

# **2018 3rd International Innovative Applications of Computational Intelligence on Power, Energy and Controls with their Impact on Humanity (CIPECH 2018)**

**Ghaziabad, India  
1-2 November 2018**



**IEEE Catalog Number: CFP1887Z-POD  
ISBN: 978-1-5386-6473-5**

**Copyright © 2018 by the Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP1887Z-POD
ISBN (Print-On-Demand):	978-1-5386-6473-5
ISBN (Online):	978-1-5386-6472-8

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# Contents

Messages	iii
Keynote Speakers	xi
Committees	xvii

## APPLIED TECHNOLOGIES IN RENEWABLE ENERGY AND SMART GRIDS

---

<b>1. A Study on Green Energy Powered Cognitive Radio Network for Communication Network Architecture of Smart Grid</b>	
<i>Naveen Kumar</i>	3
<b>2. Techno-economic and Environmental Strategy for Optimal Planning of Dispatchable and Non-Dispatchable DG units in Distribution Systems</b>	
<i>Tarannum Bahar, Omveer Singh, R.K. Viral and Nitin Kadiyan</i>	8
<b>3. Estimation of Weibull Distribution Parameters and Wind Power Density for Wind Farm Site at Akal at Jaisalmer in Rajasthan</b>	
<i>Mohammad Mohsin and K.V.S. Rao</i>	14
<b>4. Performance Analysis of 25 MW Grid Connected Solar Photovoltaic Plant in Gujarat, India</b>	
<i>Sandeep Singh Bhullar and Mahendra Lalwani</i>	20
<b>5. Performance Analysis of Solar Powered DC-DC Buck Converter for Energy Harvesting IoT Nodes</b>	
<i>Himanshu Sharma, Madhav Sharma, Chetan Sharma, Ahteshamul Haque and Zainul Abidin Jaffery</i>	26
<b>6. Packing Factor Effects on the Performance of Photovoltaic Module for a Given Module Area</b>	
<i>Md. Meraj, M. Emran Khan, G.N. Tiwari and Md. Istiyaque</i>	30
<b>7. LQR based PI Controller Tuning for Transport Delay-Phase Locked Loop (TD-PLL)</b>	
<i>Mohd Afroz Akhtar, Srishti Choudhury and Suman Saha</i>	34
<b>8. Experimental Validation &amp; Performance Analysis of 100kW Solar Photovoltaic System</b>	
<i>Akhilesh Rai, Anmol Soni, Anmol Gupta and Ashish Thombre</i>	39
<b>9. Estimation of Energy Production of Grid Connected Rooftop Solar Photovoltaic System at Nagar Nigam Kota, Rajasthan</b>	
<i>Gauranshi Saxena and Lata Gidwani</i>	45
<b>10. Levelized Cost of Electricity with Degradation of 10 MW Grid-Connected Photovoltaic Power Plant in Kalwakurthy, India</b>	
<i>Radhy Rani Nagar and Lata Gidwani</i>	50
<b>11. Solar Energy Potential of the State of Rajasthan in India</b>	
<i>Vineet Kumar Mahaver and K.V.S. Rao</i>	56
<b>12. A Five-Level PWM Inverter for Hybrid PV/Fuel Cell/Battery Standalone Power System</b>	
<i>Avinash Pareek, Prashant Singh and Anmol Gupta</i>	62
<b>13. Improved Design Analysis of Photovoltaic Modules and Arrays Under Varying Conditions</b>	
<i>Mohd Faisal Jalil, Shahida Khatoon and Ibraheem Nasiruddin</i>	68

- 14. Smart Solar Energy Management to Power Computer Lab in Rural Areas**  
*Neeraj Kumar Gupta, Aditya Kumar Singh, Ashish D. Thombre and Kirti Pal* 76
- 15. Application of Consensus Algorithm for Power Dispatch in Autonomous Microgrid**  
*Rucha Joshi, Leena Heistrene, Elijah Toppo and Reema Patel* 81
- 16. Regression Models with Common Coefficients for Global Solar Radiation Estimation Under Different Climates in India**  
*M. Azeem Ansari, M. Shahrukh Anis and Basharat Jamil* 86

---

## COMPUTATIONAL INTELLIGENCE AND APPLICATIONS

---

- 17. SMS Advisory System for Medical Assistance by using Neuro Fuzzy System**  
*Ankit Verma, Gaurav Agarwal and Shashank Bhardwaj* 93
- 18. Detecting Infrequent Weighted Patterns as Outliers using WFPG**  
*Deepak Sinwar, Vijaypal Singh Dhaka and Manoj Kumar Sharma* 97
- 19. Modeling and Simulation of Fast Steering Mirror Plant for Laser beam pointing Application**  
*Himanshu Chaudhary, Shahida Khatoon, Ravindra Singh and Ashish Pandey* 102
- 20. Performance Enhancement of Integrated Solar-Wind Hybrid Energy System using MPPT**  
*Akanksha Sharma, H.P. Singh and S.K. Sinha* 107
- 21. Review Paper on Optimization of Handover Parameter in Heterogeneous Networks**  
*Payal Mahajan and Zaheeruddin* 111
- 22. R-peak based Arrhythmia Detection using Hilbert Transform and Principal Component Analysis**  
*Varun Gupta and Monika Mittal* 116
- 23. Detection of Tuberculosis based on Multiple Parameters using ANFIS**  
*Ajay Kumar Shrivastava, Akash Rajak and Shashank Bhardwaj* 120
- 24. Adaptive Steganography via Image Complexity Analysis using 3D Color Texture Feature**  
*Ridhima Grover, Dinesh Kumar Yadav, D.K. Chauhan and Suraj Kamya* 125
- 25. Parameter Identification of an Over-Determined and Over-Constrained System using PSO**  
*L. Navinkumar Rao and Sanjay Gairola* 130
- 26. A Qualitative Analysis of Secured Handover Management Schemes for Mobile IPv6 Enabled Networks**  
*Arun Kumar Tripathi and Surendra Kumar Tripathi* 135

---

## CONTROL SYSTEMS AND APPLICATIONS

---

- 27. Wound Healing Therapy Machine**  
*Anish Kapoor* 145
- 28. Fast Steering Mirror for Optical Fine Pointing Applications: A Review Paper**  
*Himanshu Chaudhary, Shahida Khatoon, Ravindra Singh and Ashish Pandey* 150

<b>29. Optimal Controller Design for Two Wheel Mobile Robot</b>	
<i>Shahida Khatoon, Devendra Kumar Chaturvedi, Naimul Hasan and Md Istiyaque</i>	155
<b>30. Piezoelectric Actuation and Motors: An Overview of Nonlinearities, Control and Emerging Industrial Applications</b>	
<i>Saikat Kumar Shome, Uma Datta, Arpita Mukherjee and Partha Bhattacharjee</i>	160

---

## EMERGING TRENDS IN ON-CHIP COMMUNICATIONS

---

<b>31. Soft Computing based Ellipsoidal Fractal Antenna for Wide Band Applications</b>	
<i>Mohd. Gulman Siddiqui, A.K. Saroj, Devesh, R. Saxena, J.A. Ansari and S.S. Sayeed</i>	167
<b>32. Orthogonally Coupled Rectangular Patch Antenna for Wireless Smart Applications</b>	
<i>Abhishek Kumar Saroj, Devesh, Mohd. Gulman Siddiqui, J.A. Ansari, Neelesh Agrawal and Mukesh Kumar</i>	171
<b>33. Performance Analysis of Dual Half Circular Overlapped Microstrip Antenna</b>	
<i>Mukesh Kumar, J.A. Ansari, Rohini Saxena, Mohd. Gulman Siddiqui, Abhishek Kr. Saroj and S.S. Sayeed</i>	175

---

## POWER ELECTRONICS DRIVES AND ELECTROMECHANICAL ENERGY CONVERSION

---

<b>34. Harmonics Minimization in 3-Level Inverter Waveform and its FPGA Realization</b>	
<i>Salman Ahmad, Zahoor Ahmad Ganie, Imtiaz Ashraf and Atif Iqbal</i>	183
<b>35. Simulation of Converter Topologies for PV Grid Connected System</b>	
<i>Swapnil Singh and Mahendra Lalwani</i>	188
<b>36. Design and Analysis of a New 31-Level Asymmetrical Multilevel Inverter Topology with Different PWM Techniques</b>	
<i>Shubham Kumar Gupta, Kuldeep Rathore and Praveen Bansal</i>	194

---

## POWER SYSTEM TECHNOLOGY

---

<b>37. Energy Conservation: Analysis &amp; Improvement through Energy Audit</b>	
<i>Sudhir Kumar Singh, Brajesh Kumar Tiwari and Alok Kumar Pandey</i>	203
<b>38. Contingency Analysis and Security Constraint based Optimal Power Flow in Power Network</b>	
<i>Deepak Yadav, Aditya Singh Chauhan and Brijesh Singh</i>	210
<b>39. A Brief Study on Optimal Placement of Phasor Measurement Unit</b>	
<i>Kajal Kaushal, Poonam Syal and S.K. Sinha</i>	215
<b>40. Condition Monitoring of Dielectrics</b>	
<i>Abdullah Bin Afzal, Upasana Jain and Nashet Ahmed Khan</i>	221

---

## RECENT TECHNOLOGICAL DEVELOPMENTS IN VLSI DESIGN AND TOOL AUTOMATION

---

<b>41. Design of Power Efficient Low-Offset Dynamic Latch Comparator using 90nm CMOS Process</b>	
<i>Vikrant Varshney, Avaneesh K. Dubey, Ankur Kumar, Pratosh Kumar Pal and R.K. Nagaria</i>	229
<b>42. Optimized Channel Communication Performance of IoT based Devices: A Survey</b>	
<i>Satya Prakash Singh and Neelesh Ranjan Srivastava</i>	234

<b>43. Study and Analysis of Environmental Issues for Scaled Version of Si-Ge Heterojunction Bipolar Transistor</b>	
<i>Alok Kumar Pandey, Arun Kumar and Sheetal Singh</i>	238
<b>44. An Ultra Thin Body Nanoscale Dual Material Double Gate SOI MOSFET</b>	
<i>Anil Kumar</i>	242
<b>45. A Compact Tri Band Monopole Antenna with L Stub for WLAN/WiMAX Applications</b>	
<i>Krishan Pratap Singh, Chandan and Gagandeep Bharti</i>	249
<b>AUTHOR INDEX</b>	254