

International Journal of Innovative Technology and Exploring Engineering

ISSN : 2278 - 3075

Website: www.ijitee.org

Volume-6 Issue-3, AUGUST 2016

Published by:

Blue Eyes Intelligence Engineering and Sciences Publication Pvt. Ltd.



Editor In Chief

Dr. Shiv K Sahu

Ph.D. (CSE), M.Tech. (IT, Honors), B.Tech. (IT)

Director, Blue Eyes Intelligence Engineering & Sciences Publication Pvt. Ltd., Bhopal(M.P.), India

Dr. Shachi Sahu

Ph.D. (Chemistry), M.Sc. (Organic Chemistry)

Additional Director, Blue Eyes Intelligence Engineering & Sciences Publication Pvt. Ltd., Bhopal(M.P.), India

Vice Editor In Chief

Dr. Vahid Nourani

Professor, Faculty of Civil Engineering, University of Tabriz, Iran

Prof.(Dr.) Anuranjan Misra

Professor & Head, Computer Science & Engineering and Information Technology & Engineering, Noida International University, Noida (U.P.), India

Chief Advisory Board

Prof. (Dr.) Hamid Saremi

Vice Chancellor of Islamic Azad University of Iran, Quchan Branch, Quchan-Iran

Dr. Uma Shanker

Professor & Head, Department of Mathematics, CEC, Bilaspur(C.G.), India

Dr. Rama Shanker

Professor & Head, Department of Statistics, Eritrea Institute of Technology, Asmara, Eritrea

Dr. Vinita Kumari

Blue Eyes Intelligence Engineering & Sciences Publication Pvt. Ltd., India

Dr. Kapil Kumar Bansal

Head (Research and Publication), SRM University, Gaziabad (U.P.), India

Dr. Deepak Garg

Professor, Department of Computer Science and Engineering, Thapar University, Patiala (Punjab), India, Senior Member of IEEE, Secretary of IEEE Computer Society (Delhi Section), Life Member of Computer Society of India (CSI), Indian Society of Technical Education (ISTE), Indian Science Congress Association Kolkata.

Dr. Vijay Anant Athavale

Director of SVS Group of Institutions, Mawana, Meerut (U.P.) India/ U.P. Technical University, India

Dr. T.C. Manjunath

Principal & Professor, HKBK College of Engg, Nagawara, Arabic College Road, Bengaluru-560045, Karnataka, India

Dr. Kosta Yogeshwar Prasad

Director, Technical Campus, Marwadi Education Foundation's Group of Institutions, Rajkot-Morbi Highway, Gauridad, Rajkot, Gujarat, India

Dr. Dinesh Varshney

Director of College Development Counseling, Devi Ahilya University, Indore (M.P.), Professor, School of Physics, Devi Ahilya University, Indore (M.P.), and Regional Director, Madhya Pradesh Bhoj (Open) University, Indore (M.P.), India

Dr. P. Dananjayan

Professor, Department of Department of ECE, Pondicherry Engineering College, Pondicherry, India

Dr. Sadhana Vishwakarma

Associate Professor, Department of Engineering Chemistry, Technocrat Institute of Technology, Bhopal(M.P.), India

Dr. Kamal Mehta

Associate Professor, Deptment of Computer Engineering, Institute of Technology, NIRMA University, Ahmedabad (Gujarat), India

Dr. CheeFai Tan

Faculty of Mechanical Engineering, University Technical, Malaysia Melaka, Malaysia

Dr. Suresh Babu Perli

Professor & Head, Department of Electrical and Electronic Engineering, Narasaraopeta Engineering College, Guntur, A.P., India

Dr. Binod Kumar

Associate Professor, School of Engineering and Computer Technology, Faculty of Integrative Sciences and Technology, Quest International University, Ipoh, Perak, Malaysia

Dr. Chiladze George

Professor, Faculty of Law, Akhaltsikhe State University, Tbilisi University, Georgia

Dr. Kavita Khare

Professor, Department of Electronics & Communication Engineering, MANIT, Bhopal (M.P.), INDIA

Dr. C. Saravanan

Associate Professor (System Manager) & Head, Computer Center, NIT, Durgapur, W.B. India

Dr. S. Saravanan

Professor, Department of Electrical and Electronics Engineering, Muthayamal Engineering College, Resipuram, Tamilnadu, India

Dr. Amit Kumar Garg

Professor & Head, Department of Electronics and Communication Engineering, Maharishi Markandeshwar University, Mullana, Ambala (Haryana), India

Dr. T.C.Manjunath

Principal & Professor, HKBK College of Engg, Nagawara, Arabic College Road, Bengaluru-560045, Karnataka, India

Dr. P. Dananjayan

Professor, Department of ECE, Pondicherry Engineering College, Pondicherry, India

Dr. Kamal K Mehta

Associate Professor, Department of Computer Engineering, Institute of Technology, NIRMA University, Ahmedabad (Gujarat), India

Dr. Rajiv Srivastava

Director, Department of Computer Science & Engineering, Sagar Institute of Research & Technology, Bhopal (M.P.), India

Dr. Chakunta Venkata Guru Rao

Professor, Department of Computer Science & Engineering, SR Engineering College, Ananthasagar, Warangal, Andhra Pradesh, India

Dr. Anuranjan Misra

Professor, Department of Computer Science & Engineering, Bhagwant Institute of Technology, NH-24, Jindal Nagar, Ghaziabad, India

Dr. Robert Brian Smith

International Development Assistance Consultant, Department of AEC Consultants Pty Ltd, AEC Consultants Pty Ltd, Macquarie Centre, North Ryde, New South Wales, Australia

Dr. Saber Mohamed Abd-Allah

Associate Professor, Department of Biochemistry, Shanghai Institute of Biochemistry and Cell Biology, Yue Yang Road, Shanghai, China

Dr. Himani Sharma

Professor & Dean, Department of Electronics & Communication Engineering, MLR Institute of Technology, Laxman Reddy Avenue, Dundigal, Hyderabad, India

Dr. Sahab Singh

Associate Professor, Department of Management Studies, Dronacharya Group of Institutions, Knowledge Park-III, Greater Noida, India

Dr. Umesh Kumar

Principal: Govt Women Poly, Ranchi, India

Dr. Syed Zaheer Hasan

Scientist-G Petroleum Research Wing, Gujarat Energy Research and Management Institute, Energy Building, Pandit Deendayal Petroleum University Campus, Raisan, Gandhinagar-382007, Gujarat, India.

Dr. Jaswant Singh Bhomrah

Director, Department of Profit Oriented Technique, 1 – B Crystal Gold, Vijalpore Road, Navsari 396445, Gujarat. India

Technical Advisory Board

Dr. Mohd. Husain

Director MG Institute of Management & Technology, Banthara, Lucknow (U.P.), India

Dr. T. Jayanthi

Principal, Panimalar Institute of Technology, Chennai (TN), India

Dr. Umesh A.S.

Director, Technocrats Institute of Technology & Science, Bhopal(M.P.), India

Dr. B. Kanagasabapathi

Infosys Labs, Infosys Limited, Center for Advance Modeling and Simulation, Infosys Labs, Infosys Limited, Electronics City, Bangalore, India

Dr. C.B. Gupta

Professor, Department of Mathematics, Birla Institute of Technology & Sciences, Pilani (Rajasthan), India

Dr. Sunandan Bhunia

Associate Professor & Head,, Dept. of Electronics & Communication Engineering, Haldia Institute of Technology, Haldia, West Bengal, India

Dr. Jaydeb Bhaumik

Associate Professor, Dept. of Electronics & Communication Engineering, Haldia Institute of Technology, Haldia, West Bengal, India

Dr. Rajesh Das

Associate Professor, School of Applied Sciences, Haldia Institute of Technology, Haldia, West Bengal, India

Dr. Mrutyunjaya Panda

Professor & Head, Department of EEE, Gandhi Institute for Technological Development, Bhubaneswar, Odisha, India

Dr. Mohd. Nazri Ismail

Associate Professor, Department of System and Networking, University of Kuala (UniKL), Kuala Lumpur, Malaysia

Dr. Haw Su Cheng

Faculty of Information Technology, Multimedia University (MMU), Jalan Multimedia, 63100 Cyberjaya

Dr. Hossein Rajabalipour Cheshmehgaz

Industrial Modeling and Computing Department, Faculty of Computer Science and Information Systems, Universiti Teknologi Malaysia (UTM) 81310, Skudai, Malaysia

Dr. Sudhinder Singh Chowhan

Associate Professor, Institute of Management and Computer Science, NIMS University, Jaipur (Rajasthan), India

Dr. Neeta Sharma

Professor & Head, Department of Communication Skills, Technocrat Institute of Technology, Bhopal(M.P.), India

Dr. Ashish Rastogi

Associate Professor, Department of CSIT, Guru Ghansi Das University, Bilaspur (C.G.), India

Dr. Santosh Kumar Nanda

Professor, Department of Computer Science and Engineering, Eastern Academy of Science and Technology (EAST), Khurda (Orisa), India

Dr. Hai Shanker Hota

Associate Professor, Department of CSIT, Guru Ghansi Das University, Bilaspur (C.G.), India

Dr. Sunil Kumar Singla

Professor, Department of Electrical and Instrumentation Engineering, Thapar University, Patiala (Punjab), India

Dr. A. K. Verma

Professor, Department of Computer Science and Engineering, Thapar University, Patiala (Punjab), India

Dr. Durgesh Mishra

Chairman, IEEE Computer Society Chapter Bombay Section, Chairman IEEE MP Subsection, Professor & Dean (R&D), Acropolis Institute of Technology, Indore (M.P.), India

Dr. Xiaoguang Yue

Associate Professor, College of Computer and Information, Southwest Forestry University, Kunming (Yunnan), China

Dr. Veronica Mc Gowan

Associate Professor, Department of Computer and Business Information Systems, Delaware Valley College, Doylestown, PA, Allman China

Dr. Mohd. Ali Hussain

Professor, Department of Computer Science and Engineering, Sri Sai Madhavi Institute of Science & Technology, Rajahmundry (A.P.), India

Dr. Mohd. Nazri Ismail

Professor, System and Networking Department, Jalan Sultan Ismail, Kuala Lumpur, MALAYSIA

Dr. Sunil Mishra

Associate Professor, Department of Communication Skills (English), Dronacharya College of Engineering, Farrukhnagar, Gurgaon (Haryana), India

Dr. Labib Francis Gergis Rofaiel

Associate Professor, Department of Digital Communications and Electronics, Misr Academy for Engineering and Technology, Mansoura City, Egypt

Dr. Pavol Tanuska

Associate Professor, Department of Applied Informatics, Automation, and Mathematics, Trnava, Slovakia

Dr. VS Giridhar Akula

Professor, Avanthi's Research & Technological Academy, Gunthapally, Hyderabad, Andhra Pradesh, India

Dr. S. Satyanarayana

Associate Professor, Department of Computer Science and Engineering, KL University, Guntur, Andhra Pradesh, India

Dr. Bhupendra Kumar Sharma

Associate Professor, Department of Mathematics, KL University, BITS, Pilani, India

Dr. Praveen Agarwal

Associate Professor & Head, Department of Mathematics, Anand International College of Engineering, Jaipur (Rajasthan), India

Dr. Manoj Kumar

Professor, Department of Mathematics, Rashtriya Kishan Post Graduate Degree, College, Shamli, Prabudh Nagar, (U.P.), India

Dr. Shaikh Abdul Hannan

Associate Professor, Department of Computer Science, Vivekanand Arts Sardar Dalipsing Arts and Science College, Aurangabad (Maharashtra), India

Dr. K.M. Pandey

Professor, Department of Mechanical Engineering, National Institute of Technology, Silchar, India

Prof. Pranav Parashar

Technical Advisor, International Journal of Soft Computing and Engineering (IJSCE), Bhopal (M.P.), India

Dr. Biswajit Chakraborty

MECON Limited, Research and Development Division (A Govt. of India Enterprise), Ranchi-834002, Jharkhand, India

Dr. D.V. Ashoka

Professor & Head, Department of Information Science & Engineering, SJB Institute of Technology, Kengeri, Bangalore, India

Dr. Sasidhar Babu Suvanam

Professor & Academic Coordinator, Department of Computer Science & Engineering, Sree Narayana Gurukulam College of Engineering, Kadayiuruppu, Kolenchery, Kerala, India

Dr. C. Venkatesh

Professor & Dean, Faculty of Engineering, EBET Group of Institutions, Kangayam, Erode, Caimbatore (Tamil Nadu), India

Dr. Nilay Khare

Assoc. Professor & Head, Department of Computer Science, MANIT, Bhopal (M.P.), India

Dr. Sandra De Iaco

Professor, Dip.to Di Scienze Dell'Economia-Sez. Matematico-Statistica, Italy

Dr. Yaduvir Singh

Associate Professor, Department of Computer Science & Engineering, Ideal Institute of Technology, Govindpuram Ghaziabad, Lucknow (U.P.), India

Dr. Angela Amphawan

Head of Optical Technology, School of Computing, School Of Computing, Universiti Utara Malaysia, 06010 Sintok, Kedah, Malaysia

Dr. Ashwini Kumar Arya

Associate Professor, Department of Electronics & Communication Engineering, Faculty of Engineering and Technology, Graphic Era University, Dehradun (U.K.), India

Dr. Yash Pal Singh

Professor, Department of Electronics & Communication Engg, Director, KLS Institute Of Engg.& Technology, Director, KLSIET, Chandok, Bijnor, (U.P.), India

Dr. Ashish Jain

Associate Professor, Department of Computer Science & Engineering, Accurate Institute of Management & Technology, Gr. Noida (U.P.), India

Dr. Abhay Saxena

Associate Professor & Head, Department of Computer Science, Dev Sanskriti University, Haridwar, Utrakhnad, India

Dr. Judy. M.V

Associate Professor, Head of the Department CS &IT, Amrita School of Arts and Sciences, Amrita Vishwa Vidyapeetham, Brahmasthanam, Edapally, Cochin, Kerala, India

Dr. Sangkyun Kim

Professor, Department of Industrial Engineering, Kangwon National University, Hyoja 2 dong, Chunche0nsi, Gangwondo, Korea

Dr. Sanjay M. Gulhane

Professor, Department of Electronics & Telecommunication Engineering, Jawaharlal Darda Institute of Engineering & Technology, Yavatmal, Maharastra, India

Dr. K.K. Thyagarajan

Principal & Professor, Department of Informational Technology, RMK College of Engineering & Technology, RSM Nagar, Thiruyallur, Tamil Nadu, India

Dr. P. Subashini

Assoc. Professor, Department of Computer Science, Coimbatore, India

Dr. G. Srinivasrao

Professor, Department of Mechanical Engineering, RVR & JC, College of Engineering, Chowdavaram, Guntur, India

Dr. Rajesh Verma

Professor, Department of Computer Science & Engg. and Deptt. of Information Technology, Kurukshetra Institute of Technology & Management, Bhor Sadian, Pehowa, Kurukshetra (Haryana), India

Dr. Pawan Kumar Shukla

Associate Professor, Satya College of Engineering & Technology, Haryana, India

Dr. U C Srivastava

Associate Professor, Department of Applied Physics, Amity Institute of Applied Sciences, Amity University, Noida, India

Dr. Reena Dadhich

Prof. & Head, Department of Computer Science and Informatics, MBS MArg, Near Kabir Circle, University of Kota, Rajasthan, India

Dr. Aashis. S. Roy

Department of Materials Engineering, Indian Institute of Science, Bangalore Karnataka, India

Dr. Sudhir Nigam

Professor Department of Civil Engineering, Principal, Lakshmi Narain College of Technology and Science, Raisen, Road, Bhopal, (M.P.), India

Dr. S. Senthil Kumar

Doctorate, Department of Center for Advanced Image and Information Technology, Division of Computer Science and Engineering, Graduate School of Electronics and Information Engineering, Chon Buk National University Deok Jin-Dong, Jeonju, Chon Buk, 561-756, South Korea Tamilnadu, India

Dr. Gufran Ahmad Ansari

Associate Professor, Department of Information Technology, College of Computer, Qassim University, Al-Qassim, Kingdom of Saudi Arabia (KSA)

Dr. R. Navaneetha krishnan

Associate Professor, Department of MCA, Bharathiyar College of Engg & Tech, Karaikal Puducherry, India

Dr. Hossein Rajabalipour Cheshmejjaz

Industrial Modeling and Computing Department, Faculty of Computer Science and Information Systems, Universiti Teknologi Skudai, Malaysia

Dr. Veronica McGowan

Associate Professor, Department of Computer and Business Information Systems, Delaware Valley College, Doylestown, PA, Allman China

Dr. Sanjay Sharma

Associate Professor, Department of Mathematics, Bhilai Institute of Technology, Durg, Chhattisgarh, India

Dr. Taghreed Hashim Al-Noor

Professor, Department of Chemistry, Ibn-Al-Haitham Education for pure Science College, University of Baghdad, Iraq

Dr. Madhumita Dash

Professor, Department of Electronics & Telecommunication, Orissa Engineering College, Bhubaneswar, Odisha, India

Dr. Anita Sagadevan Ethiraj

Associate Professor, Department of Centre for Nanotechnology Research (CNR), School of Electronics Engineering (Sense), Vellore Institute of Technology (VIT) University, Tamilnadu, India

Dr. Sibasis Acharya

Project Consultant, Department of Metallurgy & Mineral Processing, Midas Tech International, 30 Mukin Street, Jindalee-4074, Queensland, Australia

Dr. Neelam Ruhil

Professor, Department of Electronics & Computer Engineering, Dronacharya College of Engineering, Gurgaon, Haryana, India

Dr. Faizullah Mahar

Professor, Department of Electrical Engineering, Balochistan University of Engineering and Technology, Pakistan

Dr. K. Selvaraju

Head, PG & Research, Department of Physics, Kandaswami Kandars College (Govt. Aided), Velur (PO), Namakkal DT. Tamil Nadu, India

Dr. M. K. Bhanarkar

Associate Professor, Department of Electronics, Shivaji University, Kolhapur, Maharashtra, India

Dr. Sanjay Hari Sawant

Professor, Department of Mechanical Engineering, Dr. J. J. Magdum College of Engineering, Jaysingpur, India

Dr. Arindam Ghosal

Professor, Department of Mechanical Engineering, Dronacharya Group of Institutions, B-27, Part-III, Knowledge Park, Greater Noida, India

Dr. M. Chithirai Pon Selvan

Associate Professor, Department of Mechanical Engineering, School of Engineering & Information Technology Manipal University, Dubai, UAE

Dr. S. Sambhu Prasad

Professor & Principal, Department of Mechanical Engineering, Pragati College of Engineering, Andhra Pradesh, India.

Dr. Muhammad Attique Khan Shahid

Professor of Physics & Chairman, Department of Physics, Advisor (SAAP) at Government Post Graduate College of Science, Faisalabad.

Dr. Kuldeep Pareta

Professor & Head, Department of Remote Sensing/GIS & NRM, B-30 Kailash Colony, New Delhi 110 048, India

Dr. Th. Kiranbala Devi

Associate Professor, Department of Civil Engineering, Manipur Institute of Technology, Takyelpat, Imphal, Manipur, India

Dr. Nirmala Mungamuru

Associate Professor, Department of Computing, School of Engineering, Adama Science and Technology University, Ethiopia

Dr. Srilalitha Giriya Kumari Sagi

Associate Professor, Department of Management, Gandhi Institute of Technology and Management, India

Dr. Vishnu Narayan Mishra

Associate Professor, Department of Mathematics, Sardar Vallabhbhai National Institute of Technology, Ichchhanath Mahadev Dumas Road, Surat (Gujarat), India

Dr. Yash Pal Singh

Director/Principal, Somany (P.G.) Institute of Technology & Management, Garhi Bolni Road, Rewari Haryana, India.

Dr. Sripada Rama Sree

Vice Principal, Associate Professor, Department of Computer Science and Engineering, Aditya Engineering College, Surampalem, Andhra Pradesh, India.

Dr. Rustom Mamlook

Associate Professor, Department of Electrical and Computer Engineering, Dhofar University, Salalah, Oman. Middle East.

Managing Editor

Mr. Jitendra Kumar Sen

International Journal of Innovative Technology and Exploring Engineering (IJITEE)

Editorial Board

Dr. Saeed Balochian

Associate Professor, Gonaabad Branch, Islamic Azad University, Gonabad, Iratan

Dr. Mongey Ram

Associate Professor, Department of Mathematics, Graphics Era University, Dehradun, India

Dr. Arupratan Santra

Sr. Project Manager, Infosys Technologies Ltd, Hyderabad (A.P.)-500005, India

Dr. Ashish Jolly

Dean, Department of Computer Applications, Guru Nanak Khalsa Institute & Management Studies, Yamuna Nagar (Haryana), India

Dr. Israel Gonzalez Carrasco

Associate Professor, Department of Computer Science, Universidad Carlos III de Madrid, Leganes, Madrid, Spain

Dr. Guoxiang Liu

Member of IEEE, University of North Dakota, Grand Forks, N.D., USA

Dr. Khushali Menaria

Associate Professor, Department of Bio-Informatics, Maulana Azad National Institute of Technology (MANIT), Bhopal (M.P.), India

Dr. R. Sukumar

Professor, Sethu Institute of Technology, Pulloor, Kariapatti, Virudhunagar, Tamilnadu, India

Dr. Cherouat Abel

Professor, University of Technology of Troyes, France

Dr. Rinkle Aggrawal

Associate Professor, Department of Computer Science and Engineering, Thapar University, Patiala (Punjab), India

Dr. Parteek Bhatia

Associate Professor, Department of Computer Science & Engineering, Thapar University, Patiala (Punjab), India

Dr. Manish Srivastava

Professor & Head, Computer Science and Engineering, Guru Ghasidas Central University, Bilaspur (C.G.), India

Dr. B. P. Ladgaonkar

Assoc. Professor&Head, Department of Electronics, Shankarrao Mohite Mahavidyalaya, Akluj, Maharashtra, India

Dr. E. Mohan

Professor & Head, Department of Computer Science and Engineering, Pallavan College of Engineering, Kanchipuram, Tamilnadu, India

Dr. M. Shanmuga Priya

Assoc. Professor, Department of Biotechnology, MVJ College of Engineering, Bangalore Karnataka, India

Dr. Leena Jain

Assoc. Professor & Head, Dept. of Computer Applications, Global Institute of Management & Emerging Technologies, Amritsar, India

Dr. S.S.S.V Gopala Raju

Professor, Department of Civil Engineering, GITAM School of Technology, GITAM, University, Hyderabad, Andhra Pradesh, India

Dr. Ani Grubisic

Department of Computer Science, Teslina 12, 21000 split, Croatia

Dr. Ashish Paul

Associate Professor, Department of Basic Sciences (Mathematics), Assam Don Bosco University, Guwahati, India

Dr. Sivakumar Durairaj

Professor, Department of Civil Engineering, Vel Tech High Tech Dr.Rangarajan Dr.Sakunthala Engineering College, Avadi, Chennai Tamil Nadu, India

Dr. Rashmi Nigam

Associate Professor, Department of Applied Mathematics, UTI, RGPV, Airport Road, Bhopal, (M.P.), India

Dr. Mu-Song Chen

Associate Professor, Department of Electrical Engineering, Da-Yeh University, Rd., Dacun, Changhua 51591, Taiwan R.O.C., Taiwan, Republic of China

Dr. Ramesh S

Associate Professor, Department of Electronics & Communication Engineering, Dr. Ambedkar Institute of Technology, Bangalore, India

Dr. Nor Hayati Abdul Hamid

Associate Professor, Department of Civil Engineering, Universiti Teknologi Mara, Selangor, Malaysia

Dr. C.Nagarajan

Professor & Head, Department of Electrical & Electronic Engineering Muthayammal Engineering College, Rasipuram, Tamilnadu, India

Dr. Ilaria Cacciotti

Department of Industrial Engineering, University of Rome Tor Vergata Via del Politecnico Rome-Italy

Dr. V.Balaji

Principal Cum Professor, Department of EEE & E&I, Lord Ayyappa Institute of Engg & Tech, Uthukadu, Walajabad, Kanchipuram, Tamil Nadu, India

Dr. G. Anjan Babu

Assoc. Professor, Department of Computer Science, S V University, Tirupati, Andhra Pradesh, India

Dr. Damodar Reddy Edla

Assoc. Professor, Department of Computer Science & Engineering, National Institute of Technology, Goa, India

Dr. D.Arumuga Perumal

Professor, Department of Mechanical Engg, Noorul Islam University, Kanyakumari (Dist), Tamilnadu, India

Dr. Roshdy A. AbdelRassoul

Professor, Department of Electronics and Communications Engineering, Arab Academy for Science and Technology, Electronics and Communications Engineering Dept., POBox 1029, Abu-Qir, Alexandria, Egypt

Dr. Aniruddha Bhattacharya

Assoc. Professor & Head, Department of Computer Science & Engineering, Amrita School of Engineering, Bangalore, India

Dr. P Venkateswara Rao

Professor, Department of Mechanical Engineering, KITS, Warangal, Andhra Pradesh, India

Dr. V.Mahalakshmi M.L

Assoc. Professor & Head, Institute of Management Studies, Chennai CID Quarters, V.K.Iyer Road, Mandaveli, Chennai

S. No	Volume-6 Issue-3, August 2016, ISSN: 2278-3075 (Online) Published By: Blue Eyes Intelligence Engineering & Sciences Publication Pvt. Ltd.		Page No.
	Authors:	Ndèye Madeleine DIOP, Boureima SEIBOU, Mamadou WADE, Marcel Sitor DIOUF, Ibrahima LY, Hawa LY DIALLO, Grégoire SISSOKO	
	Paper Title:	Theoretical Study of Vertical Parallel Junction Silicon Solar Cell Capacitance under Modulated Polychromatic Illumination: Influence of Irradiation	
1.	Abstract: This article is a theoretical study of vertical parallel junction silicon solar cell capacitance under modulated polychromatic illumination: influence of irradiation. Thus, from the minority carrier density and the photovoltage expressions, the capacitance is determined. Furthermore, Bode and Nyquist diagram followed by an equivalent electric circuit of the capacitance is given.		1-7
Keywords: solar cell vertical junction - frequency– Capacitance-irradiation – photovoltage - Nyquist-Bode.			
References:			
<ol style="list-style-type: none"> 1. M. L. Samb, M. Zoungrana, F. Toure, M. T. D. Diop, G. Sissoko. "Study in 3D modeling of a solar cell silicon static regime placed in a magnetic field and under constant multispectral illumination: Determination of electrical parameters" Journal des sciences Vol 10, N°4, 2010, pp. 23-38. www.cadjsd.org 2. O. Sow, I. Zerbo, S. Mbodji, M.I. Ngom, M.S. Diouf and G. Sissoko, "Silicon solar cell under electromagnetic waves in steady state: electrical parameters determination using the i-v and p-v characteristics." International Journal of Science, Environment and Technology, 1(4), (2012), pp. 230 – 246. 3. Dieng, M.L. Sow, S. Mbodji, M.L. Samb, M. Ndiaye, M. Thiame, F.I. Barro and G. Sissoko, "3D study of polycrystalline silicon solar cell: influence of applied magnetic field on the electrical parameters." Semiconductor Science and technology, 26(9), (2011). pp. 473-476. 4. Mazhari and H.Morkoç, "Theoretical study of a parallel vertical multi-junction silicon", J. App. Phys. 73(11), (1993), pp. 7509-7514 5. H. EL .Ghitani and S. Martinuzzi, "Determination Electric parameters of a solar cell silicon" J. App. Phys. 66(4), (1989), pp. 1717-1726 . 6. J. Dugas, "3D Modelling of a Reverse Cell Made with Improved Multicrystalline Silicon Wafers", Solar Energy Materials and Solar Cells, 32, (1),(1994) pp. 71 – 88,. 7. K. Misiakos, C.H. Wang, A. Neugroschel, and F.A. Lindholm. "Simultaneous Extraction of minority-carrier parameters in crystalline semiconductors by lateral photocurrent". J. Appl. Phys. 67 (1), (1990). pp 321 – 333. 8. Sissoko, G., C. Museruka, A. Corréa, I. Gaye and A.L. Ndiaye, "Light spectral effect on recombination parameters of silicon solar cell". Renew. Energ., 3, (1996), pp. 1487-1490. 9. Tall, B. Seibou, M. A. O. El Moujtaba, A. Diao, M. Wade, G. Sisoko, "Diffusion Coefficient Modeling of a Silicon Solar Cell under Irradiation Effect in Frequency: Electric Equivalent Circuit", International Journal of Engineering Trends and Technology (IJETT), 19, (2), (2015), pp. 56-61 10. Ricaud, Photopiles Solaires, Presses Polytechniques et Universitaires Romandes, 1997 11. M. L. Samb, M. Dieng, S. Mbodji, N. Thaim, F. I. Barro, G. Cissoko "Recombination parameters measurement of silicon solar cell under constant white bias light". Proceedings of the 24th European Photovoltaic Solar Energy Conference, Germany (Hamburg), September (2009), pp.469-472 12. Sissoko, G., E. Nanéma, A. Corréa, P.M. Biteye, M. Adj and A.L. Ndiaye, "Silicon Solar cell recombination parameters determination using the illuminated I-V characteristic. Renew. Energ., 3, (1998), pp. 1848-1851 13. H. L. Diallo, A. S. Maiga, A. Wereme, G. Sissoko "New approach of both junction and back surface recombination velocity in a 3D modelling study of a polycrystalline silicon solar cell. Eur. Phys. J. Appl. Phys. 42, (2008), pp. 203–211 14. Dione, M.M., S. Mbodji, M.L. Samb, M. Dieng, M. Thiame, S. Ndoye, F.I. Barro and G.Sissoko, "Vertical Junction under Constant Multispectral Light: Determination of Recombination Parameters." Proceedings of the 24th European Photovoltaic Solar Energy Conference , Germany (Hamburg), September 2009, pp. 465- 468 15. Mbodji, S., B. Mbow, F. I. Barro, G.Sissoko, "a 3D model for thickness and diffusion capacitance of emitter-base junction determination in a bifacial polycrystalline solar cell under real operating condition." Turkish Journal of Physics, 35(3) , (2011), pp. 281 – 291. 16. Mbodji, S., M. Dieng, B. Mbow, F.I. Barro and G. Sissoko, "Three dimensional simulated modelling of diffusion capacitance of polycrystalline bifacial silicon solar cell." Journal of Applied Science and Technology (JAST), 15(1 & 2), (2010), pp. 109 – 114 17. Mbodji, S., I. Ly, H.L. Diallo, M.M. Dione, O. Diassé and G. Sissoko, "Modeling study of n+/p solar cell resistances from single I-V characteristic curveconsidering the junction recombination velocity (Sf)", .Res. J. Appl. Sci. Eng. Techn., 4(1), (2012), pp. 1-7. 18. Anil Kumar, R "Measurement of solar cell AC parameter using Impedance Spectroscopy", A Thesis Submitted for the Degree of master of science (Engg.) in the Faculty of Engineerin Indian Institute of Science, Jan. 2000 pp. 49-50 19. El. Ndiaye, G. Sahin, M. Dieng, A. Thiam, H. L. Diallo, M. Ndiaye, G. Sissoko. "Study of the Intrinsic Recombination Velocity at the Junction of Silicon Solar under Frequency Modulation and Irradiation".J. Appl Math and Physics, 3, (2015), pp. 54-55 20. Mora-Sero, I., Garcia-Belmonte, G., Boix P.P., Vazquez, M.A. and Bisquet, J., "Impedance Spectroscopy Characterization of Highly Efficient Silicon Solar Cells under Different Illumination Intensities Light". Energyand Environmental Science, 2, (2009), pp.678-686. 21. Suresh, S., "Measurement of Solar Cell Parameters Using Impedance Spectroscopy." Solar Energy Materials and Solar Cells, 43, (1996) , pp 21-28. 			
	Authors:	Hamdy Mohamed Soliman, S.M.EL. Hakim	
	Paper Title:	Robust PI Controllers to Improve the Dynamic Performance of PMSM with Ripple Minimization	
2.	Abstract: Classical vector control for the permanent magnet synchronous motor (PMSM) is depending upon the mathematical model and hence any problem in the machine parameters or AC drives will deteriorate the performance of the drive system over all. So this paper suggested using four PI current controllers to improve the performance characteristics of the drive system. Three of them is used in the bang-bang control of inverter by rate of one for each phase and the other PI current controller is used to improving the q- axis current component at sudden applies or removes the load. this reflects the performance over all and improve it. The MATLAB Simulink is used to simulating the drive system. The proposed model of the vector control is compared to classical vector control to show the improvement occurs in the performance characteristics of the system with proposal method. The proposed cases are simulated through the MATLAB program and are operated in the laboratory. The laboratory results agreed with the simulating results that have been obtained		8-16
Keywords: Bang-bang inverter control, PI control, PMSM, vector control.			
References:			

	<ol style="list-style-type: none"> Goed, I. da Silva and P. Jose, A. Serni, "A hybrid controller for the speed control of a permanent magnet synchronous motor drive," Control Engineering Practice, Vol. 16, Issue 3, pp. 260-270, March, 2008. C. Mademlis and N. Margaris, "Loss minimization in vector-controlled interior permanent-magnet synchronous motor drives", Industrial Electronics, IEEE Transactions on, vol. 49, pp. 1344-1347, 2002. Jian-Xin, S. K. Panda, P. Ya-Jun, L. Tong Heng, and B. H. Lam, "A modular control scheme for PMSM speed control with pulsating torque minimization", Industrial Electronics, IEEE Transactions on, vol. 51, pp. 526-536, 2004. Jinggong zhang, Zhiyuan Liu and Run Pei, "Two-Degree-of-Freedom internal model control for AC servo system (Periodical style)," Transactions of China Electrotechnical Society, vol. 17, no. 4, pp. 45-48, 2002. Shengxian Zhuang, Xuening Li and Zhaoji Li, "The application in the speed regulating of asynchronous machine vector frequency changing based on adaptive internal model control (Periodical style)," Journal of University of Electronic Science and Technology of China, vol. 28,no.5, pp.502-504, 1999. P. L. Jansen and R. D. Lorentz, "Transducerless position and velocity estimation in induction and salient AC machines", IEEE Trans. Ind. Applicat., vol. 31, pp. 240-247, Mar./Apr. 1995. P. L. Jansen, R. D. Lorenz, and D. W. Novotny, "Observer-based direct field orientation: Analysis and comparison of alternative methods", IEEE Trans. Ind. Applicat., vol. 30, pp. 945-953, July/Aug. 1994. M. P. Kazmierkowski, and L. Malesani, "Current control techniques for three-phase voltage-source PWM converters: a survey", IEEE Trans. Ind. Electron., vol. 45, no. 5, October, 1998, pp. 691-703. B. k. Bose, "An adaptive hysteresis-band current control technique of a voltage - fed PWM inverter for machine drive system", IEEE Trans., on Ind. Appl., Vol.IA-37, pp.402-408, 1990 Hamdy Mohamed soliman and S. M. EL. Hakim," Improved Hysteresis Current Controller to Drive Permanent Magnet Synchronous Motors Through the Field Oriented Control", International Journal of Soft Computing and Engineering, Vol. 2, No. 4, September 2012, pp. 40-46. 					
	<table border="1"> <tr> <td>Authors:</td> <td>Massamba DIENG, Boureima SEIBOU, Ibrahima LY, Marcel Sitor DIOUF, Mamadou WADE, Grégoire SISSOKO</td> </tr> <tr> <td>Paper Title:</td> <td>Silicon Solar Cell Emitter Extended Space Charge Region Determination under Modulated Monochromatic Illumination by using Gauss's Law</td> </tr> </table>	Authors:	Massamba DIENG, Boureima SEIBOU, Ibrahima LY, Marcel Sitor DIOUF, Mamadou WADE, Grégoire SISSOKO	Paper Title:	Silicon Solar Cell Emitter Extended Space Charge Region Determination under Modulated Monochromatic Illumination by using Gauss's Law	
Authors:	Massamba DIENG, Boureima SEIBOU, Ibrahima LY, Marcel Sitor DIOUF, Mamadou WADE, Grégoire SISSOKO					
Paper Title:	Silicon Solar Cell Emitter Extended Space Charge Region Determination under Modulated Monochromatic Illumination by using Gauss's Law					
3.	<p>Abstract: In this paper, a method of determining the Emitter Extension space charge Region in a silicon Solar Cell Operating in short-circuit condition, is presented. The excess minority carrier's density versus base Depth is established in Dynamic Regime under monochromatic Illumination. Considering the junction as a plane capacitor, the emitter extension region X_{0e} is determined for various wavelengths, by using Gauss's law.</p> <p>Keywords: Silicon Solar Cell - minority carrier's density - monochromatic Illumination - Dynamic Regime - Gauss's Law - Emitter Extension Region</p> <p>References:</p> <ol style="list-style-type: none"> S. Valkov, « Electronique Analogique », Cours avec problèmes résolus aux éditions CASTEILLA-EDUCALIVRE, parution 01-03-1995, dimensions : 24, 40x17, 20x2,60. G. Sissoko, B. Dieng, A. Correa, M. Adj, D. Azilino, "Silicon Solar Cell space charge region width determination by a study in modeling." World renewable energy, 3, (1998), pp: 1852-1855 W. Shockley, « The theory of p-n junctions in semiconductors and p-n junction transistors », Bell Syst. Techn. J. 28, (3), (1945), pp. 435-489 J. J. Liou, F. A. Lindholm, « I-V Characteristics for Bifacial Silicon Solar Cell under a Magnetic Field. », J. Appl. Phys., 64, (3), 1 August 1988, pp.1249-1252 Hübner, A. G. Aberle, R. Hezel, « 20% efficient Bifacial Silicon Solar Cells », 14th European Photovoltaic Solar Energy Conference, (Barcelona, 1997), pp. 92-95. L. M. Daniel, J. M. Hwang, R. B. Campbell, « IEEE Transactions on Electron Devices », vol. ED-35, No.1, (1988), pp.70 – 78. N. Le Quang, M. Rodot, J. Nijs, M. Ghannam, J. Coppye, « Réponse spectrale de photopiles de haut rendement au silicium multicristallin. », J. Phys. III France 2, (1992), pp. 1305-1316. Schneider, C. Gerhards, F. Huster, W. Neu, M. Spiegel, P. Fath, E. Bucher, R.J.S. Young, A.G. Prince, J.A. Raby, A.F. Caroll. « Al BSF for thin screenprinted multicrystalline Si Solar Cells », Proc.17th European PVSEC, (Munich, 2001) pp. 1768 – 1771 Ricaud, « Photopiles Solaires », Photopiles au silicium cristallin, Presses polytechniques et universitaires romandes, 1997, pp. 244-245 J. Furlan, S. Amon, « Approximation of the carrier generation rate in illuminated silicon », Solid State Electr, vol 28, n°12, (1985) pp. 1241-1243 J. N. Hollenhort and G. Hasnain, « Frequency dependent whole diffusion in InGaAs double heterostructures ». Appl. Phys. Lett., .67 (15) , (1995), pp. 2203-2205 Mandelis, « Coupled ac photocurrent and photothermal reflectance response theory of semiconducting p-n junctions. », Journal of Applied Physics, 66 (11), (1989), pp. 5572-5583 M. I. Ngom, B. Zouma, M. Zoungrana, M. Thiame, Z. N. Bako, A. G. Camara and G. Sissoko, « Theoretical study of a parallel multi-junction silicon cell under multispectral illumination: influence of external magnetic field on the electrical parameters. » International Journal of Advanced Technology and Engineering Research (IJATER), 2(6), (1987), pp. 101-109 Hamidou, A. Diaou, S. A. Douani, A. Moissi, M. Thiame, F. I. Barro and G. Sissoko, « Capacitance determination of a vertical parallel junction solar cell under multispectral illumination in steady state. », International Journal of Innovative Technology Exploring Engineering (IJITEE), 2, (3), (2013), pp. 1-6 G. Sissoko, E. Nanema, A. Correa, P. M. Biteye, M. Adj, A. L. Ndiaye, « Silicon solar cell recombination parameters determination using the illuminated I-V characteristic. », Proceedings of the World Renewable Energy Conference Florence-Italy, 3, (1998), pp.1848-1851 H. L. Diallo , A.S. Maiga, A. Wereme and G.Sissoko, « New approach of both junction and back surface recombination velocities in a 3D modeling study of a polycrystalline silicon solar cell. », Eur.Phys. J. Appl. Phys., 42, (2008) pp. 193- 211.. S. Mbodji, I. Ly, H. L. Diallo, M.M. Dione, O.Diasse and G. Sissoko, « Modeling Study of N+/P Solar Cell Resistances from Single I-V Characteristic Curve Considering the Junction Recombination Velocity (Sf) ». Res. J. Appl. Sci.Eng. Technol., 4, (1), (2012), pp. 1-7. M. Ndiaye, Z. N. Bako, I. Zerbo, A. Dieng, F. I. Barro, G. Sissoko « Détermination des paramètres électriques d'une photopile sous éclairage monochromatique en modulation de fréquence, a partir des diagrammes de Bode et de Nyquist », J. Sci.Vol. 8, N° 3 (2008), pp. 59 – 68. www.ucadjs.org Queyrel, J. (1991). Précis de Physique - Electricité 1, Cours et Exercices Résolus Bréal Madougou S., Kaka M. and Sissoko G., "Silicon Solar Cells: Recombination and Electrical Parameters", Solar Energy, (2010), pp. 69-79. Mbodji, S., Mbow, B., Barro, F. I., and Sissoko, G., « A 3D model for thickness and diffusion capacitance of emitter-base junction determination in a bifacial polycrystalline solar cell under real operating condition. », Turk J Phys 35, (2011), pp. 281 –291. El Hadji Ndiaye, Gokhan Sahin, Moustapha Dieng, Amarty Thiam, Hawa Ly Diallo, Mor Ndiaye, Grégoire Sissoko, "Study of the Intrinsic Recombination Velocity at the Junction of Silicon Solar under Frequency Modulation and Irradiation" Journal of Applied Mathematics and Physics, (2015), 3, pp: 1522-1535 Ibrahima Diatta, Issa Diagne, Cheikh Sarr, Khady Faye, Mor Ndiaye, And Grégoire Sissoko "Silicon Solar Cell Capacitance: Influence Of Both Temperature And Wavelength" IPASJ International Journal of Computer Science (IJCS), Volume 3, Issue 12, December (2015), pp:1-8 	17-20				
4.	<table border="1"> <tr> <td>Authors:</td> <td>Mohamadou Samassa NDOYE, Boureima SEIBOU, Ibrahima LY, Marcel Sitor DIOUF, Mamadou</td> </tr> </table>	Authors:	Mohamadou Samassa NDOYE, Boureima SEIBOU, Ibrahima LY, Marcel Sitor DIOUF, Mamadou			
Authors:	Mohamadou Samassa NDOYE, Boureima SEIBOU, Ibrahima LY, Marcel Sitor DIOUF, Mamadou					

	WADE, Senghane MBODJI, Grégoire SISSOKO	
	Paper Title:	Irradiation Effect on Silicon Solar Cell Capacitance in Frequency Modulation
	<p>Abstract: This paper shows the irradiation effect on a solar cell capacitance under monochromatic illumination in dynamic frequency mode. From the continuity equation, we determine the expression of excess minority carrier density from which the capacitance and the capacitance efficiency are deduced thereafter studied according to the modulation frequency and the irradiation energy. This paper shows that the capacitance efficiency and the thickness of the space charge region (SCR) in short-circuit decrease according to the irradiation energy increasing.</p> <p>Keywords: Solar cell, Irradiation, frequency, capacitance efficiency.</p> <p>References:</p> <ol style="list-style-type: none"> 1. Ly, O.H. Lemrabott, B. Dieng, I. Gaye, S. Gueye, M.S. Diouf And G. Sissoko, (2012) 2. Techniques de détermination des paramètres de recombinaison et le domaine de leur validité d'une photopile bifaciale au silicium polycristallin sous éclairage multi spectral constant en régime statique. Revue des Energies Renouvelables Vol. 15 N°2 pp187 – 206 (http://www.cder.dz) 3. G. Sissoko, E. Nanéma, A. Corréa, P. M. Biteye, M.Adj, Silicon Solar cell recombination parameters determination using the characteristic. Renewable Energy, vol-3, pp.1848-1851 Elsevier Science Ltd, 0960-1481/98/#. 4. A.Cuevas, (2005). The early history of bifacial solar cells, proc 20th EPVEC, pp 801-805 5. Glunz S.W, Knobloch J, Biro D, Wetting.W, (1997), optimized high-efficiency silicon solar cells. Proc 14th EPVEC, pp 392-395 6. El Hadji Ndiaye, Gokhan Sahin, Moustapha Dieng, Amary Thiam, Hawa Ly Diallo, Mor Ndiaye, Grégoire Sissoko, (2015). Study of the Intrinsic Recombination Velocity at the Junction of Silicon Solar under Frequency Modulation and Irradiation, Journal of Applied Mathematics and Physics, 3, pp 1522-1535 Published Online November 2015 in SciRes. http://www.scirp.org/journal/jamp-http://dx.doi.org/10.4236/jamp.2015.311177 7. H. Ly Diallo, B. Dieng, I. Ly, M.M. Dione, M. Ndiaye, O.H. Lemrabott, Z.N. Bako, A. Wereme And G. Sissoko, (2012). Determinations of the Recombination and Electrical Parameters of a Vertical Multijunction Silicon Solar Cell. Research Journal of Applied Sciences, Engineering and Technology 4(16); 2626-2631, 8. A.Jakubowski, (1981). « Graphic method of substrate doping determination from C-V characteristics of MIS capacitors », Solid-State Electronics, Vol. 24, No. 10, pp 985-987, 9. G. Yaron and D. F.-Bentchkowsky, (1980). « Capacitance voltage characterization of poly Si-SiO₂-Si structures », Solid-State Electronics, Vol. 23, pp 433-439. 10. S. Mbodji, B. Mbow, F. I. Barro and G. Sissoko, (2011). A 3D model for thickness and diffusion capacitance of emitter-base junction determination in a bifacial polycrystalline solar cell under real operating condition, Turkish Journal of Physics, 35, pp.281–291. http://www.ajol.info/index.php/jast/article/view/54834 11. E.Sow, S. Mbodji, B. Zouma, M. Zougrana, I. Zerbo, A. Sere and G. Sissoko, (2012), “Determination in 3D modeling study of the width emitter extension region of the solar cell operating in open circuit condition by the Gauss's Law.”, International Journal of Science, Environment and Technology (IJSET), Volume 1, N°4, pp. 331 – 340 12. H. Bayhan, A. S. Kavasoglu, (2003). « Admittance and impedance spectroscopy on Cu(In,Ga)Se₂ solar cells », Turk. J. Phys., 27, 529-535. 13. J. H. Scofield, (1995), « effects of series resistance and inductance on solar cell admittance measurements », Solar Energy Materials and Solar Cells, 37 (2) 217-233. 14. Gaye , R. Sam , A.D. Seré , I.F. Barro , M.A. Ould El Moujtaba , R. Mané , G. Sissoko, (2014). Influence of Irradiation and Damage Coefficient on the Minority Carrier Density in Transient Response for a Bifacial Silicon Solar Cell, Current Trends in Technology and Science, ISSN : 2279-0535. Volume: 3, Issue: 2, pp 98-104. 15. Chenvidhya D., Kirtikara K. and Jivacate C. (2005) PV Module Dynamic Impedance and Its Voltage and Frequency Dependencies. Solar Energy Materials and Solar Cells, 86, 243-251. http://dx.doi.org/10.1016/j.solmat.2004.07.005 16. A.Hübner A.G.Aberle, and R.Hezel, (Munich, 2001). 20% Efficient Silicon Solar Cells Bifacial, 14th European PVSEC, pp 1796-1798. 17. G.Sissoko, C. Museruka, A. Correa, I. Gaye and A.L. Ndiaye., (1996, 15 - 21 June). 'Light Spectral Effect on Recombinaison Parameters of Silicon Solar Cell', Proceedings of the World Renewable Energy Congress, Denver, USA, Part III, pp. 1487- 1490. 18. Mandelis, A.A. Ward and K.T. Lee.(1989). Combined AC photocurrent and photothermal reflectance response theory of semiconducting p-n junctions. J. Appl. Phys. Vol.66. No.11. pp 5572 – 5583. http://dx.doi.org/10.1063/1.343662 19. Ibrahima Tall, Boureima Seibou, MAO El Moujtaba Amadou Diao, Momadou Wade, Gregory Sissoko; (Jan 2015). Diffusion Coefficient Modeling of a Silicon Solar Cell under Irradiation Effect in Frequency: Electric Equivalent Circuit; International Journal of Engineering and Technology Trends (IJETT)-Volume 19 Number 2 -ISSN: 2231-5381, p.56-61, (http://www.ijettjournal.org) 20. M.A. Ould El Moujtaba, M. Ndiaye, A.Diao, M.Thiame, I.F. Barro and G. Sissoko.(2012). Theoretical Study of the Influence of Irradiation on a Silicon Solar Cell under Multispectral Illumination. Res. J. Appl. Sci. Eng. Technol., Volume 4. Issue 23.pp 5068-5073. http://www.maxwellsci.com/jp/abstract.php?jid=RJASET&no=234&abs=21 21. Mouhammadou Mousily Diallo, Boureima Seibou, Hamet Yoro Ba, Issa Zerbo, Grégoire Sissoko. (2014). One-dimensional study of a Bifacial Silicon Solar Cell Illuminated from the Front Surface by a Monochromatic Light Under Frequency Modulation: Influence of Irradiation and Damage Coefficient. Current Trends in Technology and Sciences. ISSN: 2279-0535. Vol 3.Issue 6. pp 416-421. http://www.ctts.in/assets/upload/5628ctts-36170%20vol-3%20iss-6.pdf 22. M. Kunst and A. Sanders.(1992). Transport of Excess Carriers in Silicon Wafers.Semiconductor Science and Technology.Volume 7.Numero 1. pp 51-59. http://dx.doi.org/10.1088/0268-1242/7/1/009 23. G. Sissoko, A. Correa, E. Nanema, M. N. Diarra, A. L. Ndiaye, A. Adj.,(1998). “Recombination parameters measurement in silicon double sided field solar cell”; World Renewable Energy Congress , pp.1856-1859. 24. Ly Diallo, H., Wade, M., Ly, I., Ndiaye, M., Dieng, B., O. H Lemrabott, A.S. and Maiga Sissoko, G. (2012) 1D Modeling of a Bifacial Solar Cell Silicon under Monochromatic Illumination Frequency Modulation: Determination of the Equivalent Electrical Circuit Related to the Recombination Area Velocity. Research Journal of Applied Sciences, Engineering and Technology, 4, 1672-1676. 25. C. D. Thurmond, (Aug 1975), « The standard thermodynamic functions for the formation of electron and hole in Ge, Si, GaAs and GaP », J. Electrochem. Soc, vol. 122, pp 133-41. 26. Thiam, M. Zougrana, H. Ly Diallo, A Diao, N. Thiam, S. Gueye, M.M. Deme, M. Sarr and G. Sissoko, (2013). Influence of Incident Illumination Angle on Capacitance of a Silicon Solar Cell under Frequency Modulation, Res.J. App. Sci., Eng. and Technology, 5 1123-1128 27. Ali Hamidou, Amadou Diao, Séré Ahmed Douani, Ali Moissi, Moustapha Thiame, 28. Fabé Idrissa Barro, Grégoire Sissoko, (February 2013). Capacitance determination of a Vertical Parallel Junction Solar Cell under Multispectral Illumination in steady state, International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN: 2278-3075, Volume-2, Issue-3, pp.1-4 	
5.	Authors:	Vikram Duhan, Ritu
	Paper Title:	A Hybrid Approach to Reduce Peak-to-Average Power Ratio in Single-Carrier FDMA
	<p>Abstract: Single-carrier frequency division multiple access (SC-FDMA) is an improved methodology over orthogonal frequency division multiple access (OFDMA), where input information is changed from time domain to</p>	
		26-29

frequency domain by Discrete Fourier Transform (DFT) before applying to conventional OFDMA procedure. By applying the DFT before passing it through the Inverse Discrete Fourier Transform (IDFT) it ensures that the subcarriers are orthogonal to each other which transmit signal as the single bearer signal stimulating the SC-FDMA. SC-FDMA results in reducing the Peak-to-average power ratio (PAPR) as compare to OFDMA. In this paper computational complexity of the framework is further reduced by utilizing composite of Hartley and Hilbert transformation as a part of DFT and IDFT operation. This technique improves SC-FDMA output performance measure parameters by attaining a remarkable balance between PAPR and bit error rate (BER) reduction. The simulation results depict that hybrid transformation technique have lower PAPR than Fast Fourier Transform (FFT).

Keywords: SC-FDMA, OFDMA, DFT, Hattley, Hilbert, Peak- to-Average Power, Bit Error Rate (BER)

References:

1. H. Ekström, A. Furuskär, J. Karlsson, M. Meyer, S. Parkvall, J. Torsner, and M. Wahlqvist, " Technical Solutions for the 3G Long-Term Evolution," IEEE Commun. Mag., vol. 44, no. 3, March 2006, pp. 38– 45
2. 3rd Generation Partnership Project (3GPP); Technical Specification Group Radio Access Network; Physical Layer Aspects for Evolved UTRA, <http://www.3gpp.org/ftp/Specs/html-info/25814.htm>
3. M. Danish Nisar, Hans Nottensteiner, and Thomas Hindelang, " On Performance Limits of DFT-Spread OFDM Systems" , in Sixteenth IST Mobile Summit, July 2007 in Budapest, Hungary.
4. B.E. Priyanto, H. Codina, S. Rene, T.B. Sorensen, P. Mogensen, " Initial Performance Evaluation of DFT-Spread OFDM Based SC-FDMA for UTRA LTE Uplink" , IEEE Vehicular Technology Conference (VTC) 2007 Spring, Dublin, Ireland, Apr. 2007
5. Luqing Wang and Chintia Tellambura, " A Simplified Clipping and Filtering Technique for PAR Reduction in OFDM Systems" , IEEE Signal Processing Letters, Vol. 12, No. 6, pp.453-456 June 2005
6. Wenjin Wang, Xiqi Gao, Fu-Chun Zheng, Wen Zhong, " CP-OQAM-OFDM Based SC-FDMA: Adjustable User Bandwidth and Space-Time Coding" , IEEE Transactions On Wireless Communications, Vol. 12, No. 9, pp.4506-4517, September 2013
7. Fumihiro Hasegawa, Akihiro Okazaki, Hiroshi Kubo, Damien Castelain, and David Mottier, " A Novel PAPR Reduction Scheme for SC-OFDM with Frequency Domain Multiplexed Pilots" , IEEE Communications Letters, Vol. 16, No. 9, September 2012
8. Taewoo Lee, Hideki Ochiai, " Peak Power Reduction of SC-FDMA Signals Based on Trellis Shaping" , Globocom 2012 symposium on selected areas,3268-3273
9. Prafulla. D. Gawande, Sirdharth. A. Ladhake, " PAPR Performance of Ofdm System by Using Clipping and Filtering Method" , International Journal of Advances in Engineering & Technology, Vol. 6, Issue 2, pp. 789-794, May 2013,
10. Jinwei Ji, Guangliang Ren, Huining Zhang, " PAPR Reduction in Coded SC-FDMA Systems via Introducing Few Bit Errors" , IEEE Communications Letters, Vol. 18, No. 7, July 2014
11. Ishu,Naresh Kumar, " PAPR Reduction in Wavelet based SCFDMA using Pulse Shaping Filters for LTE Uplink Transmission" , International Journal of Applied Engineering Research, Volume 9, Number 20 (2014) pp. 6481-6492
12. Aping Yao, Yi Zheng, " Peak-To-Average Power Reduction of OFDM Signals Using Adaptive Digital Filter" , IEEE ICASSP, pp. 305-308, 2006
13. Meng Ma, Xiaojing Huang, Y. Jay Guo, " An Interference Self-Cancellation Technique for SC-FDMA Systems, IEEE Communications Letters, Vol. 14, No. 6, June 2010
14. Leonhard Korowajczuk, LTE, WiMAX and WLAN Network Design, Optimization and Performance Analysis, John Willey & Sons,2011

Authors:	Nitin. P. Sherje, S. V. Deshmukh
Paper Title:	Design, Development and Performance Evaluation of Semiactive Control Device: Magnetorheological Damper

Abstract: Vibration mitigation with semi-active control device has recently received considerable attention, because of its strong potential to control devices without imposing heavy power demands. This paper presents a design and development of Magnetorheological damper for commercial vehicles and performance evaluation experimentally. Semi-active control devices includes: Magnetorheological (MR) fluid dampers, semi-active stiffness dampers, semi-active tuned liquid column dampers, and piezoelectric dampers. In the last few years, a number of MR fluid-based devices have been researched all over the world. It has become popular in various applications like civil, automobile, biomedical, space shuttle etc. because of its advantages, high strength, Good controllability, wide dynamic range, fast response rate, low energy consumption and simple structure. Hence the work is focused on design and development of Magnetorheological damper considering the commercial vehicle and testing the performance experimentally. It has been observed that the designed damper had wide dynamic range and response. The performance of damper is tested using three different fluids MR1, MR2 and MR3. These fluids are composed by using different carrier fluids, carbonyl iron powder (5 μm) size and additives. The carrier fluids used are low viscosity paraffin oil, silicon oil, synthetic oil and additives used are AP3 Greece and Arosil.

6.

Keywords: MR damper, magnetic potential, magnetic coil.

References:

1. Honghui Zhang, Changrong Liao, Weimin Chein, Shanglian Huang, A magnetic design method of MR fluid dampers and FEM analysis of magnetic saturation, Science online paper.
2. Weng W. Chooi Design, modelling and testing of magnetorheological (MR) dampers using analytical flow solutions, Volume 86, Issues 3–5, February 2008, Pages 473–482B.F. Spencer Jr., S.J. Dyke, M.K. Sain and J.D. Carlson,
3. Phenomenological Model of a Magnetorheological Damper, Proceedings of the 12th Conference on Analysis and Computation, ASCE, Chicago, Illinois.
4. Yaojung Shiao, Chun-Chi Lai and Quang-Anh Nguyen, The Analysis of a Semi-Active Suspension System, SICE Annual Conference 2010, August 18-21, 2010, The Grand Hotel, Taipei, Taiwan.
5. Jiang Xue-Zheng, Wang Jiong, Hong Sheng, Semiactive control of vehicle suspension using MR Damper, J Cent South Southe Uni, Research Gate, Springer, 2012, 1839-1845.
6. Haiping Du, Kam Yim Sze, JamesLam, Semi-active H ∞ control of vehicle suspension with magneto-rheological dampers, Journal of Sound and Vibration 283 (2005) 981–996.
7. R.S. Prabakar, C. Sujatha, S. Narayanan, Optimal semi-active preview control response of a half car vehicle model with magnetorheological damper, Journal of Sound and Vibration 326 (2009) 400–420.
8. M. Zapateiro, N.Luo, H. R. Karimi, J.Vehi, Vibration control of a class of semiactive suspension system using neural network and backstepping techniques, Mechanical Systems and Signal Processing, 23 (2009) 1946–1953.
9. N. R. Fisco, H. Adeli, Smart structures: Part I—Active and semi-active control, Scientia Iranica (A), (2011) 18(3) 275-284.

	<ol style="list-style-type: none"> 10. S.J. Dyke, B.F. Spencer Jr., M.K. Sain and J.D. Carlson, An Experimental Study of MR Dampers for Seismic Protection, Special Issue on Large Civil Structures. 11. Faycal Ikhouane, Oriol Gomis-Bellmunt, A limit cycle approach for the parametric identification of hysteretic systems, <i>Systems & Control Letters</i> 57 (2008) 663–669. 12. R. Turczyn, M. Kciuk, Preparation and study of model Magnetorheological fluids, <i>Journal of achievements in materials and manufacturing engineering</i>, 2008, 27(2). 13. Fang, C; Zhao, B.Y; Chen, L.S; Wu, Q & Hu, N.L.K. The effect of the green additive guar gum on the properties of magnetorheological fluid. <i>Smart Mater. Struc.</i>, 2005, 14(1), N1–N5. 14. Wu, W.P; Zhao, B.Y; Wu, Q & Hu, L.S.C.K. The strengthening effect of guar gum on the yield stress of magnetorheological fluid. <i>Smart Mater. Struc.</i>, 2006, 15(4), N94–N98. 15. Chiranjit Sarkar, Harish Hirani, Synthesis and Characterization of Antifriction Magnetorheological Fluids for Brake, <i>Defence Science Journal</i>, Vol. 63, No. 4, July 2013, pp. 408-412. 16. S.Elizabeth Premalatha1,2, R. Chokkalingam1, M. Mahendran, Magneto Mechanical Properties of Iron Based MR Fluids, <i>American Journal of Polymer Science</i> 2012, 2(4): 50-55. 17. Kumbhar B. K., Satyajit R. Patil, Suresh M. Sawant, Synthesis and characterization of fo Magneto-rheological fluids for MR brake application, <i>Engineering science and Technology an International Journal</i>, Elsevier, 18(2005),432-438. 	
--	--	--

	<table border="1" style="width: 100%;"> <tr> <td style="width: 20%;">Authors:</td> <td>Lyudmila Aleksandrova</td> </tr> <tr> <td>Paper Title:</td> <td>Passive Solar Heating and Hot Water Supply for Medical Purposes in Extreme Situations</td> </tr> </table>	Authors:	Lyudmila Aleksandrova	Paper Title:	Passive Solar Heating and Hot Water Supply for Medical Purposes in Extreme Situations	
Authors:	Lyudmila Aleksandrova					
Paper Title:	Passive Solar Heating and Hot Water Supply for Medical Purposes in Extreme Situations					
	<p>Abstract: In the paper are shown several ways for passive solar heating and hot water supply by using rainwater for medical purposes, demonstrated in patent BG66192 (B1) – „Solar energy application for hot water residential supply and air heating in a modular medical unit (operation theatre) in extreme situations” . Here are also explained the applications of stretched membranes as well as the use of tensegrity structures as a way of execution of protective screens for the chambers and volumes.</p> <p>Keywords: passive, solar heating, hot water supply, medical purposes, extreme situations.</p> <p>References:</p> <ol style="list-style-type: none"> 1. Yanko Aleksandrov Refrigeration chambers and volumes for use in extreme situations. <i>IJITEE- India</i>. Volume- 6, Issue 2, July 2016. Page №.; 30-37. 2. Aleksandrov Yanko [BG] BG 111651 (A). MOVEABLE COLD STORAGE CHAMBER FOR POSITIVE TEMPERATURE; Classification: international; E04H5/12; Espacenet. 3. Aleksandrov Yanko [BG] BG 111658 (A). SYSTEM FOR SOLAR HEATING OF COOLING CHAMBER WITH POSITIVE TEMPERATURES; Classification: international: E04B2/00; E04C1/00; Espacenet. 4. Aleksandrova Lyudmila [BG]; VSU LYUBEN KARAVELOV [BG] Patent BG66192 (B1) — 2011-12-30. „Solar energy application for hot water residential supply and air heating in a modular medical unit (operation theatre) in extreme situations.” Espacenet. 5. Classification: - international: F24J2/42 - cooperative: Y02E10/40 Application number: BG20060109516 20060421 6. Priority number(s): BG20060109516 20060421 7. Also published as: BG109516 (A) 8. Aleksandrova Liudmila Chapter 5. „Connection of the walls of operation blocks with rectangular shape to the coordination axes of the carrying construction of refrigeration chambers, according to Ukrainian norms”, in the monograph “Exploitation of medical modules and sub-modules in extreme situations”. 2016. ISBN 978-954-331-068-5. 	35-37				

	<table border="1" style="width: 100%;"> <tr> <td style="width: 20%;">Authors:</td> <td>Teresa Chikohora, Thulaganyo Dimakatso, Edmore Chikohora</td> </tr> <tr> <td>Paper Title:</td> <td>A Technical Framework for Assessing Higher Education E-Learning Readiness</td> </tr> </table>	Authors:	Teresa Chikohora, Thulaganyo Dimakatso, Edmore Chikohora	Paper Title:	A Technical Framework for Assessing Higher Education E-Learning Readiness	
Authors:	Teresa Chikohora, Thulaganyo Dimakatso, Edmore Chikohora					
Paper Title:	A Technical Framework for Assessing Higher Education E-Learning Readiness					
	<p>Abstract: E-learning is one of the fast growing technologies in Higher Education which has seen institutions adopting a platform to enhance their traditional teaching, learning and assessment methods. Most institutions use already established platforms like Blackboard and Moodle, where they pay a fee for using the facility. However institutions are limited by the Service level agreements with the service providers such that they may not use other environments effectively. The study is motivated by the challenges that institutions face after investing in this e-learning infrastructure. Institutions tend to under-utilise the implemented platform yet the implementation costs are high. A thorough analysis on the technical readiness of the institution is therefore required so as to inform the decision on whether to invest or not. A survey was conducted to identify the hardware, software and networking resource requirements for an e-learning platform. Questionnaires and interviews were used as data collection instruments. The study defines a framework that may be used to assess the technical readiness of a university to implement an e-learning platform. The framework also uses the e-LRS model to inform the readiness levels. The defined framework will be useful in ensuring that universities benefit from the huge investments in e-learning infrastructure.</p> <p>Keywords: e-learning, readiness, framework.</p> <p>References:</p> <ol style="list-style-type: none"> 1. Al-Amer, K. and Al Soufi, A. (2011). Faculty perceptions and utilization of a learning management system at the Higher Colleges of Technology in UAE. <i>Proceedings of the IADIS International Conference on e-learning 2011</i>. 2. Aydin, C.H., & Tasci, D. (2005). “Measuring Readiness for e-Learning: Reflections from an Emerging Country”. <i>Educational Technology & Society</i>, 8 (4), 244-257. 3. Borotis, S. and Poulymenakou, A. (2004) E-Learning Components: Key Issues to Consider Before Adopting e-Learning Interventions. <i>Proc. Of e-Learn 2004</i>, Washington, DC. 4. Govindasamy, T (2002), Successful implementation of e-Learning Pedagogical considerations, <i>Internet and Higher Education</i>, 4 (2002) 287–299. Elsevier Science. 5. Graham, C. R. (2006). Chapter 1: Blended learning system: Definition, current trends, future directions. <i>Handbook of blended learning</i>. San Francisco, CA: Pfeiffer. 6. Gumińska, M & Madejski, J. (2007), Web based e-learning platform as a source of the personalized teaching materials, [online] , VOLUME 24 ISSUE 2, International OCSCO World Pres, Available: http://www.journalamme.org/papers_vol24_2/24251.pdf, [accessed 12/09/14] 7. Howard Community College, (2012), Technical Requirements for eLearning, [online] available: http://www.howardcc.edu/academics/eLearning/technical/techreq.html, ©2012 Howard Community College. [Accessed 21/09/14] 8. Leal.J.P & Queirós. R (n.d), E-LEARNING FRAMEWORKS: A SURVEY, [online] http://www.dcc.fc.up.pt/~zp/papers/INTED_2010.pdf, 	38-42				

	<p>[accessed on 19/09/14]</p> <ol style="list-style-type: none"> 9. Madar. M.J & Willis. O, (2014), "Strategic Model of Implementing E-Learning, INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH VOLUME 3, ISSUE 5. 10. Ouma. G.O, Awuor. F.M, Kyambo, B, (n.d) E-Learning Readiness in Public Secondary Schools in Kenya, available: http://www.eurodl.org/?p=archives&year=2013&halfyear=2&article=592, [accessed 20/09/14] 11. Okinda. R, (2013), KTTC's eLearning Readiness Survey (2013). 12. Piotrowski. M, (2010), what is an E-Learning Platform? [online] ZHAW Zurich University of Applied Sciences. Available: http://www.irma-international.org/viewtitle/43445/, [accessed 17/10/14] 13. Psycharis. S, (2005), Presumptions and actions affecting an e-learning adoption by the educational system Implementation using virtual private networks. University of the Aegean. 14. Schreurs. J, Ehler. U, Moreau. R, (2008), Measuring e-learning readiness [online], Available: https://uhdspace.uhasselt.be/dspace/bitstream/1942/8740/1/ICL08.pdf, [accessed on 19/09/14] 15. Piotrowski, M., 2010. What is an e-learning platform?, in Learning management system technologies and software solutions for online teaching: tools and applications, I. Global, Editor. 	
Authors:	Pritam Singha Roy, Samik Chakraborty	
Paper Title:	Design of h-Slotted Microstrip Patch Antenna with Enhanced Bandwidth for C-Band Application	
9.	<p>Abstract: In this paper a compact h- shaped slotted microstrip patch antenna has been proposed for C-band applications. The antenna parameters such as Return loss, Bandwidth, Gain, VSWR are improved .The comparison between measured and simulated results for unslotted and h-slotted microstrip patch antenna has been discussed . The proposed antenna has been fabricated and tested in laboratory .The measured and simulated results are exhibits good agreement. The proposed antenna achieved 16.6% of bandwidth at centre frequency of 7.52 GHz with VSWR \leq 2 and gain is 6.46dBi. The return loss of -27.97 dB is obtained for h-slot microstrip antenna with dielectric substrate (Glass PTFE $\epsilon_r=2.55$) of thickness (h) =1.6 mm. The proposed antenna is simulated with IE3D® software.</p> <p>Keywords: Bandwidth; Gain; h-slot;Microstrip antenna; Return loss.</p> <p>References:</p> <ol style="list-style-type: none"> 1. N. G. Alexopoulos, D. R. Jackson., "Fundamental superstrate (cover) effects on printed circuit antennas," IEEE Trans. Antennas Propagat., vol. 32, 1987, pp. 807-815. 2. M. K. Meshram, B. R. Vishvakarma, "Gap-coupled microstrip array antenna for wide-band operation," International Journal of Electronics, vol. 88, 2001, pp. 1161-1175. 3. J-S. Row, K. L, Wong, "Resonance in a superstrate-loaded rectangular microstrip structure," IEEE Trans. Antennas Propagat, vol. 29, 1993, pp. 1349-1355. 4. T.K.Lo and Y.Hwng, "Microstrip antennas of very high permittivity using iris,"Electron Lett., vol.40 no. 12, pp.718-719,Jun .2004 5. T. M. Au , K.F. Tong and K.M. Luk, "Analysis of offset dual- patch microstrip antenna," IEE Proc. Microwave. Antennas Propagat., Vol.141, No.6, 1994, pp. 523-526. 6. Axelrod, M. Kisluk and J. Maoz, "Broadband microstrip-fed slot radiator," Microwave J., June 1989, pp. 81-94. 7. M. Kahrizi, T.K.Sarkar and Z.H.Maricevic, " Analysis of a wide radiating slot in the ground plane of a microstrip line," IEEE Trans. Microwave Theory Tech. , Vol. MTT-41, Jan. 1993, pp.2937. 8. R.A. Sainati CAD of micro strip antenna for wireless applications. Artech House, Inc 1996 9. D.M.Pozar,"Microstrip Antennas,"Jhon Wiley and ons,Hoboken,1995,pp.79-81 10. R. Garg, P. Bhartia, I. Bahl, and A. Ittipiboon, Microstrip Antenna Design Handbook, ArtechHouse, 2001. 	43-46