises when there is a conditional branch instruction in pipeline. Consider a JUMP on carry (JC) instruction which will be known only in execution stage leading to a hazard in the pipeline as it fetches the wrong instruction from the memory, thereby, taking extra cycles to execute the JUMP instruction [7]. So, to overcome this hazard a concept of Branch Prediction circuit with different algorithms has been implemented on CPUs to predict JUMP instruction in Fetch stage so that the correct instruction is fetched in the next cycle, hence, saving the wastage of extra clock cycles.

Branch predictors are used to enhance the flow of the pipeline as it helps eliminating some of the stalls produced by the conditional branches by trying to guess if the branch is taken or not before leaving the fetch stage [8]. Implementation of the branch predictors with pipeline will increase the performance of the CPU when compared to the non-pipeline CPU, also when prediction rate is high it minimizes the miss rate and hence it avoids the wastage of time. There are several Branch Prediction algorithms such as ALWAYS NOT TAKEN, ALWAYS TAKEN, BINARY and DYNAMIC etc.

A. Hardware Requirements

1) Xilinx SPARTAN-6: An Atlys development board based on a Xilinx Spartan-6 LX45 FPGA, speed grade -3 and compatible with all the Xilinx freely available design tools, is used to test the accuracy of the design logic in real hardware environment [9].

2) Power adapter: Atlys board requires an external 5V, 4A with a coax center-positive 2.1mm internal-diameter plug, a suitable adapter is already provided as a part of the Atlys kit.

3) USB/JTAG cable: A standard USB type A/type B cable is used for communication between the host and the target system i.e., to dump the code and analyse its results.

Selective Suppression of IRNSS S-band Signals for Specific Applications

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Abstract— The Indian Regional Navigational Satellite System (IRNSS) has become operational recently. IRNSS S-band signals are more vulnerable to Radio Frequency Interference (RFI) as the S-band spectrum is congested with several other signals including the signals operating in the license free band. It operates in L5 and S1 frequencies. The performance of IRNSS receivers meant for non-precision applications can be enhanced by suppressing S1 signals. In view of this, an aluminium reflector is designed and developed to selectively suppress S1 signals. The results are encouraging.

Keywords—IRNSS, S- band, RF Interference

I. INTRODUCTION

Global Positioning System (GPS) is an already established space-based navigation system, with applications in diversified fields of science and engineering [1]. However, the Indian Regional Navigation Satellite System (IRNSS) is an emerging satellite based navigation system providing an independent positioning and timing service over Indian land mass and about 1500 Kms from the mainland [2]. IRNSS is designed, developed and controlled by the Indian Space Research Organization (ISRO). The IRNSS satellite constellation consists of 4 satellites (IRNSS 1A, 1B, 1D, 1E) in inclined geosynchronous orbits and three in Geostationary Earth Orbit (IRNSS 1C, 1F, 1G). In contrast to other satellite constellations which use only L-band frequencies, IRNSS uses both L-band (1164.45 – 1188.45 MHz) and S-band (2483.5-2500MHz) signals [3]. The use of these bands compared to C band gives acceptable received signal power with reasonable satellite transmit power levels, and less ionospheric delay and fluctuation in delay, compared to UHF [4]. Several researchers have investigated various aspects of IRNSS such as ephemeris errors even before the constellation became fully operational [5], [6]. IRNSS has been operational since June 2016. Under an MOU between SAC,ISRO, India and CBIT, Hyderabad, India two IRNSS receivers were installed at CBIT (17.39° N, 78.31° E). Since then several field trials on the receiver are being carried out. This paper investigates the robustness of IRNSS signals which are subject to interference from S-band terrestrial sources like Wi-Fi, Bluetooth, Zigbee etc. operating in the license free band of 2.4 GHz. For several general, day to day and non-precision applications, single frequency IRNSS receivers can be used. For such applications, S-band signal interference is detrimental and compromises the position accuracy. Therefore, in this paper it is proposed to design and develop an aluminium reflector plate at S1 frequencies to avoid interference and improve the receiver performance.

II. DESIGN OF ALLUMINIUM REFLECTOR FOR IRNSS RECEIVER

Antennas are an essential part of any navigation system. Its performance can be evaluated by measuring several parameters such as gain, bandwidth, phase centre etc. [6]. Using reflectors, antenna performance can be either degraded or enhanced depending upon the applications. In this paper, an aluminium reflector plate is used to selectively suppress the S-band signals, the details of which are discussed in this section.

A. Basic Analysis

To investigate the robustness of IRNSS signals, it is proposed to study the penetration capability of the signals through a reflector. For this an aluminium plate is used as a reflector positioned in the line of sight path between satellite and receiver antenna. To decide the position and orientation of reflector plate near the receiver antenna, the azimuth and elevation information of the IRNSS satellites is determined. Geostationary satellites have minimum variation of position with respect to earth station. Hence reflector position calculation is done for IRNSS 1G. The azimuth and elevation variations are found to be 97.5° – 109° and 26.9° - 31°. Even though originally it was planned to launch 1G satellite as a geostationary satellite, later it was given an inclination of 5° to improve dilution of precision. Therefore, such a variation in azimuth and elevation is seen for this satellite.

A square reflector plate of dimensions 0.25m x 0.25m and thickness (t) 0.254mm (10mil) (justification of these values can be found in part II B, Calculation of Reflector Design Parameters) is placed in LOS path of IRNSS 1G signal as shown in Fig. 1. The reflector plate is mounted on a tripod whose height can be varied easily. Also a provision is made to rotate the plate both in horizontal and vertical direction. The distance from the antenna to the reflector is also variable. The penetration depth (δ) of such a plate is computed as [7].

$$\delta = \sqrt{\frac{\rho}{\pi f \mu}} \qquad (1)$$

Where ρ, the resistivity of the aluminium is 2.6548×10^{-8} Ω-m, f is the frequency in Hertz, μ is the absolute magnetic permeability of the conductor ($\mu_r \times \mu_o$), μ_o is $4\pi \times 10^{-7}$ H/m, μ_r is 1.00002 [8]. δ is 2.3908μm at 1176.45 MHz and 1.6427 μm

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"RLG Dither signal removal using wavelet transforms",

RLG Dither Removal Us ing Wavelet Transforms

Bharath Regimanu, Kakarla Subba Rao. Kishore Chandra Das. Ch.Raja Kumari, P.Neeharika

Abstract— Ring Laser Gyroscopes (RLGs) are widely used in many airborne and navigation systems for accurate measurement of the true rotation of the body movement. But the RLG's suffer a serious problem at low frequencies known as Lock –in frequency. To avoid lock-in problem, the RLG is vibrated mechanically to a high frequency which is known as Dithering. In order to get the true rotation of the body the dither signal has to be removed. Single stage, multistage and multirate filters are suggested to remove the dither signal. These filters have the disadvantage that either the FIR filter length is too large or the phase characteristics are not linear. In this work multiresolution techniques using Wavelet Transforms (WTs) are used to remove the dither signal. Six level multi resolution analysis is carried out with various types of wavelets like Discrete Meyer and Daubechies 45 (db45) etc. With none of the standard wavelets, the original and reconstructed signals are matched. A new wavelet is designed to remove the dither signal. The required signal can be constructed back using the approximation coefficients at level 6. The dither signal is attenuated by 265 dB, and the phase characteristics are found to be linear in the pass band. The computational complexity is also less compared to the three stage combined filter reported earlier.

Keywords—Ring Laser Gyroscope, Multiresolution.

I.INTRODUCTION

Gyroscope is basically a rotation sensor which is used to measure the absolute angular rotation of any rotating system. This instrument is an essential requirement for navigation and control of a moving vehicle. The advantage of RLG is that it is less sensitive to environmental conditions and its performance does not depend on gravity of the earth 'g'. It is also less sensitive to thermal conditions and magnitude fields. Hence it is more accurate and more stable.

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Investigation of Anomalous Ionospheric Gradient Effects on the Performance of Indian GBAS

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Abstract— Ground Based Augmentation Systems (GBAS) ensure safe low-visibility aircraft landings at suitably equipped airports. Low latitude ionosphere characterized by ionospheric irregularities and anomalous gradients pose a severe threat to the performance of Indian GBAS. No significant work has been reported on the range and position domain errors introduced by severe gradients identified at low-latitude stations. In this paper, extensive analysis of range domain errors, induced by anomalous gradients is carried out. From the analysis carried out in this work, it is observed that PRN affected by gradient of 460 mm/km induced range error of 8.11m. For other PRNs the error is only upto 2.3m.

Keywords— Ground Based Augmentation Systems, ionospheric gradients, differential range error.

I. INTRODUCTION

GBAS is a 21st-century safety-critical system capable of supporting aircraft PA and landing even in low visibility conditions. GBAS provides an assured accuracy, availability and integrity initially to Category I PA, and eventually to CAT II, and III PAs [1] [2]. To achieve such high accuracy levels, the Ground Facility computes a single pseudorange correction for each satellite and transmits the corrections to all the users in the service volume. The single correction accounts for all common errors (atmospheric and satellite based errors) between the Ground Facility and the user and hence these errors can be completely eliminated when user applies differential corrections. Errors that are not identical at Ground Facility and the user cannot be cancelled out with differential corrections and cause residual errors at the user. GBAS users compute the bounds on residual errors (called protection levels), with the help of the error sigmas broadcast by the Ground Facility. The residual error that is most challenging to GBAS users is the ionospheric spatial decorrelation error. This error builds up due to the fact that ionosphere exhibits spatial variations, and hence the delays experienced by the Ground Facility and the user are different, giving rise to spatial gradients of ionospheric delay between the two. The spatial gradients are extremely large (of the order of hundreds of mm/km) under ionospheric storm conditions [3]. Several researchers investigated the aspect of large gradients at mid-latitudes ([4]; [5]; [6]; [7]). The impact of such large gradients on GBAS performance has also been investigated ([8]; [9]). At low latitudes, Srinivas et al., [10] analyzed the GPS data of two stations namely National Geophysical Research Institute (NGRI), Hyderabad (17.41°N, 78.55°E) and Research and Training Unit for Navigational Electronics (NERTU) of Hyderabad (17.44°N, 78.47°E). Based on the available data, data of four years (from 2008 to 2012) is analyzed and

gradients as large as 300-460 mm/km were observed. Such anomalous gradients induce not only large range errors but also vertical position errors. Range errors induced by large gradients are computed in this paper.

II. ANOMALOUS IONOSPHERIC GRADIENTS AND THEIR EFFECTS ON LAAS

Under normal conditions, ionosphere over equatorial and low latitude regions is characterized by high spatial variation of ionospheric delays. Abnormal solar events like Coronal Mass Ejections from the Sun produces large ionospheric delays and large gradients of the order of hundreds of mm/km. Such large gradients introduce several meters of error in range domain. The ionosphere induced error in range domain is called Differential Range Error (DRE (ε)) and it is directly proportional to the ionospheric gradient amplitude (g_i), for a given separation distance between the LGF and the user (x) [11] (Eqn.1).

$$\varepsilon = \min\left[\frac{50}{W_\_}, \max(g_i)\right] \times (x + 2\tau\, v_{\_\_}) \quad (m) \qquad (1)$$

Where

$W_\_$ is the width of the ionospheric front (km)

τ is the time-constant of the smoothing filter (100s)

$V_{\_\_\_}$ is the velocity of the aircraft (0.07 km/s)

III. METHODOLOGY

Initially, the dependence of DRE on key parameters such as x and g_i is analyzed. Later, DRE is computed for all the satellites commonly visible between NGRI and NERTU stations on a quiet day (8th March 2012 (1<Kp<5)). Finally, the DRE due to anomalous gradient of the order of 460 mm/km observed between the two stations on a storm day (09 March 2012 (2<Kp<8)) is estimated.

IV. RESULTS AND DISCUSSION

Fig. 1 shows the simulation result of DRE variation with respect to distance between the LGF and user (x). For a given value of gradient, x is varied from 1 km to 45 km (GBAS applicable distances). It is observed that DRE value increased linearly with distance and reached a value as much as 30 m, when the separation is 45 km. Also, the variations in DRE values are directly proportional to the magnitude of the gradient (g_i).

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"Investigation on Performance of Distributed Autonomous Sensors on Embedded Platforms"

Investigation on Performance of Distributed Autonomous Sensors on Embedded Platforms

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M Rajendra Prasad ; B Santosh Pawan Kumar ; A Swarnamani ; A Lahari ; P Prathyusha ; D Krishna Reddy   All Authors

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Abstract

Document Sections

I. Introduction

II. Literature Survey and Related Work

III. Design Methodology

IV. Results and Discussions

V. Conclusion

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Figures

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Abstract:

A node is an intersection point that can generate, receive, store or transmit data along distributed network routes and allows us to analyze the data at a particular point. In a network node, each sensor has several parts such as transceiver with an internal or connection to an external antenna, micro controller, electronic circuits for interfacing sensors and energy source. The scaling of single node cluster has a limitation of CPU computational powers, maximum memory and number of processes that can run on a single machine. In order to overcome these limitations multi node clusters are needed. To process huge amount of data at the same timeframe, multi node clusters are used. To monitor environment and physical conditions such as temperature, ambient light etc. and to cooperatively pass their data through network to a main location a distributed autonomous sensor called Wireless Sensor Networks (WSN) are used. WSN is a low-cost technology which is built of nodes from few to several hundred or thousands where each node is connected to single or several sensors. It acts like a bridge between virtual and real world. Besides, using a single platform for WSN, the proposed work send and receive the data on different platforms like FRDM-KL25Z, and Arduino Uno using WSN Multiple Nodes. A novel methodology is developed to create a node, transmit the data from the sensor through the created node, calculation of time to transmit and receive data through the nodes and comparing the network latencies.

"System Level Performance Analysis of Embedded System for GSM Applications"

System-Level Performance Analysis of Embedded Systems for GSM Applications

M. Rajendra Prasad ✉ & D. Krishna Reddy

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Abstract

An embedded system is an integration of customized hardware and optimized software designed for a specific function running continuously. In recent years, with the advent of increasing embedded telecom, an application running on dedicated platforms and the evaluation of system-level performance are essential. This paper proposes the procedure to analyze the low-level performance of three embedded platforms. These values are useful for GSM protocol stack developers for MS (Mobile Station), BTS (Base Transceiver Station), BSC

"Development of System Level Computational Platform for IP- BTS Telecom Application"

Development of System Level Computational Platform for IP-BTS Telecom Application

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M. Rajendra Prasad ; D. Krishna Reddy   **All Authors**

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Abstract

Document Sections

I. Introduction

II. Related Work

III. Hardware & Software Specifacations

IV. Building the Bootable Image for Target Board

V. Results and Discussions

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Authors

Abstract:

IP-BTS (Internet Protocol Based Base Transceiver Station) is a small computing hardware module designed for integration into an industry standard tower PC housing which provides a complete GSM Access Point. It is used to optimize cost of transmission line for high density multi-band base stations. This paper describes the detailed procedure to develop system level boot loader software (universal boot loader-u-boot) for IP-BTS which is a customized hardware with PowerPC based processor board running on RTLinux operating system. This paper also discusses the brief presentation of the customized hardware platform at system level and the boot loader software development procedure for embedded telecom application IP-BTS. Designing suitable boot software at system or boot level is a complex and challenging task which is included in development of an embedded system for telecom applications. The boot loader connects application software through customized hardware and Real-Time Operating System (RTOS). It is not only responsible for initialization of the processor board and other module of IP-BTS software also upgrades operating system images and IP-BTS software versions. The early initialization code is always developed in the processor's native assembly language. In this paper we presented detailed procedure to transplant boot loader (u-boot) on Power PC based customized board and tested successfully with results.

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(ISME-MM-95)

EXTRACTION OF CELLULOSE NANO FIBERS AND DEVELOPMENT OF NANO CELLULOSE FIBER COMPOSITES - A REVIEW

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Abstract- Natural fibers are abundantly available in nature at a low cost and have the main advantage of being biodegradable. They have low density and high toughness. The structure of natural fiber consists of cellulose crystals surrounded by hemi-celluloses and lignin. Lignin is the glue like substance that binds all the component of the fiber. Strength of the fiber is mainly due to the pure crystalline structure of the cellulose. Various plant sources like, kenaf, jute, flax, hemp, sisal, okra, banana and Roselle are used to produce nano cellulose fibers. The natural fibers are subjected to a sequence of treatments like, alkaline treatment, bleaching, cryo crushing, grinding, high pressure homogenization, acid hydrolysis, ultra-sonication, TEMPO-mediated oxidation, steam explosion, etc. These treatments yield cellulose fibers of three grades such as, micro-fibrillated cellulose, nano crystalline cellulose and bacterial nano cellulose. The fibers obtained in each stage are characterized for their chemical composition. The cellulose nano fiber composites are made using various biodegradable polymers such as, poly lactic acid, thermoplastic starch and poly hydroxyalkanoate (PHAS), poly vinyl alcohol (PVA) and poly esteramide. Partially degradable nano cellulose composites are made using polypropylene, polyester, polyethylene resins are used for making variety of components for domestic, automobile, optical sensors, electronic devices, structural, medical, textile, paint, paper board and packaging industry and also for hygiene products, cosmetics. In this paper, the status of research on extraction of nano cellulose fibers and various processes involved and type of materials employed for making the nano cellulose products are presented focusing the scope for further research and development of nano cellulose composites.

Keywords: Nano cellulose fibers, biodegradable nano cellulose composites, nano cellulose composites for packaging, electronics and cosmetic industry.

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I. INTRODUCTION

Due to the increased attention on the issues related to degradation of environment, there has been a great demand in the recent years from all sections of the society for the biodegradable and environmental friendly products from sustainable resources [1, 2]. Such products are developed using various biodegradable resins such as, poly lactic acid, thermoplastic starch and poly hydroxyl alkanoates (PHAS), poly vinyl alcohol (PVA) and poly ester amide along with natural fibers [3]. Nano cellulose composites are made using polypropylene, polyester, polyethylene resins and modified starch. Cellulose fibers derived from various plant sources are used extensively in textile, paper and cosmetic industries. In the recent years, nano cellulose products are used as an alternative to plastics to avoid detrimental effects of plastic products. Various natural fibers being used in raw form or in modified form for different applications are presented in Fig.1. The structural elements of natural fibers such as lignin, pectin, hemicelluloses and cellulose are described in sections II and III. Different stages of extraction of nano cellulose fibers are presented in sections IV. Development of nano cellulose composites and their applications are presented in sections V and VI respectively.

1

Effect of plan shape on the wind pressures on buildings: A CFD Approach

Effect of Plan Shape on the Wind Pressures Onbuildings- A CFD Approach

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Abstract-- Lateral loads i.e. wind load, seismic load, govern the design of tall buildings and their computation is of paramount importance for the efficient analysis of structures. For very tall buildings, wind loads are more predominant than seismic loads and the present wind load code IS 875 (PART-3) provides provisions for design pressure and force coefficients for some standard shapes. But with the present trend of adopting complex geometries for buildings, the present specifications are inadequate for the computation of wind loads. For such cases, wind tunnel testing, which is required to generate equivalent atmospheric turbulence properties and boundary layer flow inside the wind tunnel can be adopted, but is too costly and time consuming. In such a scenario, computational fluid dynamics, an analytical tool comes handy and provides a reasonable and economical solution.

Computational Fluid Dynamics, popularly known as CFD, basically involves obtaining numerical solution for the fluid problems often governed by Navier Stoke equations. It needs high speed computing systems and efficient algorithms. In the present work, an attempt is made to predict the wind pressures on buildings of various shapes with various floor heights and make a comparative study. K-epsilon turbulence model is considered for the analysis and software ANSYS - FLUENT is used for CFD analysis.

Keywords-- Computational fluid dynamics (CFD), Boundary layer, K-epsilon, UDF- Velocity profile.

I. INTRODUCTION

Wind is a phenomenon of great complexity because of the many flow situations arising from the interaction of wind with structures. Wind is composed of a multitude of eddies of varying sizes and rotational characteristics carried along in a general stream of air moving relative to the earth's surface. These eddies give wind its gusty or turbulent character. The gustiness of strong winds in the lower levels of the atmosphere largely arises from interaction with surface features. The average wind speed over a time period of the order of ten minutes or more tends to increase with height, while the gustiness tends to decrease with height.

The characteristics of wind pressures on a structure are a function of the characteristics of the approaching wind, the geometry of the structure under consideration, and the geometry and proximity of the structures upwind. The pressures are not steady, but highly fluctuating, partly as a result of the gustiness of the wind, but also because of local vortex shedding at the edges of the structures themselves. The fluctuating pressures can result in fatigue damage to structures, and in dynamic excitation, if the structure happens to be dynamically wind sensitive. The pressures are also not uniformly distributed over the surface of the structure, but vary with position.

The purpose of the present study is to investigate the dynamic behaviour of tall structures of various shapes when subjected to wind. For the simulation part domain size and mesh size influences the accuracy of the result. The boundary conditions and wall condition around the bluff body should be considered. The main focus of the present study is to reduce the unsteadiness of wake region around the structure, which creates high pressures, by considering the appropriate shape of the structure. Aerodynamic forces on tall building models with same area were using the pressure contours generated on various faces of models are calculated. [3]

II. OUTLINE OF MODELS CONSIDERED

A. Configuration of tall building models:

The tall buildings used for the experiments are square, circle, ellipse and parabolic shapes. The pressure contours are generated for various angles of attacks like 0, 90 and 180. The height of the structures considered are 150m, 195m and 240m Selection of models were based on the aerodynamic nature of the buildings.

B. Computational Fluid Dynamics

Computational fluid dynamics (CFD) is a branch of fluid mechanics that uses numerical analysis and algorithms to solve and analyse problems that involve fluid flows.

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EFFECT OF RECYCLED AGGREGATE ON FRESH AND HARDENED STATE PROPERTIES OF SELF-COMPACTING CONCRETE

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Abstract

Concrete is the most widely used construction material in which Aggregates take maximum share. This poses the problem of acute shortage of aggregate and scouring of Granite Quarry. At the same time, the quantity of recycled Concrete aggregates from old Construction Demolished waste is piling up in many areas. If it is possible to use this RCA in fresh concrete by partial/complete replacement of Natural Coarse aggregates, then this will not only save the cost of construction at the same time it will solve the problem of disposal of this CDW waste. Therefore, the objective of this research work is to develop sustainable self Compacting Concrete (SCC) of various grades using Recycled Concrete Aggregate (RCA), fly ash etc. This paper discusses the fresh and hardened state properties of SCC of M30 grade using Natural and Recycled Concrete Aggregates. Quantification and Characterization was done using Modified Nan Su Mix design analysis.

Keywords: Self Compacting Concrete (SCC), Recycled concrete aggregates (RCA), Fresh Properties, Mechanical Properties, Modified Nan Su Method.

Introduction

The term Self-Compacting Concrete (SCC) refers to a "new" special type of concrete mixture, characterized by high resistance to segregation that can be cast without compaction or vibration. It flows like "honey", de-aerates, self-compacts, and has nearly a horizontal concrete level after placing. Products made with SCC have an excellent finish, and are virtually free of bug holes The basic components of the mix composition of SCC are the same as those used in conventional concrete. However, to obtain the requested properties of fresh concrete in SCC, a higher proportion of ultrafine materials and the incorporation of chemical admixtures, particularly an effective superplasticizer, are necessary. Because of this, self-compatibility can be largely affected by the characteristics of materials and mix proportion. No standard or all-encapsulating method for determining mixture proportions currently exists for SCC. However, many different proportion limits have been listed in various publications. Therefore, a rational mix-design method for NASCC and RASCC using variety of materials is necessary. The proposed Modified Nan Su Mix design of SCC must satisfy the criteria on filling ability, pass ability and segregation resistance.

Mix Design Method: Initially EFNARC first approach for Modified Nan Su Mix design is used, and then the proportions of materials modified after the evaluation by fresh tests was done. The modifications are made according to EFNARC guidelines.

Sustainable Design: Sustainability in general terms is to create an economic system with enhanced performance with long term safety. Sustainability is the one which mainly focuses

Studies on strength characteristics of Self-curing concrete

STUDIES ON STRENGTH CHARACTERISTICS OF SELF-CURING CONCRETE

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Abstract

Today concrete is most widely used construction material due to its good compressive strength and durability. Depending upon the nature of work the cement, fine aggregate, coarse aggregate and water are mixed in specific proportions to produce plain concrete. Plain concrete needs congenial atmosphere by providing moisture for a minimum period of 28 days for good hydration and to attain desired strength. Any laxity in curing will badly affect the strength and durability of concrete. Self-curing concrete is one of the special concretes in mitigating insufficient curing due to human negligence paucity of water in arid areas, inaccessibility of structures in difficult terrains and in areas where the presence of fluorides in water will badly affect the characteristics of concrete. The present study involves the use of shrinkage reducing admixture polyethylene glycol (PEG 400) in concrete which helps in self-curing and helps in better hydration and hence strength. In the present study, the effect of admixture (PEG 400) on compressive strength, split tensile strength and modulus of rupture by varying the percentage of PEG by weight of cement from 0% to 2% were studied both for M20 and M40 mixes. It was found that PEG 400 could help in self-curing by giving strength on par with conventional curing. It was also found that 1% of PEG 400 by weight of cement was optimum for M20, while 0.5 % was optimum for M40 grade concretes for achieving maximum strength without compromising workability.

Index Terms: Self-curing concrete; Water retention; Relative humidity; Hydration; Absorption; Permeable pores; Sorptivity; Water permeability

1. INTRODUCTION

Proper curing of concrete structures is important to meet performance and durability requirements. In conventional curing this is achieved by external curing applied after mixing, placing and finishing. Self-curing or internal curing is a technique that can be used to provide additional moisture in concrete for more effective hydration of cement and reduced self-desiccation.

1.1 Methods of self curing

Currently, there are two major methods available for internal curing of concrete. The first method uses saturated porous lightweight aggregate (LWA) in order to supply an internal source of water, which can replace the water consumed by chemical shrinkage during cement hydration. The second method uses poly-ethylene glycol (PEG) which reduces the evaporation of water from the surface of concrete and also helps in water retention.

1.2 Mechanism of Internal Curing

Continuous evaporation of moisture takes place from an exposed surface due to the difference in chemical potentials (free energy) between the vapour and liquid phases. The polymers added in the mix mainly form hydrogen bonds with water molecules and reduce the chemical potential of

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Cognitive Informatics and Soft Computing pp 403–408

Object Classification Using SIFT Algorithm and Transformation Techniques

T. R. Vijaya Lakshmi ✉ & Ch. Venkata Krishna Reddy

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Abstract

Recognition of objects, as well as identification and localization of three dimensional environments is a part of computer vision. In the proposed study the objects in a war field are classified. Images extracted from the video stream are utilized to classify the objects of interest (soldier, tree and tank). Distinguishable features of the objects are extracted and these features are used to identify and classify the objects. The SIFT algorithm used to find the features from such images are processed to classify the objects such as soldier, tank, tree, etc. The key

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Probabilistic Analysis of Partial Discharge in Power Transformer due to the Presence of Spherical Particle

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Abstract:- The paper deals with the partial discharge in a power transformer due to presence of metallic particle in a transformer oil or mineral oil. A conducting particle is assumed to be present in the oil, between High Voltage (HV) winding and pressboard inner cylinder gap. It is assumed that particle moves in random direction along with the transformer oil. Probabilities of Partial Discharge (PD) have been calculated by assuming various field intensification factor β and threshold voltages. Simulations have been carried out to find the probability of partial discharge at different oil velocities. Results of this paper show that the probability for the occurrence of partial discharge varies with respect to field intensification factor β, threshold voltage and velocity of the oil, as particle is also assumed to move with the same velocity of oil. It is observed that probability of PD increases with β for a given threshold voltage.

Keywords:- Power transformer, Partial discharge, Field intensification factor, Particle movement

I. INTRODUCTION

New technologies are being introduced gradually in the area of power generation, transmission and distribution. It is required to step up and step down the voltages to make it available as per necessity. Higher voltage rating power transformers have been developed and employed for transmission of larger power to longer distances. Consequently, the demand on insulation also increases. In addition, phenomenon associated with voltage stress and PD becomes more predominant at relatively higher voltages. Thus preventing partial discharges at these voltages becomes a challenging task. The most common cause for failure of power transformer is found to be due to partial discharge in the transformer. Although PD is allowed up to 250 Pico- Coulombs (pC) as per standard at the test voltage, it becomes difficult to limit at sharp corners and curvatures of the conductors. As a result the above value exceeds at this voltage.

PD can occur due to the presence of particles, which are conducting in nature moving along with the transformer oil. A work by Ward et al [1] shows the impact on field intensification factor at the particle and its influence in breakdown analysis. Hu Yue et al [2] proposed a method to find the location of partial discharge using Monte-Carlo simulation. Van Brunt and Cernyar [3] simulated AC generated discharge pulses using Monte-Carlo technique and found that results are similar to the experimental results. M.Hikita et al [4] carried out a Monte-Carlo simulation to generate the PD distributions and proposed a model for PD mechanism. Rain and Tabazeon [5] experimented with the breakdown mechanism of liquid insulation in the presence of free and fixed particle and represented that breakdown occurs at lower voltage when the particles are free. Mishra et al [6] measured Partial Discharge activity in GIS with the presence of AC voltages and at various pressure levels.

A 100 MVA 11/132/220 kV auto transformer is considered for analysis. This transformer has three windings, viz. low voltage (LV), Intermediate voltage (IV) and High Voltage (HV). For the present analysis only HV winding is only considered because it provides an onerous condition for initiation of Partial Discharge.

A Solution to the Multi-Objective Optimization Problem with FACTS Devices using NSHCSA Including Practical Constraints

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Abstract— Optimal Power Flow (OPF) with FACTS devices place a vital role in power systems. In this paper, a proposed Non-dominated Sorting Hybrid Cuckoo Search Algorithm (NSHCSA) for multi objective optimal power flow problem with series FACTS devices namely Static Synchronous Series Compensator (SSSC) and Interline Power Flow Controller (IPFC) with different objective functions including the practical constraints, operating constraints and the installation cost of FACTS devices are considered for this analysis. Some heuristic rules are suggested for the optimal location of FACTS devices to reduce the number of possible locations. Cuckoo Search Algorithm (CSA) and Genetic Algorithm (GA) are combined to form the proposed Hybrid Cuckoo Search Algorithm (HCSA). The fuzzy decision making tool is used to select optimal Pareto front solution for multi objectives. The effectiveness of the proposed method is tested on IEEE-30 bus test system with FACTS devices. The results are analyzed and compared with existing methods.

Index Terms— Hybrid cuckoo search algorithm; Multi objective optimization; Pareto solution; Location of FACTS device; Device installation cost; Non-dominated Sorting; power system severity.

I. INTRODUCTION

The latest FACTS devices are unified power flow controller (UPFC) and interline power flow controller. In the past, much effort has been made in the modeling of the UPFC for power flow analysis [1, 2]. UPFC compensate a single transmission line, whereas the IPFC is used for the compensation and power flow control of multi-line transmission system. Like the static compensator (STATCOM), SSSC and UPFC, the IPFC employs the voltage sourced converter (VSC) as a basic building block reported by L. Gyugyi et al. [3]. A steady state control of power system parameters with current and voltage operating constraints has been presented by X.P.Zhang [4] in which it uses a multi control functional model of SSSC. Mathematical models of generalized unified power flow controller (GUPFC), IPFC and their implementation in Newton power flow are described by X.P.Zhang [5] to demonstrate the performance of GUPFC and IPFC.

S. Teerathana et al. [6] proposed OPF method with IPFC to solve load flow problem and the power and the power generation with the minimum cost. An injection model for congestion management and total active power loss minimization in electric power system was developed Jun Zhang and Akihiko Yokoyama [7]. A current based model of SSSC and IPFC has developed by Vinkovic A and Mihalic R [8, 9]. Ramin Rajabioun [10] proposed a novel evolutionary algorithm cuckoo optimization algorithm, suitable for continuous nonlinear optimization problems. Xin-She Yang et.al [11], initiated to formulate a new meta-heuristic algorithm, called cuckoo search algorithm for solving optimization problems.

The study of the former literature reveals that all the FACTS devices incorporated for power flow management of single transmission line. But, this paper describes the performance of a multi-line FACTS device which is IPFC. A mathematical model of IPFC which is commonly known as IPFC power injection model has presented. In this paper while understanding the impact of IPFC on power system networks this model is very much useful. IPFC power injection model is associated with Newton-Raphson (NR) power flow solution method to study the effects of IPFC parameters in power flow studies. Numerical analysis is carried out on IEEE 30 bus system to demonstrate the performance of the IPFC model.

From the above literature, it is observed that the OPF problem is solved using different techniques without considering the practical constraints such as ramp rate limits, Prohibited Operating Zones (POZ) and the installation cost of FACTS devices. In this paper a non-dominated sorting hybrid cuckoo search algorithm to find the solution of multi objective optimal power flow problem in the presence of FACTS

Multi-objective OPF Problem Analysis with Practical Constraints in the Presence of FACTS Devices using NSHCSA

Computational Intelligence: Theories, Applications and Future Directions - Volume II pp 423–434

Multi-objective OPF Problem Analysis with Practical Constraints in the Presence of FACTS Devices Using NSHCSA

M. Balasubbareddy ✉

Abstract

This research paper proposes a hybrid cuckoo search algorithm (HCSA) for OPF problem solution in power systems. In this, genetic algorithm (GA) is combined with conventional cuckoo search algorithm (CSA) to improve the performance of the single-objective and multi-objective problem solution with satisfying equality, inequality, and practical constraints such as ramp-rate limits and prohibited operating zones (POZ). Fuzzy approach is used to select optimal solution required by the user from the total solutions.

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SPRINGER NATURE

Performance of Custom Power Devices for Power Quality Improvement

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Abstract— During Last decade power quality problems has become more complex at all level of power system. Recently, the Power electronics controllers are gaining concern to provide the quality of power for both power suppliers and consumers. Nowadays a new concept of custom power is used for customer's satisfaction. This paper presents a comprehensive survey of custom power devises in order to improve quality of power. Custom power devices (CPDs) including active voltage conditioner (AVC), dynamic voltage restorer (DVR), and distribution static synchronous compensator (D-STATCOM) are simulated on the modified IEEE-16 bus radial distribution system using Matlab/Simulink software to investigate performance efficiency of each device under various Power quality disturbances including voltage sags, voltage interruption, and harmonic distortions. The simulation results demonstrate that the effectiveness of each device to compensate different types of power quality disturbances depends on the device's arrangement and characteristics.

Index Terms— Active Voltage Conditioner, Dynamic voltage restorer, D-STATCOM, Custom power devices, Power quality, Power quality disturbance.

I. INTRODUCTION

The electric power system consists of three major functional blocks those are generation, _____ion and distribution. As per reliability consideration in power system, generation unit must generate satisfactory amount of power, transmission unit should supply maximum power over long distances without overloading and distribution system must deliver electric power to each consumer's premises form bulk power systems. Distribution system is located at the end of electric power system and is directly to the consumer, so the power quality depends upon the state of distribution system. The reason for this is failure in the electric distribution network accounts for about 91% of the average consumer's interruptions. Earlier, power system reliability focused on generation and transmission system due to capital investment in these systems. But today, distribution system is receiving more attention as reliability is concerned. Power quality issues are achieving a major concern due to the increase in number of sensitive loads. Also the extensive use of electronic equipment, such as information technology equipment, adjustable speed drives (ASD), arc furnaces, electronic fluorescent lamp ballasts and programmable logic controllers (PLC) have entirely altered the electric loads nature. These loads are the foremost sufferers of power quality problems. the non-linearity of these loads cause disturbances in the voltage waveform. The utility will likely to deliver a low distortion balanced voltage to its customers, particularly those with sensitive loads. For the improvement of reliability and power quality of system, the custom power devices are introduced into the power system. DSTATCOM, DVR, AVR, APC etc. are some of the major devices used for the improvement of voltage sag and swells. With the help of these FACTS devices[12], we are capable of reduce the problems related to power quality.

This paper presents a study on the performance of the most renowned CPDs[1] including active voltage conditioner (AVC), dynamic voltage restorer (DVR), and distribution static synchronous compensator (D-STATCOM) under different PQ disturbances. Each device is modelled on the modified IEEE 16-bus[2] radial distribution system using Matlab/Simulink software. Several PQ disturbances including voltage sag, momentary voltage interruption, and voltage and current harmonic distortions are generated to investigate and compare the advantages and limitations of CPDs.

II. POWER QUALITY DISTURBANCES

Electricity consumers face power quality problem at all stages of usage. Actually, Power quality[3] defines the assets of power supply distributed to the users in normal operating conditions. New electronic equipments and devices are more prone to power quality problems[10,11]. Reduced PQ has become a major problem for both power suppliers and customers. Poor PQ means there is enough variation in the power supply to affect equipments and may lead to their mis-operation or failure. It is unfeasible to completely control disturbances on the supply system but efforts and investments are made by utilities to avoid interruptions. Normal operations such as switching loads and capacitors or faults and opening of circuit breakers to clear faults mainly cause disturbances. The most regular and important PQ issues that require practical solutions are as follows:

A. Voltage Sag or Dip

Voltage sag is defined as a drop in the normal voltage level between 10 and 90% of the nominal rms voltage at the power frequency, for durations of 0. 5

Deep Learning Based Hand Gesture Translation System

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Abstract—

Sign language plays an important role for the people who have the hearing and speech problems. For the Non- verbal communication between the deaf-mute people. For the Kinetics gestures plays a crucial role in our day-to-day life. There are different sign languages that are available. Hand Gesture Translation is one among them. The sign language is a collection of different Hand Gesture symbols and Each Hand Gesture symbol have special meaning. It is mostly used by the deaf-mute persons to express their views and thoughts very quickly with the normal people. Main problem with this system is very difficult to translate the symbols and required special training on sign language. To overcome this problem we have implemented a Hand Gesture Translation System it provides an ability to interact with the machine efficiently. It will help the deaf-mute to express their feelings and views more effectively with the normal people. In this paper implemented software prototype that will automatically recognize the hand gestures with an accuracy of 93.4% for gesture Translation which will help the deaf and dumb people to interact easily with the normal people. The main aim of the project is to provide the easy way of communication between the normal people and the deaf-mute through gestures.

Keywords—Hand Gestures; Deep learning; Machine learning; Pre-Processing Image; Feature Extraction of Image; Image Processing; Deaf-mute.

I. INTRODUCTION

The Sign language plays an vital role for the communication between the deaf-mute. Hand Gesture Translation System(HGT System) is one among them, which will help the deaf and dumb people to communicate with the normal people through different hand gestures. These hand gestures will help the deaf and dumb people to express their views and thoughts very quickly with the people. The output is produced in the form text so that the people can recognize what the deaf and dumb are saying. The sign language mostly reduces the communication gap between the deaf-mute and the other people.

There are two types of sign languages that are available one is Image based sign language and another one is Sensor based sign language. Sensor based sign language is very costly compared with the Image based sign language because components whereas Image based sign language is built through Camera. Our Laptop consists of inbuilt Camera which will help to capture the image objects very easily. Hand Gesture Translation System is the software prototype it uses the Laptop inbuilt camera for capturing the different hand gestures and produces the output in the form of Text. It is mostly used by people who have speech and hearing problems to speak with the people. Because sometimes the people cannot understand what deaf and dumb people are saying in that case these hand gesture Translation system will used because the output is produced in the form of text, which the normal people can able to read. One of the Advantage of Image based approach is not to wear the Hand Gloves, Helmet etc. Sign language identification is significant in many domains areas such as user-interface, Interaction, security and multimedia. There are two parts in sign language identification one is sign detection and another one is sign identification. The system will use the web camera for capturing the hand gestures and after successfully capturing it will recognize these hand gestures and produces the output in the form of text.

In Machine Learning is useful in solving different real-time problems. This technology is mostly performs complex jobs such as classifying data, Translation of data, identifying data and predict the values. The basic idea of every machine learning project is to give a input data to the machine to generate a system which can be produce the result. Then the obtained result offer the correct response with the new input to generate predictions for the known information. The objective of our proposed system is to train ML algorithm in order to classify the different hand gesture images such as palm, fist. This method is also using deep learning and Tensor flow frame work.

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Word Sense Disambiguation System for Information Retrieval in Telugu Language

Neeraja Koppula, J. Pradeep Kumar, Koppula Srinivas Rao & G. Kiran Kumar

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Abstract

Nowadays, In Natural Language Processing (NLP), using artificial intelligence is a open challenge. Word Sense Disambiguation (WSD) is a sub field of artificial intelligence. In this research paper, WSD system is developed and validated for regional Telugu language. Many Natural Languages are having many ambiguous words. The word having more than one sense is known as ambiguous word or polysemy word. Word Sense Disambiguation is termed as the methodology of finding the appropriate sense of the

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Abstract:
R language executes its program on a one core CPU by default, using image
processing. R language requires gigantic amount of calculations which are all
processed by one core itself. When there is a need to use multiple core present
in our platform, special packages in R language are used and executed. Image
processing requires a large number of resources and processing all running
simultaneously, and all the calculations are majorly done with the help of matrix
pixels. In order to see how single-core and Multi-core systems affect the
efficiency of image processing algorithms we execute codes on multiple
platforms with varying number of codes along with varying sizes of the image.
Also we use the concept of threading, and performing the same function both
as a single thread process and a Multi thread process to check its efficiency. An
increase on the performance as a whole can be observed when we change the
number of codes, size of images and also as we choose to implement thread
concepts.