# Proceedings of the

# 2017 International Conference On

# Smart Technology for Smart Nation SmartTechCon2017

17 – 19 August 2017 REVA University, Bengaluru, India

# **Editor(s)**

S.K. Niranjan, Sunilkumar S. Manvi, Mallikarjuna M. Kodabagi and Vishwanath R. Hulipalled

IEEE Part Number: CFP17M14-USB IEEE ISBN:978-1-5386-0568-4 IEEE Conference Record #41985

# **Technically Co-Sponsored**















Copyright and Reprint Permission: 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 Operations Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved. Copyright ©2015 by IEEE.

Best viewed with Internet Explorer 7.0 or later, Firefox 8.0 or later, Safari 5.1 or later in Microsoft® Windows™, Linux and MacOS. If you are having issues when viewing PDF files in Firefox, please refer the <u>help</u> page.

# **Welcome Message**

Dear Colleagues,

On behalf of the SmartTechCon 2017 Organizing Committee, it is our pleasure to welcome you all to the International Conference on Smart Technologies for Smart Nation. SmartTechCon 2017 is the first international conference initiated from India by REVA University to provide an international forum for the presentation and discussion of recent advances in Smart Technologies, Communication and Internet of Things. SmartTechCon is technically sponsored by IEEE Bangalore Section, IEEE Computational Intelligence Society Bangalore Chapter and Research Publishing, Singapore. The conference will be held from 17 - 19 August 2017 at REVA University, Bangalore.

We are honored to have 7 internationally renowned keynote speakers, who will deliver their keynote speeches in the morning sessions. Two short-course will be conducted by experts in their respective fields. We also planned for 2 tutorials.

A total of 963 submissions were received globally, witnessing this truly popular and international event. We have 21 papers accepted from the submissions received from Bangladesh, Sudan, Singapore, Indonesia, Malaysia, Ethiopia, Iran, Sir Lanka, Mexico, China, Oman, USA and UK. The Technical Program Committee (TPC) comprising 180 experts from academia and industry selected 298 papers for presentations. The conference will run in 6 parallel sessions in 3 days, in which 5 Best Paper will be selected based on the recommendation by the reviewers.

We would like to express our sincere thanks to our Keynote speakers, all the authors, and the conference attendees. Our deep appreciation goes to Peer-Review Oversee members, Steering Committee members, TPC members, and Session Chairs for their invaluable contribution. Recognition should go to the Local Organizing Committee members who have all worked extremely hard for the details of important aspects of the conference programs and social activities. We appreciate the contributions of all the student volunteers who have given their time to help make the conference successful. We would like to thank C & M Consultants for their great services as Professional Conference Organizer (PCO). We wish to thank Mr. Sankaran of Research Publishing, Singapore for his invaluable support.

We are grateful to our technical co-sponsors IEEE Bangalore Section and IEEE Computational Society, Bangalore Chapter. Finally, we would like to thank all our sponsors and supporters for their contribution to the conference.

Enjoy the first edition of SmartTechCon and your stay in Bangalore, India.

General Chair(s)

Dr. Sunilkumar S. Manvi Dr. S.K. Niranjan

**Organizing Chair(s)** 

Dr. Mallikarjun M. Kodabagi Dr. Vishwanath R. Hulipalled **Committees** 

# **Oversight Committee**

Prof. Debabrata Das, IEEE Bangalore Section, Bangalore, India

Dr. Puneet Kumar Mishra, IEEE Bangalore Section, Bangalore, India

Dr. Pamela Kumar, IEEE Bangalore Section, Bangalore, India

Mr. BN Pal, IEEE Bangalore Section, Bangalore, India

Dr. KVS Hari, IEEE Bangalore Section, Bangalore, India

Dr. Ravikiran Annaswamy, IEEE Bangalore Section, Bangalore, India

Dr. B S Bindhumadhava, IEEE Bangalore Section, Bangalore, India

# **Steering Committee**

Abzetdin Adamov, Chair of IEEE ComSoc and IEEE CS, Qafqaz Univ., Azerbaijan

Alex Alagarsamy, UNBC, Canada

Alex Galis, Member of IEEE, University College London, United Kingdom

Alex P James, Senior Member of IEEE, Nazarbayev Univ., Kazakhstan

Angel Lozano, IEEE Fellow, Universitat pompeuFabra, Spain

Ankur Gupta, Senior IEEE Member, Model Institute of Engineering & Technology, India

Asif Gill, Member of IEEE, University of Technology Sydney, Australia

Atul Negi, IEEE Senior Member, University of Hyderabad, India

B. Hirosaki (Botaro), IEEE Fellow, NEC Corporation, Japan

B. P. Divakar, REVA University, India

Bakirtzis Anastasios, IEEE Fellow, Aristotle University of Thessaloniki, Greece

Bhanu Prasad, Texas A & M University, Florida, USA

Bhawani Shankar Chowdhry, Chairman IEEE COMSOC, Mehran University of Engineering & Technology, Pakistan

Binod Kumar, Member of IEEE ComSoc, JSPM's Jayawant Institute of Computer Applications, India

**Bjoern Schuller,** *IEEE Senior Member, University of Passau, Germany* 

Carlos Wesphal, Member of IEEE CNOM, Federal University of Santa Catarina, Brazil

Cheng Li, Senior Member of IEEE, Bioinformatics Institute, Singapore

Chin-Teng (CT) Lin, IEEE Member, National Chiao Tung Univ., Taiwan

Col. Jerry Miller, FIU, USA

D. Schilling (Don), IEEE Fellow, Linex Technologies Inc, Finland

Danda Rawat, Senior Member of IEEE, Georgia Southern Univ., USA

Daryoush Habibi, Senior Member of IEEE, Edith Cowan Univ., Australia

David Kaeli, IEEE Fellow, Northeastern Univ., USA

Dusit Niyato, Committee Member IEEE VTS Singapore, Nanyang Technological Univ., Singapore

E. Brady (Edward), IEEE ComSoc Member, Strategic Perspectives Inc, USA

Ekram Khan, Senior Member of IEEE USA, Aligarh Muslim Univ., India

Fernando Velez, Senior Member of IEEE, Centre for Telecommunications Research, London

Gert Jervan, Senior Member of the IEEE, Tallinn University of Technology, Estonia

Gregg T Vesonder, IEEE Member, Stevens Institute of Technology, USA

Hao Ying,IEEE Fellow, Wayne State Univ., USA

Hung-Yu Wei,IEEE Member, National Taiwan Univ., Taiwan

**Imre Jozsef Rudas,**TC Co-Chair of IEEE SMC, Ã "buda Univ., Hungary

Iti Saha Misra, Executive Committee Member IEEE Kolkata Section, Jadavpur Univ., India

Jaime Lloret, IEEE Member, Universidad Politecnica de Valencia, Spain

**Jeng-Shyang Pan,** Tainan Chapter Chair IEEE Signal Processing Society, National Kaohsiung University of Applied Sciences, Taiwan

Jiankun Hu, Member of IEEE ComSoc, UNSW Australia, Australia

Joe Sremack, IEEE Information Theory Society member, Berkeley Research Group LLC, USA

Joel Rodrigues, Chair of the IEEE ComSoc, University of Beira Interior, Portugal

Josa Soler, IEEE Member, Technical University of Denmark, Denmark

Josep M. Guerrero, IEEE Fellow, Aalborg Univ., Denmark

K. Trivedi (Kishor), Member of IEEE ComSoc, Duke Univ., Duke

K. B. Nagasundara, SDMIT, Dharwad

Kandarpa Sarma, Senior Member of IEEE, Gauhati Univ., India

Kin Leung, IEEE Fellow, Imperial College, UK

L. M. Patnaik, IISc, India

Lajos Hanzo, IEEE Fellow, University of Southampton, UK

M Ayoub Khan, Member of IEEE, Engineering and Technology. Jamia Millia Islamia, India

M. Alencar (Marcelo), IEEE Member, UFCG, Brazil

M. Guizani (Mohsen), IEEE Fellow, SAFAT Kuwait Univ., Kuwait

Madhukar V Pitke, IEEE Life Fellow, Institute of Electrical and Electronics Engineers Inc, United States

Mallikarjun Shastry, REVA University, India

Manjunath S, Central University of Kerala, Kasargod

Michael Beer, University of Liverpool, UK

Michal Wozniak, Senior Member of the IEEE, Wroclaw University of Technology, Poland

Milena Radenkovic, IEEE Fellow, Wollaton Road University of Nottingham, UK

N Sriraam, Chairman IEEE EMBS Bangalore Chapter, M.S.Ramaiah Institute of Technology, India

Natarajan Meghanathan, Jackson State University, USA

Noor M. Sheikh, Chair of IEEE ComSoc in IEEE Lahore Section, EE UET Lahore, Pakistan

Oliver Rose, Member of IEEE ComSoc, Universität der Bundeswehr Mýnchen, Germany

P Deepa Shenov, UVC, India

Puneet Kumar Mishra, IEEE Bangalore Section EXECOM Members, India

Qinyu Zhang, IEEE Senior Member, Shenzhen University Town, China

R. C. Biradar, REVA University, India

Raghavendra Kulkarni, MSRIT, India

Raghuram Krishnapuram, IEEE CS, Chair, Bangalore, India

Rajashekar Mandi, REVA University, India

Rajkumar Buyya, University of Melbourne, Australia

Ramjee Prasad, IEEE Fellow, Aalborg Univ., Denmark

Ranganath Heggere, UAH, USA

S. S. Iyengar, Florida International University, USA

Sajal K. Das, Missouri University, Rolla

**Salman Avestimehr,** Associate Editor for the IEEE Transactions on Information Theory, University of Southern California, USA

Sasi PM, Member IEEE Kerala Section, Centre for Development of Advanced Computing (C-DAC), India

Sattar Bader Sadkhan, Chairman of IEEE IRAQ SECTION, University of Babylon, Babylon

Sherali Zeadally, IEEE Member, University of Kentucky, USA

Siano Pierluigi, IEEE Member, Dipartimento di Ingegneria Industriale, Italy

**Stefano Berretti,** *IEEE Member, University of Firenze, Italy* 

Sudeendra Koushik, IEEE CES, Bangalore, India

Sudip Misra, Senior Member of IEEE, Indian Institute of Technology, India

Sunil Kumar Kopparapu, Senior Member of IEEE, TCS Innovation Labs - Mumbai, India

T. Shrinivas, IISc, India

Tathagat Varma, Senior Member of IEEE, St. Joseph's College of Business Administration, India

Tony Beamount, Aston University, UK

V. V. Srinivasan, IEEE CES, Chairman, Bangalore, India

Vasile Bota, IEEE Member, University Cluj-Napoca, Romania

Venugopal K. R, UVC, India

Vincenzo Eramo, IEEE Member, Sapienza-University of Roma, Italy

Vinod Mishra, IEEE ComSoc Member, Northern Virginia, USA

Vishwanath R. Hulipalled, REVA University, India

Vivek Jain, Member of IEEE ComSoc, Robert Bosch LLC, USA

Vivek S. Deshpande, Chair of IEEE ComSoc Chapter, Technical University of Sofia, Bulgaria

Wang Hai, Aston University, UK

Wlodzislaw Duch, IEEE Senior Member, Nicolaus Copernicus Univ., Poland

Y. Narahari, IISc., India

# **Organising Committee**

#### **Chief Patron**

Dr. P Shyama Raju, Chancellor, REVA University, Bangalore, India

#### **Patrons**

**Dr. S. Y. Kulkarni,**Vice-Chancellor, REVA University, Bangalore, India **Dr. M. Dhanamjaya,** Registrar, REVA University, Bangalore, India **Dr. N. Ramesh,**Director Planning, REVA University, Bangalore, India

Dr. V. G. Talawar, Advisor, REVA University, Bangalore, India

#### **General Chair(s)**

**Prof. Dr. Sunilkumar S. Manvi,**Senior Member of IEEE, Director, School of C & IT, REVA University, India **Prof. Dr. S.K. Niranjan**, SJCE, Mysore, India

#### **Steering Committee Chair(s)**

**Prof. Dr. Alvaro Rocha,** *Member of IEEE SMC, University of Coimbra, Portugal* **Dr. V. G. Talawar,** *Advisor, REVA University, Bangalore, India* 

#### **Organizing Chair(s)**

**Prof. Dr. Mallikarjun M. Kodabagi,** Professor, School of C & IT, REVA University, India **Prof. Dr. Vishwanath R. Hulipalled,** Professor, School of C & IT, REVA University, India

#### **Organizing Secretary**

(Dr.) Ashwinkumar U. Motagi, Associate Professor, School of C & IT, REVA University, India Prof. Dr. Mallikarjuna Shastry, Professor, School of C & IT, REVA University, India Prof. Dr. P. I. Basarkod, Professor, School of ECE, REVA University, India

#### Technical Program Chair(s)

**Prof. Dr. Daniel Thalmann,**Founder of the Virtual Reality Lab (VRLAB) at EPFL, Switzerland **Prof. Dr. Manjunath Aradhya,** JSS Technical Education Campus, SJCE, Myore-570 006, Karnataka, India **Prof. Dr. Vishwanath Hulipalled,** SChool of C & IT, REVA University, India

# **Publication Committee**

Dr. Thinagaran Perumal, Chair, IEEE Consumer Electronics Society Malaysia Chapter, Malaysia(Chair)

(Dr.) Ashwinkumar U. M., REVA University

Dr. Shivareddy V., REVA University

Mr. Supreeth S., REVA University

Mr. Surendra Babu, REVA University

Mr. Kanaiya V Kanzariya, REVA University

Mr. Rathan M., REVA University

#### **Registration Committee**

Ms. Rashmi C., REVA University

Ms. Sushma Ravindra, REVA University

Ms. Chaithra M. H., REVA University

Ms. Shilpa N. R., REVA University

Ms. Shruti G., REVA University

Ms. Archana M. H., REVA University

Ms. Pavithra P., REVA University

Ms. Sheelavathy K. V., REVA University

#### **Finance Committee**

Mallikarjun M. Kodabagi, REVA University

Vishwanath R. Hulipalled, REVA University

Mr. Vasu, REVA University

Mr. Swamy, REVA University

# **Transportation/Accommodation Committee**

Mr. Akram Pasha, REVA University

Mr. AnilkumarAmbore, REVA University

Mr. Aruna Kumara B., REVA University

Mr. Dheeraj D., REVA University

Mr. Gopinath R., REVA University

Mr. Naveen Chandra Gowda, REVA University

Mr. Ravishankar H., REVA University

Ms. Asha Rani, REVA University

Ms. Divya D. R., REVA University

Ms. Illa Chandrakar., REVA University

Ms. Keerthi M Hiremath, REVA University

Ms. Priyanka Bharti, REVA University

Ms. Sanjana R Heralgi, REVA University

Ms. Shilpa V., REVA University

Ms. Thanuja K., REVA University

# **Publicity Committee**

Sharanya Rajan, MPH Researcher, University of London, UK

# **Sponsorship Committee**

Mr. Thanoojkumar, REVA University

Mr. Naveen, REVA University

**Prof. Satish G. C.,***REVA University* 

**Prof. Ravishankar**, REVA University

**Prof. Lithin,** REVA University

Ms. Deepa, REVA University

Mr. Shivakumar Naik, REVA University

Ms. Chaitra M. H., REVA University

Ms. Anupama, REVA University

Mr. Sagar, REVA University

Mr. Lohith P.,REVA University

#### **Conference Coordinators**

**Prof. P. I. Basarkod**, *REVA University* 

**Prof.** Narayanaswamy, REVA University

**Prabhakar M.,***REVA University* 

Udaya Rani, REVA University

Rajeev Ranjan, REVA University

Shilpa Choudary, REVA University

Gopal Krishna Shyam, REVA University

Mr. Venkatesh Prasad K. S., REVA University

Mr. Bijay Kumar Jyotishi, REVA University

Mrs. Ranjitha U. N., REVA University

#### **Conference Co-Coordinators**

Mr. Satish G. C., REVA University

Mr. Mallikarjuna M., REVA University

Mr. Ananda Shankara, REVA University

Mr. Mylara Reddy, REVA University

Ms. Nirmala S Gupta, Member of IEEE, REVA University

- Ms. Vani Krishnan, REVA University
- Ms. Meenakshi Sundaram, Member of IEEE, REVA University
- Ms. Sarvamangala. D. R., Member of IEEE, REVA University
- Ms. Reshmi C., REVA University
- Ms. Bindushree D. C., REVA University
- Ms. Lalitha L. A., REVA University
- Ms. Anooja Ali, REVA University
- Ms. Chaitra Desai, REVA University
- Ms. SushmaRavindra Y., REVA University
- Ms. Shilpa N. R., REVA University
- Ms. Shilpa K. A., REVA University
- Ms. Laxmi B Rananavare, Member of IEEE, REVA University
- Ms. Amrita Anand, REVA University
- Ms. Shalini Tiwari, REVA University
- Ms. Archana B., REVA University
- Ms. Salma Banu N. K., REVA University
- Ms. Shobha B., REVA University
- Ms. Thirumagal E., REVA University
- Ms. Priyadarshini, REVA University
- Ms. Shailaja T., REVA University
- Mr. Ravishankar, REVA University
- Mr. Lithin, REVA University
- Mr. Naveen Chandra Gowda, REVA University
- Mr. Manjunath P. C., REVA University
- Mr. Vinay, REVA University
- Ms. Sujatha K, REVA University
- Ms. Nimrita Koul
- Mr. Kiran M., Member of IEEE, REVA University
- Mr. Dheeraj, REVA University
- Ms. Laxmi B Ranannavare, REVA University
- Ms. Ila Chandrakar, REVA University
- Mr. Raghavendra Nayaka, REVA University
- Mr. Raghavendra Reddy, REVA University
- Mr. Aruna Kumara, REVA University
- Mr. Nikhil, REVA University
- Mr. Surendra Babu, REVA University
- Mr. Rathan, REVA University
- Mr. Gopinath, REVA University
- Ms. Anitha Chagi, REVA University
- Ms. Jyoti Kiran Mirji, REVA University
- Ms. A Ajil, REVA University
- Ms. Soumya, REVA University
- Mr. Tanweer, REVA University
- Mr. Shrikant Tangade, REVA University
- Mr. Nirmalkumar Benni, REVA University
- **Kiran Kumari Patil,** Member of IEEE, REVA University
- Mr. Shashikala N., Member of IEEE, REVA University

# **Technical Program Committee**

#### **Technical Program Chair(s)**

Prof. Daniel Thalmann, Founder of the Virtual Reality Lab (VRLAB) at EPFL, Switzerland

Prof. Manjunath Aradhya, JSS Technical Education Campus, SJCE, Mysore, Karnataka, India

**Prof. Vishwanath Hulipalled,**SChool of C & IT, REVA University, India

#### **Technical Program Committee Members**

Abduladhem Abdulkareem Ali, Senior Member of IEEE, University of Basrah, Iraq

Abhishek Shukla, R.D. Engineering College Technical Campus, Ghaziabad

Ajinkya Deshmukh, Uurmi System Pvt. Ltd, India

Anamika Ahirwar, MPCT, Gwalior, India

Angelo Genovese, Università Degli Studi Di Milano, Italy

Ankur Gupta, IEEE member, Model Institute of Engineering and Technology, India

Asharaf S, Indian Institute of Information Technology and Management, India

Ashok Sutagundar, BEC, Bagalkot, India

Ashoka K., BIET Davangere, Karnataka, India

B. M. Tippeswamy, Salt, Bangaluru, India

B. S. Anami, KLEIT, Hubli

Banuprakash, Sir.MVIT, Bangaluru, India

Basarkod P. I, REVA University, India

Basavaraj Talawar, NITK, Suratkal

Bhushan Trivedi, GLS (Shailesh R. Parish) Institute of Computer Technology, India

C. V. Suresh Babu

Chandrashekar, SJCIT, Chikkaballapur, India

D. G. Sahukar, RaniChennamma University, Karnataka, India

D. H. Goudar, VTU, Belgaum, India

D. S. Guru, UoM, Mysore, India

Dhiya Al-Jumeily, IEEE Member, Liverpool John Moores University, UK

Divakar B. P., REVA University, India

Edy Portmann, IEEE Member, University of Bern, Switzerland

G. F. Ali Ahammed, VTU PG centre, Mysore, India

G. Hemantha Kumar, UoM, Mysore, India

H. B. Prajapati, Dharmsinh Desai University - Nadiad, Gujarat, India

Halagur, RaniChennamma University, Karnataka, India

Hareesh K. S., Manipal Institute of Technology, Manipal University, Manipal, India

Himanshu Monga, Lovely Professional University, Phagwara, Punjab, India

I. Goswami, INFO Institute of Engineering, Coimbatore, Tamil Nadu, India

Indrajit Saha, National Institute of Technical Teachers' Training & Research, Kolkata, India

**Ivan Ganchev,** Deputy Director, Telecommunications Research Centre (TRC), University of Limerick, Limerick, Ireland / Plovdiv University Paisii Hilendarski, Bulgaria

J. Karthikeyan, SSM Institute of Engineering and Technology, Dindigul, India

Jan Platos, Technical University of Ostrava, Czech Republic

Jangala. Sasi Kiran, Vidya Vikas Institute of Technology, Hyderabad, India

Jeng-Shyang Pan, Member of IEEE SMC, National Kaohsiung University of Applied Sciences, Taiwan

Jitendra Agrawal, Member of IEEE CIS, Rajiv Gandhi Proudyogiki Vishwavidyalaya, India

Joyanta Kumar Roy, MCKV Institute of Engineering, Howrah, India

K S Shivaprakasha, NDRK Institute of Technology, Hassan, India

KiranaKumari Patil, REVA University, India

**Kishore A. T.,** (retd.), SMIEEE, Secretary-ComSoc, Execom Mem: CIS, PHOTONICS, COMPUTERS SOCIETY-IEEE | Principal Consultant-Telecom-Corporate Learning Programme | UTL Technologies Ltd | NOFN, GPON PRODUCT | Emerging Technologies Consulting & Training, India

Koduri Srinivas, Chairman of IEEE Hyderabad Section, India

Lei Zhang, East China Normal University, China

Lipo Wang, AdCom Member of IEEE CIS, Nanyang Technological University, Singapore

Lokesh Bajantri, BEC, Bagalkot, India

M. A Jayaram

M. N. Birje, VTU, Belgaum, India

M. Senthil Kumar, Ranganathan Engineering College, Coimbatore, Tamilnadu, India

Manik Sharma, DAV University, Jalandhar, India

Markandeshwar, REC, Karnataka, India

Mahabalesh K, BEC, Bagalkot, India

Mallikarjun M. Kodabagi, REVA University, India

Mallikarjun. S. Holi, University B.D.T. College of Engineering, Davangere, India

Manjula B., REVA University, India

Manjunath S, Central University of Kerala, Kasargod, India

Manjunath, BMSIT, Bangaluru, India

Maulika S Patel, IEEE member, G H Patel College of Engg & Tech, India

Mithilevsh Sathiyanarayanan, University of London, UK.

Mojtaba Ahmadieh, IEEE Member, Toosi University of Technology, Iran

Muralidar Kulakarni, NITK, Suratkal

Muthukumar Subramanyam, Anna University, India

Nandakumar A N, Professor, CSE department New Horizon College of Engineering

Nasimuddin, Institute for Infocomm Research (I2R), A\*STAR, Singapore

Nikhil Bhargava, Chairman of Industry Outreach Committee, IEEE Computer Society India Council, India

Nirmala C R, Bapuji Institute of Engineering and Technology, Davangere, India

P. Kuppusamy, Gnanamani College of Technology, Namakkal, India

P. S. Hiremath, KLE University, Hubli, India

Pascal Lorenz, IEEE Senior Member, University of Haute Alsace, France

Patrick Siarry, Université Paris-Est Créteil Val-de-Marne, France

Pethuru Raj, IBM Global Cloud Center of Excellence, India

Philip Branch, Swinburne University of Technology, Australia

**Pietro Ducange,** The University of Pisa, Italy

Ponnambalam G, IEEE Computer Society of India Life Member, Monash University Sunway Campus, Malaysia

Prabhakar C J, Kuvempu University, India

Pradeep, Bapuji Institute of Engineering and Technology, Davangere, India

Preeta Sharan, Member of IEEE Bangalore Section, The Oxford College of Engineering, India

Premasudha B. G., Siddaganga Institute of Technology, Karnataka, India

Pullela, Aditya College of Engineering, Surampalem, India

R. C. Biradar, REVA University, India

R. S. Chandok

Rajashekar Mandi, REVA University, India

Rajesh K Shukla, Sagar Institute of Research and Technology, Bhopal, India

Ravibabu Mulaveesala, Indian Institute of Technology Ropar, India

Roopa G M, BIET, Davangere, India

S. A. Angadi, VTU, Belgaum

S. G. Koolagudi, NITK, Surathakal

S. M. Hatture, BEC, Bagalkot, India

S. Selvaperumal, Syed Ammal Engineering College, Ramanathapuram, Tamil Nadu, India

SK Hafizul Islam, BITS Pilani, Rajasthan, India

Sangeet Vashishtha

Sanjay Sharma, Roorkee Engineering & Management Institute Shamli (U.P), India

Sannakki, GIT, Belgaum, India

Sansanee Auephanwiriyakul, SMIEEE, Member of Fuzzy System TC-IEEE CIS, Member of Bioinformatics and Bioengineering TC-IEEE ComS, Thailand

Saravanan Chandran, National Institute of Technology, Durgapur, West Bengal, India

Sathyanarayana S V, JNN College of Engg., Shimoga, India

Senthil, REVA University, India

Sergey Mosin, Vladimir State University, Russia

Sharanya Rajan, MPH Researcher, University of London, UK

Sharanu Angadi, REC, Hulkoti, India

Shekhappa G. Ankaliki, SDM College of Engineering & Technology, Dharwad, India

Shirdonkar, BLDE, Karnataka, India

Shishir K. Shandilya, BANSAL Institute of Research & Technology, India

Shivasankari, AMC, Bangaluru, India

Shobha Patil, BEC, Bagalkot, India

Siby Abraham, TC Member of IEEE SMC, University of Mumbai, India

Siddesha S, Sri Jayachamarajendra College of Engineering [SJCE], Mysuru, India

Sotiris Kotsiantis, University of Patras, Greece

Srikantaiah, SJBIT, Bangaluru, India

Sriram Veeriah Perumal, Kalasalingam University, India

Subramanian K, VIT University, Vellore, India

Suma. V, Dayananda Sagar Institutions, Bangalore, India

Sunil Kumar B S, GM Institute of Technology, Davangere, India

Supha Lakshmi

Surekha Mariam Varghese, M.A. College of Engineering, Kerala, India

Suresh G R, Easwari Engineering College, Chennai, India

Swati V. Chande, IEEE SMCS TC member, International School of Informatics and Management, Jaipur, India Thippeswamy K, VTU, India

Tippeswamy, BMSIT, Bangaluru, India

Trupil Limbasiya, NIIT University, Neemrana, Rajasthan, India

V. E. Nethaji Mariappan, Sathyabama University, Chennai, India

Venkataramu, REVA University, India

Vidya A, VKIT, Bangaluru, India

Vijaya Rajpurohit, GIT, Belgaum, India

Vikas Saxena, Jaypee Institute of Information Technology, India

Vilas Naik, BEC, Bagalkot, India

Vinay S, PESITM, Shivamogga, India

Vinayaka Murthy, REVA University, India

Vinit Kumar Gunjan, Treasurer-IEEE Computer Society & Young Professionals Community, IEEE Hyderabad Section, India

Vishwanath C. Kagawade, BEC, Bagalkot, India

Vishwanath R. Hulipalled, REVA University, India

Vivek S Deshpande, Technical University of Sofia, Bulgaria

V. Yegnanarayanan, Velammal Engineering College, Chennai, India

Y. C Kiran, BNM Institute of Technology, Bangalore, India

# **Program-at-Glance**

	Thursday, 17 August 2017		
7:30 onwards	Registration		
09:00 – 10:15	Opening @ Auditorium, C. V. Raman Block (please refer separate programme - available onsite)		
10:15 – 11:00	Inaugural Keynote: Prof. Dr. Álvaro Rocha		
11:00 – 11:30	Tea/Coffee break		
11:30 – 12:15	Keynote 1: Understanding and Modelling the Human Brain using Spiking Neural Networks <i>Prof. Suresh Sundaram</i> , <i>Deputy Director - Robotics Research Center; Cluster Director - ERI@N</i> , Nanyang Technological University, Singapore		
12:15 - 01:00	Keynote 2: Ethernet/IP Enhanced Data Access (EDA) for robots and CNCs Dr. Ashok Prajapati, Vice Chairman at IEEE Computer Society, Associate Editor, http://inderscience.com, Stanford University, Rochester, Michigan, USA		
01:00 - 02:00	Lunch Break		
02:00 - 03:00	Session 1		
	S1.1: Power, Energy and Power Electronics-I		
	S1.2: Renewable Energy-I		
	S1.3: High Voltage, Swetching Circuits & Power Converters		
	S1.4: Signal & Image Processing-I		
	S1.5: Communication Systems-I		
	S1.6: Computational Intelliegence-I		
03:30 - 04:00	Tea/Coffee break		
04:00 - 06:00	Session 2		
	S2.1: Power, Energy and Power Electronics-II		
	S2.2: Renewable Energy-II		
	S2.3: Cloud/Mobile Computing-I		
	S2.4: Singnal & Image Processing-II		
	S2.5: Communication Systems-II		
	S2.6: Computing Technologies-I		

Friday, 18 August 2017				
7:30 onwards	Registration			
09:30 – 10:15	Keynote 3: Internet of Things and Industry 4.0: The New Research Paradigm Dr. Thinagaran Perumal, Unit Head: Cyber-Physical Systems, Universiti Putra Malaysia, Malaysia			
10:15 – 11:00	Keynote 4: Smartgrid: Yesterday, Today and Tomorrow <i>Prof. Dr. D. P. Kothari, Director Research, S. B. Jain Institute of Technology, Management &amp; Research, Nagpur, India</i>			
11:00 – 11:30	Tea/Coffee break			
11:30 - 01:00	Session 3			
	S3.1: Power, Energy and Power Electronics- III			
	S3.2: Motors & Drives			
	S3.3: Communication Systems-III			
	S3.4: Big Data & Data Mining-I			
	S3.5: Internet of Things IoT-I			
	S3.6: Robatics, Control, Instrumentations & Automations			
01:00 - 02:00	Lunch Break			
02:00 - 03:00	Session 4			
	S4.1: Power Generation, Transmission, Utility & Storage			
	S4.2: Communication Systems-IV			
	S4.3: Big Data & Data Mining-II			
	S4.4: Intelligent Transport Systems-I			
	S4.5: VLSI & Recent Advances			
	S4.6: Biomedical Engineering			
03:30 - 04:00	Tea/Coffee Break			
04:00 - 05:30	Session 5			
	S5.1: Signal & Image Processing-III			
	S5.2: Communication Systems-V			
	S5.3: Computational Intelliegence-II			
	S5.4: Computing Technologies-II			
	S5.5: Power, Energy and Power ElectIV			
	S5.6: Smart City Applications-I			

Saturday, 19 August 2017			
7:30 onwards	Registration		
09:30 – 10:15	Keynote 5: A Journey of Electrical Distribution Power Flow Study Towards Automation, Programmed Leader of Electrical Power Engineering, Caledonian College of Engineering (A University College), Sultanate of Oman <i>Dr. Dharmasa Pawar</i>		
10:15 – 11:00	Keynote 6: Cloud, Big Data, IoT and Advanced Analytics -Opportunities and Challenges Dr. Madhan Kumar Srinivasan, Associate Vice President - Cloud and Big Data Analytics, Analytics Advisory, Accenture Innovation Center for Analytics, Bangalore, India; Founder Member, Cloud Computing Innovation Council of India		
11:00 – 11:30	Tea/Coffee break		
11:30 - 01:00	Session 6		
	S6.1: Communication Systems-VI		
	S6.2: Internet of Things IoT-II		
	S6.3: Intelligent Transport Systems-II		
	S6.4: Smart City Applications-II		
	S6.5: High Voltage, Swetching Circuits & Power Converters-II		
	S6.6: Big Data & Data Mining-IV/SE		
01:00 - 02:00	Lunch break		
02:00 - 03:00	Session 7		
	S7.1: Internet of Things IoT-III		
	S7.2: Power, Energy and Power ElectV		
	S7.3: Big Data & Data Mining-III/SE		
	S7.4: Emerging Technologies (ET)		
	S7.5: Renewable Energy-III		
	S7.6: Communication Systems-VII		
03:30 - 04:00	Tea/Coffee break		
04:00 - 06:00	Session 8		
	S8.1: Internet of Things IoT-IV		
	S8.2: Networks & Security		
	S8.3: Power, Energy and Power ElectVI		

S8.4: Renewable Energy-IV
S8.5: Cloud/Mobile Computing-II
S8.6: Intelligent Transport Sys-III
END OF CONFERENCE

# **Keynotes Speakers**

Keynote 1	Understanding and Modelling the Human Brain using Spiking Neural Networks	
Date / Time	17 – 19 August 2017 / 11:30 – 12:15	
	<b>Prof. Suresh Sundaram,</b> Deputy Director - Robotics Research Center; Cluster Director - ERI@N, Nanyang Technological University, Singapore	

## **Biography**



Prof. Suresh Sundaramis an Associate Professor with School of Computer Science and Engineering at Nanyang Technological University, Singapore. In the field of Data Analytics and Automation, he plays an important role as Cluster Director At ERI@N and Deputy Director at Robotic Research Center. His research interests are in Computational Cognitive Analytics, Intelligent Control and Automation. He closely works with many SME's on data analytics and robotic automation for industrial problems. Prior to joining NTU, Suresh was an Assistant Professor at Indian Institute of Technology - Delhi during 2008-2009. For a short-period, he was with Korea University as a faculty in Industrial Engineering department. From 2007-2008, he was selected as a ERCIM research fellow and spent valuable time in the project team PULSAR at INRIA Sophia-Antipolis, France. He received post-doctoral training under the guidance of Prof. N. Sundararajan at School of Electrical Engineering, Nanyang Technological University, Singapore, from 2005-2007. He received Masters (1999-2001) and Ph.D (2001 - 2005) degree from Department of Aerospace Engineering, Indian Institute of Science, Bangalore India. He published more than 200 journals and conference papers and a book on complex-valued neural network. He served in various committees in IEEE Computational Intelligence Society, Singapore. He was a general chair for IEEE SSCI 2018 and co-chair for IEEE CISDA. He also served as a Publication Chair in IEEE SSCI 2013.

#### Abstract

The research and development in Artificial Intelligence attempt to represent the human intelligence and thought, whereas the Artificial Neural Networks attempts to model the human brain. Recent development in ANN neural network aims to provide autonomy in learning by understanding the psychological aspect of human learning. Recent developments in neuroscience, motivated researchers to develop an advanced neuron model called "spiking Neuronâ€, which closely represent the neurons in the human brain and its dynamics. The spiking neurons are computationally more powerful than conventional neural networks. Further, the advancement in technology, it is possible to extract the knowledge from big-data in an efficient, brain-like way and present the model in highly parallel neuromorphic hardware systems. The talk first presents the principle behind spiking neuron and then introduce several learning algorithms in spiking neural network. Further, the talk introduces the concept of meta-neuron and its online learning algorithm for handling big-data. Finally, how we can realize SNN in hardware, towards development of neuromorphic systems.

I will let you know tomorrow by travel plan for further processing.

Keynote 2	Ethernet/IP Enhanced Data Access (EDA) for robots and CNCs	
Date / Time	17 – 19 August 2017 / 12:15 – 01:00	
Speaker	<b>Dr. Ashok Prajapati,</b> Vice Chairman at IEEE Computer Society, Associate Editor, http://inderscience.com, Stanford University, Rochester, Michigan, USA	



**Prof. Dr. Ashok Prajapati,**has over 15 years of technology experience and is well known researcher in his field. He works as an engineer/researcher in the world's leading industrial robot manufacturer in USA. He has always given high tech and very demanding products to the industry. He received his PhD in Computer Engineering from Oakland University USA. He obtained his master's degree from National Institute of Technology followed by a yearlong thesis from IIT Kanpur (India). His bachelor degree is in Computer Science & Engineering from KNIT Sultanpur (UP). He published about 20 international conferences and journals. He has many books and a patent in his credit. His senior IEEE membership and Associate Editor of IJFSE role vouches for his technical and professional maturity in his field of expertise. He is serving as Vice-Chair of IEEE Computer Society, South-East Michigan (USA) for last three years.

Keynote 3	Internet of Things and Industry 4.0: The New Research Paradigm	
<b>Date / Time</b>	18 – August 2017 / 09:30 – 10:15	
	<b>Dr. Thinagaran Perumal,</b> <i>Unit Head: Cyber-Physical Systems, Universiti Putra Malaysia, Malaysia</i>	

#### **Biography**



**Dr. Thinagaran Perumal** is a Senior Lecturer in the Department of Computer Science, Faculty of Computer Science and Information Technology, Universiti Putra Malaysia. Dr. Thina received his BEng in Computer and Communication Systems from UPM in 2003, and his M.S. and Ph.D.in Intelligent Systems from same university in 2006 and 2012, respectively. Thina's research interests include embedded systems, Internet of Things (IoTs), smart homes and building automation, machine learning, robotics, smart cities, and ambient intelligence for smart environments. Thina is currently serving as Chapter Chair for the IEEE Consumer Electronics Society Malaysia Chapter. She has received research funding for5 sponsored projects as Principal investigator andfor 3 projects as co-investigator worth of ~ Rs.110 Lakhs from various funding agencies such as Indira Gandhi Atomic Centre for Research (IGCAR), Kalpakkam, National Institute of Ocean Technology (NIOT), Chennai, INTEL Bangalore, DST and SSN. She is a member of IEEE, Fellow of IETE, and Life member of ISTE.

<b>Keynote 4</b>	Smartgrid:	
Date / Time	18 – August 2017 / 10:15 – 11:00	
	<b>Prof. Dr. D. P. Kothari,</b> Director Research, S. B. Jain Institute of Technology, Management & Research, Nagpur, India	



Prof. Dr. D. P. Kothari, is presently Director Research of S.B. Jain Institute of Technology, Management and Research Nagpur. He obtained his BE (Electrical) in 1967, ME(Power Systems) in 1969 and Ph.D. in 1975 from BITS, Pillani, Rajasthan. From 1969 to 1977, he was involved in teaching and development of several courses at BITS Pillani. Earlier Dr. Kothari served as Vice Chancellor, VIT, Vellore, Director in-charge and Deputy Director (Administration) as well as Head in the Centre of Energy Studies at Indian Institute of Technology, Delhi and as Principal, VRCE, Nagpur. He was visiting professor at the Royal Melbourne Institute of Technology, Melbourne, Australia, during 1982-83 and 1989, for two years. He was also NSF Fellow at Perdue University, USA in 1992. He also taught at Melbourne University Australia for one semester in 1989. Dr. Kothari, who is a recipient of the most Active Researcher Award, has published and presented 812 research papers in various national as well as international journals, conferences, guided 50 Ph.D scholars and 68 M. Tech students, and authored 50 books in various allied areas. He has delivered several keynote addresses and invited lectures at both national and international conferences. He has also delivered 42 video lectures on YouTube with maximum of 40,000 hits! He received Excellent Academic Award at IIT Guwahati by NPSC-2014.In 2016, he has received 6 Life Time Achievement awards by various agencies on 19 February, 4 March, 11 March, 18 March, 20TH March and 25 March 2016, respectively. Dr. Kothari is a Fellow of the National Academy of Engineering (FNAE), Fellow of Indian National Academy of Science (FNASc), Fellow of Institution of Engineers (FIE), Fellow IEEE ,Hon. Fellow ISTE and Fellow IETE. His many awards include the National Khosla Award for Lifetime Achievements in Engineering (2005) from IIT, Roorkee. The University Grants Commission (UGC), Government of India has bestowed the UGC National Swami Pranavandana Saraswati Award (2005) in the field of education for his outstanding scholarly contributions. He is also the recipient of the Lifetime Achievement Award (2009) conferred by the World Management Congress, New Delhi, for his contribution to the areas of educational planning and administration. Recently he received Excellent Academic Award at IIT Guwahati by NPSC-2014. In last two months he has received 6 Life Time Achievement awards by various agencies on 19th February, 4th March, 11th March, 18th March, 20TH March and 25th March 2016, respectively. On 20th April 2016 he received 'Living Legend' Award in Chennai Conference.

Wikipedia Link: http://en.wikipedia.org/wiki/D.P.Kothari

Keynote 5	A Journey of Electrical Distribution Power Flow Study Towards Automation	
Date / Time	19 – August 2017 / 09:30 – 10:15	
Speaker	<b>Dr. Dharmasa Pawar,</b> Programmed Leader of Electrical Power Engineering, Caledonian College of Engineering (A University College), Sultanate of Oman	



**Dr. Dharmasa Pawar,** is currently working as a Programmed Leader of Electrical Power Engineering at Caledonian College of Engineering (A University College), Sultanate of Oman. Since 2009, he is an active IEEEMember. In the year 2011, he becomean IEEE Branch Counselor at Caledonian College of Engineering and in the year 2012, he has been elected as Membership Development Officerfor the Country Sultanate of Oman. Presently, he is an IEEE Sr. Member. He received BE (Electrical), ME (Power and Energy System) degrees from Bangalore Government University in the year 1996 and 2000, respectively and PhD (Power Distribution Analysis) degree received from Jawaharlal Technological Government University in the year 2011. He has published 27 papers in the international level conferences and journals and he was also associated as Technical Discussion IET, UK, Berkeley Press, Canada and IEEE. His area of research interest includes: Power System Analysis; Power System Protection, Reliability, Renewable Energies, Engineering Industrial Practice. Since October 2010, he is with Caledonian College of Engineering and contributing in teaching, research and curriculum development as per Glasgow-University (UK) norms, which is operating under Ministry of Higher Education, Oman. In his previous positions, he worked as: Engineer-Assistant, Professor.-Associate- Professor Professor-HOD and Educational Advisor, at various industry and organization: Bharuka Gases Limited, Banlagore, SNIST-JNT University, EIT-Asmara University, certified-safety warden, respectively.

<b>Keynote 6</b>	Cloud, Big Data, IoT and Advanced Analytics -Opportunities and Challenges	
Date / Time	19 – August 2017 / 10:15 – 11:00	
	<b>Dr. Madhan Kumar Srinivasan,</b> Associate Vice President - Cloud and Big Data Analytics, Analytics Advisory, Accenture Innovation Center for Analytics, Bangalore, India ; Founder Member, Cloud Computing Innovation Council of India	



**Dr. Madhan Kumar Srinivasan,** is currently the 'Associate Vice President of Analytics Advisory and Cloud & Big Data Analytics Product Offerings Lead' at Accenture Innovation Center for Analytics, Accenture Solutions Ltd., Bangalore, India and the 'Founder Member' of Cloud Computing Innovation Council of India (CCICI). Prior to Accenture, he worked as an Assistant Director & Principal Consultant at GSTF Pte. Ltd., Singapore and as a Senior Member-E&R at Infosys, India. He holds a Ph.D. in Cloud Computing from Hindustan University, India and pursuing his Executive Management program EPBA (specialized in Business Analytics/Data Science) from Indian Institute of Management Calcutta (IIM-C), India. Dr.Madhan is an IBM Certified Cloud Solution Architect, IBM Certified Big Data and Hadoop, and MapR Certified Big Data professional. He has published 20+ refereed research papers covering vast range of top international publishers like ACM, Elsevier, IEEE & Springer, etc. He has presented papers, keynote presentations, seminars/workshops in more than 75 international conferences/events worldwide. Dr.Madhan has authored 5 chapters in 3 research text books published by Springer, New York, USA. In addition, he is an editorial board member & a designated reviewer for various International Journals which includes IEEE Transactions TNSM-Cloud Services, China Communications, IGI Global Journals (USA), Cyber Journals (Canada), etc. Also, he was an Organizing Chair for the following world's prominent International conferences like IEEE mCloud 2013 (Italy), ACM CloudID 2012 (India), Springer/ACM ID 2011 (India), IEEE CloudID 2013 (India). Dr. Madhan is a recipient of "Top 100 Scientists for 2014" Award from IBC, Cambridge, England and "Cloud Tech Guru" Award from Infosys. In a survey, LinkedIn has recognized his profile as "One of the Top 10% Most Viewed LinkedIn Profiles for 2012 in India" among 200 Million Users. His profile was listed as "Who's Who in the World" for the consecutive years 2014, 2015 and 2016 as a Research Scientist by Marquis, New Jersey, USA. Once again, Marquis has selected his profile as "Who's Who in Science and Engineering" for the year 2016-17. In addition, he is also a recipient of the most prestigious "Inspiring Teacher Award" for the year 2010 from Teacher's Academy at Osmania University, India.He is having a successful track record of highly satisfied international clients including Microsoft, IBM, HP, Deloitte, SAP Labs, Philips, Panasonic, Standard Charted Bank, ANZ Bank, UBS Bank, Reliance, NUS, SMU, Singapore Ministries (MOM, IDA, DSTA, MAS) and ranging from countries like USA, Singapore, Brazil, Spain, India, China, Malaysia, Philippines, Oman, Myanmar, Netherlands and Bolivia.

# **Technical Papers**

Session 1.1	Power, Energy and Power Electronics-I
033	Optimization of Energy Storage Elements in a Cross-Connected Capacitors Boost Converter
002	Anandh N., H.Ramesh and S. Julius Fusic
082	Kogge Stone Adder With GDI Technique in 130nm Technology for High Performance DSP Applications  Bujjibabu Penumutchi, Satyanarayana Vella and Harichandraprasad Satti
116	A Review on Artificial Intelligence Techniques in Electrical Drives : Neural Networks, Fuzzy logic, and Genetic Algorithm S.Sakunthala, R.Kiranmayi and P.Nagaraju Mandadi
269	A New Cascaded H-Bridge Multilevel Inverter With Reduced Switch Count Sreenivasulu Mamilla, Suresh Kumar Anisetty and M. Rama Pallavi
458	Continuous Tracking of Maximum Power Point of PV array with Controller Keerthana T, Shankar S and J Ramprabhakar
257	H-LEACH Protocol with Modified Cluster Head Selection for WSN G. N. Basavaraj and C. D. Jaidhar
Session 1.2	Renewable Energy-I
171	Control of Standalone Hybrid Renewable Energy Generation System Using Fuzzy Controller Sandeep S. R. and Rudranna Nandihalli
180	Soft Switching based Single Switch Integrated Converter with High Voltage Gain for Renewable Energy Conversion Shalini.N and Dhanalakshnmi.R
218	Comparative Analysis of Solar Photovoltaic Cell Models S. Umahsnakar, G. Arunkumar and R. Sivapriyan
284	A Narrative Review On Offshore Wind Power Transmission Using Low Frequency AC System Seetha Chaithanya, V. Naga Bhaskar Reddy and R. Kiranmayi
342	Design and Performance Analysis of Autonomous Indoor Solar Energy Harvesting System  Jaskiran Kaur, Komalpreet Kaur, Arpit Manaktala, Deepanshu Bhatia, Bhavneet Kaur, Ranjit Kaur and Ekambir Sidhu
358	Paradigm and Performance Anatomization of Automatic Indoor Solar Energy Harvesting System Exerting Sensors Jaskiran Kaur, Komalpreet Kaur, Parshant Rawat, Mayank Sharma, Arpit Manaktala, Sukhjeet Singh, Ranjit Kaur and Ekambir Sidhu
404	Performance Comparison of Building Integrated Multi-Wattage Photovoltaic Generators Mounted Vertically and Horizontally Nallapaneni Manoj Kumar, Bhogula Navothna and Manisha Minz

# Session 1.3 High Voltage, Switching Circuits & Power Converters

 ${\bf 041} \qquad {\bf Effect\ of\ Micro\ Particle\ Contamination\ on\ Breakdown\ Voltage\ Characteristics\ of\ CO_2\ in\ Coaxial\ Duct}$ 

D. Ravi Prasad, B. Rajesh Kamath and K. R. Jagadisha

# O79 Coordinated Control of SVC and TCSC for Voltage Profile Improvement Employing Particle Swarm Optimization

Maulikkumar C. Pandya and Jitendra G. Jamnani

# 722 **Sentiment Analysis of Indian Currency Demonetization** *Ishan Vaid and Praveen Kumar*

- 762 **Predictive Analysis Techniques for Road Accident Injuries: A Survey** *Roopal Chaudhary, Madhulika Bhadauria and Anchal Garg*
- 175 Eight Phase MIBC for High Step Down Ratio with Closed Loop Control M. Ishwarya and R. Dhanalakshmi
- 416 Performance Analysis of Bridgeless DCM SEPIC Rectifier for Universal Input Voltage Applications with Fast Dynamic Response

Jyoti Gupta, Ashok Kumar Sharma, Pavan Singh Tomar and Kanak Hada

# Session 1.4 Signal & Image Processing-I

- 017 A Novel Approach to Human Gesture Recognition
  Bhavya Shahi, Prema K. V., Mansi Goyal and N. V. Subba Reddyd
- On-Road Moving Vehicle Detection by using Spatiotemporal Video Analysis of Static and Dynamic Backgrounds

  Saurabh Buttan, Kavya Venugopal and S. N. Omkar
- 217 Information Hiding in Line Spectrum Pair Feature of Non-Voice Part of Speech Signal Nikunj Tahilramani and Ninad Bhatt
- 1056 Design of Fractional Hilbert Transformer using Fractional Differencing and Different Windows

  Sushil Kumar and Dharmendra K. Upadhyay
- 574 Siren Detection and Driver Assistance Using Modified Minimum Mean Square Error Method
  S. L. Kiran and M. Supriya
- 1077 **Design of Low Error Fractional Order IIR Digital Differentiators and Integrators**Shivam Kansal and Dharmendra K. Upadhyay

# Session 1.5 Communication Systems-I

- O76 A Low Power Asynchronous Viterbi Decoder using Minimum Transition Hybrid Register Exchange Method
- Surekha K. Tadse and S. L. Haridas
- 166 A Double Negative Metamaterial Antenna For WiMAX Application Mohammad Saadh AW, Tanweer Ali and Rajashekhar C. Biradar
- 248 A Corner Truncated Circularly Polarized Antenna For IRNSS Application

  Mohammed Muzammil Khaleeq, Mohammad Saadh AW, Tanweer Ali and B. Sandhya Reddy
- 347 Performance Evaluation of Microstrip Patch Antenna using Plywood as Substrate for Fixed Satellite and Earth Exploration Applications
  Parshant Rawat, Mayank Sharma, Bhavneet Kaur, Divesh Mittal, Damanpreet Singh and Ekambir Sidhu
- A Slotted Multiband Antenna With Wide-bandwidth operation at Lower Band for WLAN/WiMAX Applications

Tanweer Ali, Mohammed Muzammil Khaleeq, Nikhat Fathima and Rajashekhar C. Biradar

### 519 Routing Protocols in VANET- A Survey

Anil D. Devangavi and Rajendra Gupta

Session 1.6	Computational	Intelliegence-I

- A Effective Communication Solution for the Hearing Impaired Persons: A Novel Approach Using Gesture and Sentence Formation

  Shwetha S. Kulloli and R. H. Goudar
- 022 Extract Reordering Rules of Sentence Structure Using Neuro-Fuzzy Machine Learning System

Shashi Pal Singh, Ajai Kumar, Hemant Darbari, Anshika Rastogi and Shikha Jain

- 409 Prediction Capability of Neural Network Models for Higher Heating Value used for Boiler Efficiency
  Sailaja Thota, Rajashekhar P. Mandi, N. Ramesh and Shilpa Chaudhari
- O60 Smart Farming System: Crop Yield Prediction Using Regression Techniques Ayush Shah, Akash Dubey, Vishesh Hemnani and D. R. Kalbande
- 419 Artificial Neural Networks vs Regression Techniques in the forecasting of contaminants in the Santiago River, based on the Sample of a Pollutant, Through Data Fusion José Miguel Morán Loza, Marco Antonio Pérez Cisneros and Alicia García Arreola
- 613 Smart Flood Disaster Prediction System using IoT & Neural Networks Swapnil Bande and Virendra V. Shete
- Disruptive Technology for Auto Insurance Entrepreneurs: New Paradigm using Telematics and Machine Learning
  N. Arun Kumar and Siva S. Yellampalli

#### Session 2.1 Power, Energy and Power Electronics-II

- 504 Comparison, Simulation and Hardware Setup for Single Phase Cascaded Multilevel Inverter with Less Switches

  Mahesh Kumar
  - **Analytical Evaluation of Five Level Inductor Coupled Inverter Topologies**
- Analysis and Comparison of Transmit Diversity Scheme using MRC and EGC Shikhar Gupta, Ria Bajaj, Jitender Singh Jadon and Neha Arora
- 769 **Integration of RFID and Sensor in Agriculture Using Iot** *Tarushi Wasson, Tanupriya Choudhury, Shilpi Sharma and Praveen Kumar*
- 788 **Crop Productivity based on IoT**Gauri Garg, Shilpi Sharma, Tanupriya Choudhury and Praveen Kumar

Nagarjuna Reddy Jonnagiri, D. Lenine and M. Vijaya Kumar

- 891 **An Analytical Review of PaaS- Cloud Layer for Application Design**Shilpi Bansal, Kamal Gulati, Praveen Kumar and Tanupriya Choudhury
- Users perception about Online Content and Information Design on Apparel Websites

  Devang Prajapati, Tanuja Munghate and Hir Vyas

# Session 2.2 Renewable Energy-II

615

Potential of Floating Photovoltaic System for Energy Generation and Reduction of Water Evaporation at Four Different Lakes in Rajasthan

Divya Mittal, Bharat Kumar Saxena, K. V. S. Rao

- 397 Estimation of Weibull Parameters and Wind Power Density at Different Heights for Akal site at Jaisalmer in Rajasthan

  Akanksha Sharma, Bharat Kumar Saxena and K. V. S. Rao
- 400 Feasibility of Establishing Solar Photovoltaic Power Plants at Existing Wind Farms Monika Agrawal, Bharat Kumar Saxena, K. V. S. Rao
- 439 Reduction in Carbon Dioxide Emissions due to Wind Power Generation in India Bharatveer Singh Chouhan, K. V. S. Rao and Bharat Kumar Saxena
- Selection of Electrolyzer-Fuel Cell Combination for Supply of Water and Electricity in Remote Areas

Mayank Gautam, K. V. S. Rao, Bharat Kumar Saxena

- 746 **Quality of Service in MANETS**Rajesh Kumar Ahuja, Naina and Jitender Jadon
- Quality Assurance through Soft computing Techniques in Component based Software
  Osheen Bhardwaj and Shambu Kumar Jha
- 010 **Design and Implementation of Solar based Smart street Lightning System** *Aenel Murtaza, Mehtab Fatima, Sudhanshu Kumar and Rishabh Anand*

# Session 2.3 Cloud/Mobile Computing-I

- 329 Intelligent VMs Prediction in Cloud Computing Environment Kumaraswamy S. and Mydhili K. Nair
- 378 **Trust Management in Cloud Computing**Praveen S. Challagidad and Mahantesh N. Birje
- 396 Cloud Computing Usance Among SMEs: Comparative Analysis of China and Nigeria Taiwo Blessing Ogunseyi and Cheng Yang
- 513 **DDoS Attack Mitigation and Resource provisioning in cloud using fog computing**Deepali and Kriti Bhushan
- Information harvesting @intelligent Systems using Cloudlet and LoT in Cloud Systems
  Neenu Negi Rana and Rajkumar Rajasekaran
- Abstraction of Information Flow and Functional Dependency from a Restructured Legacy 'C' Program for Parallelization

  R. N. Kulkarni and Padmapriya Patil
- 531 Emergency Human Collapse Detection and Tracking System Sindhu Suryanarayanan and N Rakesh

# Session 2.4 Signal & Image Processing-II

- Normalization Method for Misaligned Face Samples in Non-Cooperative Biometrics Nilesh Pawar, D. T. Ingole and M. D. Ingole
- 107 Iris Recognition: A Symbolic Data Modeling Approach using Savitzky-Golay Filter Energy Features

  Shanmukhappa Angadi and Vishwanath C. Kagawade
- Gujarati handwritten character recognition using grey level co-occurrence matrix and dynamic time warping technique

  Phanat Sanahala, Amind Vaday, Mitul B. Batal and Mikin Batal
  - Bharat Sanchala, Arvind Yadav, Mitul P. Patel and Mihir Patel
- 362 Estimation of Garbage Coverage Area in Water Terrain Deepa T. P. and Sanjay Roka
- 454 **Kidney Stone Detection in Computed Tomography Images**Prema T. Akkasaligar, Sunanda Biradar and Veena Kumbar

- 559 Evaluation of Human Action Recognition Techniques Intended for Video Analytics Rashmi S R, Shubha Bhat and Sushmitha V C
- Improved Security in Audio Steganography using Packet Forger at the Third Level Raghavendra Joshi and Venugopala P. S.
- Fast and Secure Random number Generation using Low-cost EEG and Pseudo Random Number Generator
  Rahul Dasharath Gavas and Geeta U Navalyal

# Session 2.5 Communication Systems-II

O42 Analysis of Amplitude and Phase Imbalances on Efficiency of Microwave Power Combiner

Gowrish B. and Rahul Kumar

- O73 Cluster based Context Aware Secure Routing in Distributed Sensor Networks

  Lokesh B. Bhajantri and Shiddalingesh S. Hiremath
- 078 **IoT based Home Automation by using Personal Assistant** Chayapathy V., G. S. Anitha and Sharath B.
- 108 Comb Needle Model for Data Aggregation using Self Diagnose Cluster in WSN Abdul Raheem Syed, M Prabhakar and C Venugopal
- 1009 Sparse Recovery Algorithm for Pilot Assisted MIMO-OFDM Channel Estimation Shruthi N., Habtewolde Ababu and Manikumar S.
- 452 Assessment on Various node Voltage Stability Indices A review Prabhakar Karthikeyan Shanmugam, Akhil Prasad, Atul Manmohan and Kothari D. P.

# Session 2.6 Computing Technologies-I

- 226 **Hybridization of B-tree and HashMap for Optimized Search Engine Indexing**Bhagyashri Jantkal and Santosh Deshpande
- Digital Technology in Classroom : Changing the Face of Education Infographic Preeti Johri and Anuranjan Misra
- 326 **Revised Petri Net: Probabilistic Approach**Chandanita Chatterjee and Shibakali Gupta
- 612 A learning Styles based Recommender System Prototype for EDX Courses Jyotirmoy Gope and Sanjay Kumar Jain
- 243 **Design and Analysis of Content based Video Retrieval System** *Rayan Goudar and Shivani Kulkarni*
- 228 Entropy based Performance Comparison of Cryptographic Algorithms on Emoticons Shilpa Munnoli and Santosh Deshpande
- O44 Temperature Analysis for Modeled saw Tooth Flexure Micro Gripper with Constant Heat Flux Boundary Conditions

  Anil Kumar C. and M. A. Goutham
- HoneynetTrap : Analysis of Insider Threat Detection using Agent Oriented PN<sup>2</sup> Simulator

Alisha Gupta and B. B. Gupta

#### Session 3.1 Power, Energy and Power Electronics- III

- 271 Digital Control of Buck Converter Using Arduino Microcontroller For Low Power **Applications** 
  - Viswanatha V. and Venkata Siva Reddy R.
- 430 Spamming the Mainstream: A Survey on Trending Twitter Spam Detection Techniques Lalitha L. A., Vishwanath R. Hulipalled and Venugopal K. R.
- 724 An Efficient Approach of Taking Quick and Simple Notes in the Air through Smart Note Taker
  - Seema Rawat, Chetan Chopra and Praveen Kumar
- 585 Modeling and Control of Large Wind Farm based on DFIG using Classical PI and Fuzzy Logic Controller (FLC) Jaimala Gambhi and Tilak Thakur
- 420 Comparative Analysis of Isolated and Non-Isolated Quasi Impedance Source Converters Kanak Hada, Ashok Kumar Sharma, Jyoti Gupta and Pavan Singh Tomar
- 379 Analysis of Single Phase Matrix Converter with Regenerative Capabilities of Single **Phase Induction Motor** Sumant Kumar Dalai and Dipak Kumar Dash

#### Session 3.2 Motors & Drives

- 181 Servo drive Based Automation of 2-Way Boring Machine Using PLC Smita Hosmani and Narasimha Kaulgud
- 324 Vertical Transportation: An Overview on System Integration with Advance Technology Anand R and Mahesh M
- 057 Automatic Cradle System with Measurement of Baby's Vital Biological Parameters Vijayamahantesh Hiremath and P. Venkataratnam
- 417 A PFC Based BLDC Motor Drive Using Buck-Boost and Buck-Boost Buck Converter Ayushi Jain, Ashok Kumar Sharma and Kanak Hada
- 490 Design and Performance Evaluation of SynRM and Ferrite Assisted-SynRM for EV **Application Using FEA** Senthilnathan Nattuthurai and Rajkumar Neelamegham
- 450 A Predictive Methodology for Non-Critical Load Scheduling in Autonomous Micro-Grid Rasool M. Imran, Shaorong Wang, Bashar Sakeen Farhan and Israa T. Aziz

#### Communication Systems-III Session 3.3

- 253 A Survey on Clock Synchronization Protocols in Wireless Sensor Networks Nikhath Tabassum and Geetha D. D.
- 470 Overlay Based Fault Tolerant Peer to Peer Multicasting for Emergency Data **Communication in VANETS** 
  - Vaishnavi Karanam, Uma Maheswari B. and Sudarshan T S B
- 472 Cluster Based Fault Tolerant Architecture for Multicasting Data in Wireless Sensor Network
  - Chinasani Sravya, Uma Maheswari B. and Sudarshan T S B
- 476 The Model of Spectrum Sharing between A Primary and Two Secondary Operators Ria Sorayya and Muhammad Suryanegara
- 479 Establishing Trust Between Vehicles In Vehicular Clouds: An Agent Based Approach Shailaja S. Mudengudi and Mahabaleshwar S. Kakkasageri

# 246 Intrusion Detection Systems in MANETs using Hybrid Techniques

Vaishnavi Bheemarao Joshi and R. H. Goudar

Session 3.4	Big Data & Data Mining-I

- Big Data Ensure Homologous Patient Enduring Therapy Time Forecast Algorithm by Healing Facility Echelon Recommendation
  - T. S. Sandeep, N. Sudhakar Reddy and T. Balaji kumar
- Analyzing the Real Time Electricity Data Using Data Mining Techniques

  Aravindh Aki, Krishna Mohan Reddy D, Koushik Reddy Y, Kavitha C.R and Sasikala T
- 134 A survey on Technique for Prediction of Disease in Medical Data
  Ahelam Tikotikar and Mallikarjun M Kodabagi
- 214 Product Recommendation for the Day using Fuzzy C-Means and Association Rule Generator in KNIME

  Savitha B Japali and Archana B
- 338 Structural Similarity Based Link Prediction in Social Networks Using Firefly Algorithm Srilatha P and Manjula R
- 549 **Predicting Lung Cancer Using Data Mining Techniques with the Aid of SVM Classifier** *Ayshwarya Balakumar and Senthil S*

# **Session 3.5** Internet of Things IoT-I

- O34 Challenges and Solutions of Interoperability on IoT: How Far Have We Come in Resolving the IoT Interoperability Issues
  - Venkateswara Raju Konduru and Manjula R. Bharamagoudra
- O50 A Framework for predicting the performance of IoT protocols, a Use Case based approach
  - S. Sreeraj, N. G. Suresh Kumar and Santhosh Kumar
- 102 A Survey on Enhancing the Interoperability Aspect of IoT based Systems V. K. Daliya and T. K. Ramesh
- 109 **On Road Card Using IoT**G. Gayathri, M. Swathi, D. Monisha, Monisha Jayaker and K. Ezhilarasan
- 167 **IoT based Automatic Energy Metering System with Prepaid/Postpaid Configurability**Rahul Rajesh B, Mohan Kumar S, Nayab Z Sharief, Sourabh Kothari and K Ezhilarasan
- 182 Home Automation in Client-Server Approach with User Notification along with Efficient Security Alerting System
  - Brundha S. M., Lakshmi P. and Santhanalakshmi S.

# Session 3.6 Robotics, Control, Instrumentations & Automations

- Modeling and Analysis of MEMS based Acclerometer in Simulink Rashmi M. Kittali, B. G. Sheeparamatti and Arshath Sheeparamatti
- 234 Breast Cancer Awareness Through Smart Mobile Healthcare Applications from Indian Doctors' Perspective
  - Sharanya Rajan and Mithileysh Sathiyanarayanan
- 128 Leader-Follower Co-ordination of Multiple Robots with Obstacle Avoidance T. Bhavana, M. Nithya and M. Rajesh
- Smart Home Based on Sun Tracking Solar Panel and Environmental Monitoring System Md. Faijul Haque, Md. Rakib Hasan, Pranti Tawheed and Md. Nasfikur R. Khan,
- 193 **Intelligent Motion Control of Bots using Hill Hold Assistance Mechanism** *Aishwarya Nair, Rajkumar P. Sreedharan and M. Rajesh*

272 **Design and Development of Smart Branched Switch for Home Automation Systems** S. Shreyas Ramachandran, A. K. Veeraraghavan, K. Sivaraman, R. Yuvaraj and R. Azhagumurugan

# Session 4.1 Power Generation, Transmission, Utility & Storage

- 072 Control Strategy for an Induction-Generator in TSCAOI Mode H. G. Pankaja and P. Meena
- 095 Intensification of Peculiar Optimal Scheduling & Fuel Price Minimization Using Cuckoo Rummage Algorithm
  C. K. Srinivas
- Performance Analysis of Effect of Vibrations on Solar Panel Conversion Efficiency Osho Manu, Payal Kalra, Jaskiran Kaur, Damanpreet Singh, Jayavant Krishna Verma, Jaskaran Singh Hemant Bhatia and Ekambir Sidhu
- 858 Graphical Password Scheme using Persuasive Cued Click Points Sachin Kaja and Divya Gupta
- 401 Mitigating Sudden Voltage Dip in DC Micro-Grid using Supercapacitor Based Energy Storage System for Small Duration
  Sourish S. Sinha and Harshada Nerkar
- Smart Grids: A Perspective on the Integration and Encapsulation of Power Energy Systems with ICT Systems New Research Directions and Challenges M Mallikarjuna, Amreen Khanam and Abhishek Poonia

# Session 4.2 Communication Systems-IV

- 492 Enhancement of Coverage in Wireless Sensor Network Shobha Biradar and P. M. Mallikarjuna Shastry
- Software Defined Network Paradigm Coupled with a Virtualization of Network Functions and Services in Developing New Network and Service Infrastructures Eyassu Dilla
- 503 Multi Channel Based Clustering in Cognitive Radio Networks
  Rajiv Kumar Berwer and Santosh Kumar
- 527 **Design of Auto Wakeup Alarming System for Commuters in Railway Sleeper Coaches** T. M. Hayath, Dadapeer, S. G. Tejashwini and N. M. Indravasan
- 537 OMLP: An Efficient Opportunistic Multipath routing using Location and Power aware method in Wireless Networks

  Ruchika Das and N.Rakesh
- 092 Location based Hybrid Spectrum Sensing and Power Allocation in Cognitive Radio Networks
  - J. S. Fareduddin Ahmed and Rohitha Ujjinimatad

# Session 4.3 Big Data & Data Mining-II

- 438 A Review on Using Various DM Techniques for Evaluation of Performance and Analysis of Heart Disease Prediction
  - D. C. Bindushree and V. Udaya Rani
- 596 Prediction of Heart Disease using Ensemble Learning and Particle Swarm Optimization Indu Yekkala, Sunanda Dixit and M. A. Jabbar
- 366 Measuring Students' Engagement Using Wireless Heart Rate Sensor S. Senthil and Mu Lin Wong

- 254 **Database-per-Service for E-learning system with Micro-Service Architecture** S. Suresh Kumar and P. M. Mallikarjuna Shastry
- 478 Every Post Matters: A Survey on Applications of Sentiment Analysis in Social Media M. Rathan, Vishwanath R. Hulipalled, P. Murugeshwari and H. M. Sushmitha
- 510 **Pre-processing of User behavior for E-Commerce** *K. N. Asha and R. RajKumar*

# Session 4.4 Intelligent Transport Systems-I

150 Time series Decomposition Model for Traffic Flow Forecasting in Urban Midblock Sections

G.Omkar and S.Vasantha Kumar

Honey Bee Optimization based Resource Discovery Scheme for Vehicular Cloud Networks

Mahantesh G. Kambalimath, Mahabaleshwar S. Kakkasageri and Sunilkumar S. Manvi

- 1089 Smart Vehicle Communication Using Vector Based Forward Routeing Algorithm
  Mimansa Sharma and Dattatray Bade
- 393 BDI Agent based Dynamic Routing Scheme for Vehicle-to-Vehicle Communication in VANETs

Mamata J. Sataraddi and Mahabaleshwar S. Kakkasageri

- 422 Trust Management Scheme in VANET: Neighbour Communication Based Approach Shrikant Tangade and Sunilkumar S. Manvi
- 426 Performance Analysis of Current-Fed Impulse Commutated Three-Phase Push-pull DC/DC converter

Pavan Singh Tomar, Ashok Kumar Sharma, Kanak Hada and Jyoti Gupta

# Session 4.5 VLSI & Recent Advances

219 Low Power ASIC Implementation of Signed and Unsigned Wallace-Tree with Vedic Multiplier Using Compressors

N. Prajwal, S. K. Amaresha and Siva S. Yellampalli

- 220 ASIC Implementation of High Speed DDRSDRAM Controller H. Amaresh, S. K. Amaresha and Siva S. Yellampalli
- 227 ASIC Implementation of switch Architecture used in NoC B. K. Monika, S. K. Amaresha and Siva S. Yellampalli
- 522 Test Coverage Optimization in LBIST
- Supreetha R. Murthy, M. Nayana and Siva S. Yellampalli
- 410 Analysis Of Closed Loop Control of Matrix Converter For Capacitorless Single Phase Induction Motor for Variable Speed Operation

  Shreedhar Tiwari and Mini Sujith

### Session 4.6 Biomedical Engineering

- Modeling of Single ARM Poly Silicon Actuator Gripper with Constant Heat Flux Boundary Conditions and Stress Analysis
  - C. Anil Kumar and M. A. Goutham
- 153 **Data-Driven Motion Correction for Human Head in Computed Tomography** *G. Bala Maalinii and Anand Jatti*
- 591 Remote Control of an Electronic Device using EOG
  - P. Preetham Reddy, P. V. B. Suresh, P. Thirumal Reddy, P. V. Manitha and K. Deepa

- 496 **Design and Implementation of Heart Beat Monitoring using PIC Microcontroller**Biniyam, Guta Tesema, Akrem Mohammed, Narayana Swamy Ramaiah and Eyassu Dilla
- A Poly\_hop Message Routing Approach through Node and Data Classification for Optimizing Energy Consumption and Enhanced Reliability in WBAN Sanchari Saha and Dinesh K Anvekar
- 138 Edge Detection in Digital Panoramic Dental Radiograph Using Improved Morphological Gradients and MATLAB
  Ravneet Kaur, Ravtej Singh, Sandhu Ayush and Gera Tarlochan Kaur
- 160 **Public speaking words (Indian Sign Language)Recognition using EMG** *B. Divya*, *J. Delpha and S. Badrinath*

# Session 5.1 Signal & Image Processing-III

- 461 Digitized ECG Image Analysis
  - Prema T. Akkasaligar and Usharani Math
- 540 A Geometric Approach for Recognizing Emotions From 3D Images with Pose Variations K. M. Swetha and P. Suja
- 572 **Detection and Tracking of Objects using Thresholding Technique**Aku Venkata Raviteja and Nalini Sampath
- 581 An Improved Technique for Image Contrast Enhancement using Wavelet Transforms
  Nitish Bhatia and Tarun Kumar Rawat
- VHDL Implementation of Pattern Based Template Matching in Satellite Images Milchah V. Thomas, C. Kanagasabapthi and Siva S. Yellampalli
- 541 Emotion Recognition from 3D Videos using Optical Flow Method Gowri Patil and P. Suja
- 291 **Emotion Sensing Using Facial Recognition** Shreyas Gulur Shivashankar and Sushant Hiremath

#### **Session 5.2** Communication Systems-V

- 538 Comparative Study and Performance Analysis of Incentive Compatible Routing Protocol for Two-Hop Delay Tolerant Networks

  Ch Srividya and N. Rakesh
- A Survey on Vehicular Ad-hoc Network [VANET's] Protocols for improving safety in Urban Cities

  Pramod Mutalik and Venkangouda C. Patil
- Analysis Study of Data Buffer Policies in a Fuzzy Logic based WSN using Cluster Head Rinu Sara Ranjith and H. N. Vishwas
- 239 Implementation of a Simple Point to Point Visible Light Communication System for Audio and Bi-directional Data Transmission

  A. Trivikram Reddy and R. S. Vikesh
- 553 Realization And Performance Analysis of FPGA Based Offset Quadrature Phase Shift Keying (OQPSK) Modem

  Kiran Bhandarkar and V. Sambasiva Rao
- 144 A Mechanism for Localization and Environment Supervision using Wireless Networks S. Arya, Rajkumar P. Sreedharan and M. Rajesh
- 148 A Novel UE Centric Multi-RAT Deployment Model Dibakar Das and Debabrata Das

# Session 5.3 Computational Intelligence-II

- 433 A Comprehensive Investigation on Machine Learning Techniques for Diagnosis of Down Syndrome
  - Meenakshi Malviya, J. Chandra and Manjunatha Hiremath
- 493 Peer-to-peer Knowledge Sharing Platform for Farmers with auto-recommendation feature
  - Uttam Patil, Pulkit Saxena and Nandini Sidnal
- 544 A Hybrid Method for Activity Monitoring Using Principal Component Analysis and Back-Propagation Neural Network
  - Swapnil Kisore, Sayandeep Bhattacharjee and Aleena Swetapadma
- Multimodal Affect Recognition in V-A-D Space using Deep Learning Piyush Kawde and Gyanendra K. Verma
- 580 Automatic Document Retrieval Using SVM Machine Learning Sunita Gopal and Raghav S
- 617 **Benchmark Analysis of Popular ImageNet Classification Deep CNN Architectures**Mustafa Alghali Elsaid Muhammed, Ahmed Abdalazeem Ahmed and Tarig Ahmed Khalid
- 029 **Blockchain based Remittances and Mining using CUDA**Bhumika Ekbote, Vaishnavi Hire, Pratik Mahajan and Jignesh Sisodia
- 545 A Back-propagation Neural Network Based Method for Post Life Expectancy Estimation of Thoracic Surgery Patients

  Abhishek Kumar Pandey, Mohd Anas Khan and Aleena Swetapadma

# Session 5.4 Computing Technologies-II

- 408 Design and Development of LTCC Based Package for 3-Axis Packaging of MEMS Sensors
  - D. K. Kharbanda and P. K. Khanna
- An Analytical Model for Long Channel Double Gate Ge Ferroelectric FET (DGGeFeFET) to Study the Impact of Interface Trap Charges

  Monika Bansal and Harsupreet Kaur
- 603 Current-Mode Filter Structure using DO-OTA with dual current outputs I<sub>0</sub> and I<sub>0</sub>/n for Low-Frequency Applications

  Dattaguru V. Kamat
- Methodology Using OBIST for Detecting Parametric with Single and Multiple Catastrophic Faults in an Analog Integrated Circuit R. H. Khade and D. S. Chaudhari
- 391 **Dual Loop Clock Duty Cycle Corrector for High Speed Serial Interface** S. R. Jaya Prakash and Sujatha S. Hiremath
- 485 **Design of Low Power standard cells using Full Swing Gate Diffusion Input**Sujatha Hiremath, Akshata Mathad, Amruta Hosur and Deepali Koppad
- A Review and Analysis of Communication Logic between PL and PS in ZYNQ AP SoC Sunita Ramagond, Siva Yellampalli and C. Kanagasabapathi
- Implementing Interchange of Legal Data under Information System using a Subset by Deriving on the Form of Akoma Ntosa in Context of Right to Information by Encoding Application and Appeal
  - Manoj Kumar Singh and Anuranjan Mishra

### Session 5.5 Power, Energy and Power Elect.-IV 793 Data Theft Prevention Using User Behavior Profiling and Decoy Documents Shilpi Sharma 806 Stock Market: Statistical Analysis Of its Indexes and Its constituents Priyanshi Singh and Abha Thakral 813 **Indoor Maps: Simulation in a Virtual Environment** Meghna Pal, Abha Thakral, Rohan Chawla and Sushil Kumar 826 Comparison between Local Binary Pattern Histograms and Principal Component **Analysis Algorithm in Face Recognition System** Abha Thakral and Akshat Vohra 837 Image Contrast Enhancement using Gaussian Mixture Model and Genetic Algorithm Arushi Mahajan and Divya Gupta 876 A Hierarchical Finger Selection Method for Finger Vein Recognition Using Sift G. Sujani and G. M. Sreerama Reddy 888 Communication by Terrorist using Access Points: Cyber Security Sajal Jain, Tanupriya Choudhury, Praveen Kumar and Yogesh Singh Rathore

Session 5.6	Smart City Applications-I
	Mutifunctional HD Receivers for Smart Homes Nanda Kishora Holla and Siva Yellampalli
	Next Generation Intelligent Traffic Management System and Analysis for Smart Cities H. N. Megha and R. H. Goudar
	Hyper-Chaos Encryption Application in Intelligent Home System Hang-Hui Jia, Hai-Peng Ren, Chao Bai and Jie Li
	Predictive Analytics for Safer Smart Cities Harsha B. Aladi, Snehanshu Saha, Abu Kurian and Aparna Basu
	Intelligent Smart Parking Algorithm  Dharmini Kanteti, D. V. S. Srikar and T. K. Ramesh
	Smart Cities In India:Are We Smart Enough? M. A. Jabbar and Rajanikanth Aluvalu

ession 6.1	Communication Systems-VI	
	<b>Price Negotiation for Cloud Resource Provisioning</b> <i>Manisha T. Tapale, R. H. Goudar and Mahantesh N. Birje</i>	
	Multi-Agent Based Stable Clustering In VANET Anita Bavalatti and Ashok V. Sutagundar	
	Fault Tolerance in VANET's Ashok V. Sutagundar and Tejashwini Kalyani	
	A Generic Request/Reply Based Algorithm For Detection Of Blackhole Attack In MANET Swapnil P. Bhagat, Puja Padiya and Nilesh Marathe	
	IImplementation of Doppler Shift Compensation Algorithm for Underwater OFDM Communication Systems K. Saraswathi, Thanika Reddy, S. Ravishankar, Shreya Nayak and Sushmitha Rao	

110	An Approach for Indoor Location Estimation to the Visually Impaired people usin
	Light Fidelity (Li-Fi) Technology
	Marita Miranda and Pradyumna G.R.

Session 6.2	Internet of Things IoT-II	
233	Customary Homes to Smart Homes using Internet of Things (IoT) and Mobile Application  Vignesh Govindraj, Mithileysh Sathiyanarayanan and Babangida Abubakar	
999	Emergency communication system with Docker Containers, OSM and Rsync Shiva Kumar Pentyala	
979	An Improved Publish-Subscribe Method In Application Layer Protocol For IoT Jyoti Deogirikar and Amarsinh Vidhate	
529	Countermeasures to Security Threats/Attacks on Different Protocol Layers in Cognitive Radio Networks: An Overview Shekhar Raj and O. P. Sahu	

468 **IoT Standardization Efforts - An Analysis**Vaibhav Pratap Singh, V. Tulasi Dwarakanath, P. Haribabu and N. Sarat Chandra Babu

587 An IOT based Network Management System for Enterprise Network N. Vignesh, Ram Lohith, S. Arun Kumar, Haresh Dagale and K. Sangeeta

# Session 6.3 Intelligent Transport Systems-II

506 Vehicle State Estimator for Urban Autonomous Solution POC R. Rohini and N.Ramavenkateswaran

- 300 Real Time Traffic Speed Controlling, Collision Detection And Vehicle Tracking System H. D. Chethan and Pratibha V. Hegde
- 515 **Smart Transportation System using IoT** *P. S. Saarika, K. Sandhya and T. Sudha*
- 216 Effective Technique Using Nano Material for Controlling Automobile Emissions K. Naveen, K. Srinivasan, V. Vishwanth and V. Rukkumani
- Increasing Accuracy of Range Estimation in Electric Vehicles Using Machine Learning and Statistical Analysis

  R. Hemantharaj and D. Paulraj

# Session 6.4 Smart City Applications-II

097 **Security Access Module** Suchit Shavi

- 157 **IoT Architecture and System Design for Healthcare Systems**Niharika Kumar
- 210 **The Design of Active RFID for Food Quality and Safety Sensors** K. Y. Chetanraj, K. S. Shushrutha, A. R. Phani and C. S. Naveen
- 462 A Comprehensive Citizen Engagement Framework for Effective Resolution of Public Complaints in Cities

Prassanna Pathmanathan and Ryan Poulier

- Detection of Unusual Events in Low Resolution Video for Enhancing ATM Security and Prevention of Thefts
  - B. K. Prajwal, M. S. Sreeharsha, R. Raghulan, S. Sumanth Babu and M. Kiran
    2017 International Conference On Smart Technologies For Smart Nation (SmartTechCon)

#### Session 6.5 High Voltage, Switching Circuits & Power Converters-II 552 A Study of Comparative Analysis of Different PWM Techniques K. Deepa, P. Ajay Kumar, V. Sai Krishna, P. N. Koteswara Rao, A. Mounika and D. Medhini 618 An Optimization of Single Stage Power Factor Corrected AC-DC Converter with **Appreciable Steady-state Performance** D. Lenine, R. Satish Kumar and B. Subba Reddy 380 An Experimental Design Approach For Power Factor Correction using PLC Trupti P. Pawale, Ravindra Motekar, R. L. Chakrasali and S. B. Halbhavi 313 Unit Vectors of SRF Control Algorithm based DVR for Power Quality Improvement J. Bangarraju, V. Rajagopal, B. Pallavi, K. Amritha and K. Sainadh Singh 1038 A Survey of Deployable Tools and Techniques For a Smarter Power Grid Nishanth, Kshama Dwarakanath, Sameer Kulkarni and Rohan Rao 505 Formulation of Impact Voltage- change in the Radial Power Flow With Tap- Change

**Transformer** 

Dharmasa and Sindhu S. Nair

Session 6.6	Big Data & Data Mining-IV/SE		
206	Procedural Ailment Detection System - A Web based Healthcare approach Soumyajyoti Bhattacharya and Rohit Raj		
260	Smart University-Student Information Management System Samkeet Jain , Radhika Garg , VaibhavkrishnaBhosle and LilashSah		
337	A Review on Detection of Prostate Cancer Techniques Sanjeev P. Kaulgud, Viswanath R. Hulipalled, S. S. Patil and K. R. Venugopal		
602	Novel Large Value Grounded Capacitor Realizations using OTAs and Small Capacitors Dattaguru V. Kamat		
189	<b>Performance Dashboard Cutting-Edge Business Intelligence and Data Visualization</b> S. M. Kumar and Meena Belwal		
365	Class Results Prediction using Machine Learning S. K. Pushpa, T. N. Manjunath, T. V. Mrunal, Amartya Singh and C. Suhas		

Session 7.1	Internet of Things IoT-III
579	Ranking of Internet Service Providers Considering Customer Priorities using Multiple Criteria Decision-Making Methods M. Dheeraj, G. Sai Teja, N. Yathendra and M. Supriya
112	An Innovative Research on Augmented reality to Control Status of Physical Light using MAYA as part of IoT Madduri. Narsimlu, Midde. Venkateswarlu Naik and Mallojjala. Raja Sree
046	<b>Design and Implementation of Hybrid Encryption for Security of IOT Data.</b> Y. Chandu, K. S. Rakesh Kumar, Ninad Vivek Prabhukhanolkar, A. N. Anish and Sushma Rawal
374	Smart Environment Using Iot C. Tejaswini Roy, D. Sri Lakshmi, G. Anirudh Kumar and H. N. Vishwas
376	Aiding the Visually Impaired: Developing an efficient Braille printer Anubhav Apurva, Anupam Misra and Palash Thakur
530	Implementation of Privacy Preserving in Data Mining by Fuzzy Inference System

Shrikant D. Zade and Pradeep Chouksey

# **Session 7.2** Power, Energy and Power Electronics-I

- 268 Route Optimization for an Electric Vehicle with Priority Destinations S Raagapriya, Antara Ain and Pallab Dasgupta
- 432 Enhanced PSO for Network Reconfiguration under Different Fault Locations in Smart Grids

Israa T. Aziz, Hai Jin, Ihsan H. Abdulqadder, Rasool M. Imran and Firas M. F. Flaih

- 600 Infinite Level Inverter Based DSTATCOM for Power Quality Enhancement Athira P S, Renukadevi V and B Jayanand
- Time Shared Buck and Boost Converter based H-Bridge Inverter for Grid Tied and Standalone Applications

Vishnu C and Uma Syamkumar

- 577 **Estimation of Battery Management System**B. S. Sagar and Rajashekar P. Mandi
- Design and Implementation of PV System for a Constant Voltage Operation
  V. Balacoumarane, B. Karthik, K. V. Sai Pranav, S. Anupam Sandeep and Sindhu Thampatty

# Session 7.3 Big Data & Data Mining-III/SE

005 Cluster Analysis of a Decade of Indian Space Activities Based on an Ontological Framework

Gowrish B., Kiran A. B. and Arkalgud Ramaprasad

- 488 A Method for Predicting Essential Proteins using Gene Expression Data Soumya B. Patil, S. R. Mani Sekhar, G. M. Siddesh and Sunilkumar S. Manvi
- 595 A Study of Scheduler Performance in Spark Enabled GPU Cluster Aparna Nayanar and Bhargavi R. Upadhyay
- 399 **Quiver An Intelligent Decision Support System for Software Architecture and Design** *Abhilash Gopalakrishnan and Abhinna Chandra Biswal*
- Web Oriented FIM for Large Scale Dataset using Hadoop C. Supriya and Y. Swathi
- 512 **A Review on Overlapping Community Detection Methodologies** *C. Rashmi and Mallikarjun M. Kodabagi*

# Session 7.4 Power, Energy and Power Electronics-I

- 232 CNC PCB Milling and Wood Engraving Machine
  Rohit Choudhary, Sambhav, Sunny David Titus, Akshaya P., Jose Alex Mathew and Balaji N.
- 423 **Pharma Data Analytics:An Emerging Trend**Shweta S. Kaddi and Malini M. Pati
- Neural Network Based Energy Conservation for Wireless Sensor Network Umesh M. Kulkarni, Harish H. Kenchannavar and Deepti V. Kulkarni
- 607 Design and Implementation of Photo-detection circuit for Wavelength Modulation Spectroscopy (WMS) based Oxygen Sensor Aditi Sharma, Manish Chandra, Anuya Venkatesh, Sudhir S Kamble, J. K. Radhakrishnan and Upendra Kumar Singh
- 594 Effect of Physical Parameters on the Magnetic Field of a Conductor *P. Preetham Reddy*
- 349 **Processing and Mechanical Characterization of Al2014-B4C Aerospace Composite** *Kirankumar B and Ragu Chand R*

# Session 7.5 Renewable Energy-III 589 Design and Implementation of ZigBee Based Smart Grid System for Power Management A. Abdul Khadar, M. S. Nagraj and T. M. Hayath 568 Distribution Reliability Indices Calculation and Utilize Neural Network Model for **Radial System** C.V. Mohan, K. Seetharam and H. B. Phani Raju 901 Performance Analysis for SNR vs. BER of Transmit Diversity Scheme using EGC Shikhar Gupta, Ria Bajaj, Jitender Singh Jadon and Neha Arora 968 **Cloud Based Intelligent Attendance System Through Video Streaming** Aayush Mittal, Fatima Sartaj Khan, Praveen Kumar and Tanupriya Choudhury 905 Proposal and Implementation of a Novel Scheme for Image and Emotion Recognition using Hadoop Parag Saini, Tanupriya Choudhury, Praveen Kumar and Seema Rawat 354 A Novel DC - DC Converter Applied in Solar Energy Systems for Low & High Voltage Dc Applications G. T. Jyoti and Girish V. Attimarad Session 7.6 Power, Energy and Power Electronics-I 502 Adaboost based Parameterized Methods for Wireless Sensor Networks Safi Yadahalli 491 A Location Aware Telemedicine Routing Protocol (LATR) for Healthcare in Villages Amal Mohandas, Adwitiya Mukhopadhyay and V. Athira 431 Comparative Survey Analysis on Interleaving Techniques in IDMA Systems Asharani Patil and G. S. Biradar

# Design and Performance Analysis of High Gain Microstrip Patch Antennas employing Leather Substrates for Earth Exploration Satellite Applications Bhavneet Kaur, Mayank Sharma, Parshant Rawat, Divesh Mittal, Damanpreet Singh and

**Energy Harvesting System Based Wsn Application Using Arm7 Controller** 

Monitoring and Air Quality in Metropolitan Cities- A Survey

Bhavneet Kaur, Mayank Sharma, Parshant Rawat, Divesh Mittal, Damanpreet Singh and Ekambir Sidhu

Applications of Wireless Sensor Networks in the Real-Time Ambient Air Pollution

### **Session 8.1** Internet of Things IoT-IV

1016

494

- 653 Internet of Things: Review On Security of Novel Technology
  Arshdeep Singh Syal and Abhinav Gupta
- 071 **A Review on Home Automation System** *Markandeshwar Jerabandi and Mallikarjun M. Kodabagi*

N. Shruthi, Habtewolde Ababu and S. Manikumar

Nagaraj S and Rajashree V Biradar

- 511 **A novel approach: Cloud-based real-time Electronic Notice Board**Akshat Shukla, Dhananjay Hedaoo, Manoj B. Chandak, Veena Prakashe and Abhijeet
  Raipurkar
- 194 IoT based Alrcraft Healthcare Monitoring System

Muhammad Hameem Safwat Hussain

2017 International Conference On Smart Technologies For Smart Nation (SmartTechCon)

# 012 **Smart School** *M. Vinod, H. S. Vinay and M. Prathap*

# 355 Reinforcement Learning Based Search Softmax Algorithm in Social Network Hemant Kumar, Tripty Singh and Lakshmanan Kailasam

# Session 8.2 Networks & Security

424 Road Traffic Network Solution in Matlab Using Soft Computing
Mrinmoyee Chattoraj and Udaya Rani. V

A New Hybrid Symmetric-key Technique to Enhance Data Security of Textual Information using Random Number Generator

Rakshitha and Radhakrishna Dodmane

411 On the Reduction of Large Sparse Matrices

A. Ravali and K. Sangeeta

123 **NotifySec - A Secured Notification Infrastructure**Pavan Hanumantarao Iddalagi and Veena K.N

209 Cascade Ciphering Technique for Confidential, Authenticated and Integrity Preserved Transmission Of Images Over A Network

H. Tejaswini and Radhakrishna Dodmane

221 Shuffle-Selective Search

A. Abdul Khadar, Shrishail Math and Srinivasamurthy

448 Securing data using Elliptic Curve Cryptography and Least Significant Bit Steganography

Jayati Bhadra, M. K. Banga and M. Vinayaka Murthy

# Session 8.3 Power, Energy and Power Elect.-VI

317 Harmonic Mitigation in Multi Feeders by using MC-UPQC system with the Predictive ANN & SVM

Shilpa M. Devaraddi and P. Sandhya

- 398 **Grid Interactive Rooftop Solar PV Power Plant for Educational Institute** Rajashekar P. Mandi
- 406 Comparitive Analysis of Fuzzy Based MPPT for Buck and Boost Converter Topologies for PV Application

A.Rajeshree Patil and B.Harsha Anantwar

- 912 Analysis of Classification Models Based on Cuisine Prediction Using Machine Learning Shobhna Jayaraman, Tanupriya Choudhury and Praveen Kumar
- 918 **A Platform for Human-Chatbot Interaction Using Python** *Bhaumik Kohli, Tanupriya Choudhury, Shilpi Sharma and Praveen Kumar*
- 565 Green Libraries by Using Smart Technology C.Jayalakshmi and R.Sarangapani
- 593 **Implementation the Layout of an Aerial Robocopter**G.Srinivasan, M.Sankar, Pranoti Rajendra Nirwane, Madhuri Shivaling Patil, and Shradha Srikant Hawale
- 004 Simulink Implementation of Sensitivity Analysis of Radial Distribution Network G. Pranava, Gurram Ravindranath and K. Ramesh Reddy

# Session 8.4 Renewable Energy-IV

- 932 **A Classification based Parkinson Detection System**Zaid Ajaz Moharkan, Harshul Garg, Tanupriya Chodhury and Praveen Kumar
- Modeling and Control of Large Wind Farm based on DFIG using classical PI and Fuzzy logic controller (FLC)

Jaimala Gambhir and Tilak Thakur

610 Digital MCB

C. V. Chiranthan, Krishna Prasad, R. Y. Shreyas and H. R. Lakshmi

- Comparative Study on Modeling and Estimation of State of Charge in Battery Rahul K, J.Ramprabhakar and Shankar S.
- 927 Enhanced Security Protocol for Mobile computation of-floading and accessing data offline

Garv Saxena, Tanupriya Choudhury, Subhash Chand Gupta and Praveen Kumar

- 207 **Optimizing the Cable Designs for Wind Energy Applications** *M.W.B.K. Wickramagedara and J.B. Ekanayake*
- 114 Use of Roof Top Ventilator for Electricity Generation

  Maneesh Khandelwal, Pratik Mundle, Darshan Pande, Tushar Bang, Madhuri A. Chaudhari
  and Sunil Mutha

# Session 8.5 Cloud/Mobile Computing-II

- 055 Cloud Broker and their role in a Hybrid Multi Cloud Environment G. Girish and N. J. Nischita
- 652 Smart Billing System framework for Economic Internet Connectivity B I D Kumar and Vasanth G.
- A Mobile Based Smart Attendance System Framework for Tracking Field Personals Using a Novel QR Code Based Technique

  K.Navin, A. Shanthini and M. B. Mukesh Krishnan
- O35 Genuine Ratings for Mobile Apps with the Support of Authenticated Users' Reviews K.Manoj Kumar, M.Venkata Prasanna, Harish Kandala and N.Kavya
- 231 Mobile Governance A Complement for Successful eGovernance (Study on Challenges in Mobile Governance)

Rama Yerramilli and Nirmala Kumar Swamy

139 Feature Driven Hybrid Test Automation Framework (FDHTAF) for Web Based or Cloud Based Application Testing

Vinodkumar H. Kiranagi and Gopal Krishna Shyam

473 Performance Evaluation of Clustering Algorithms for Dynamic VM Allocation in Cloud Computing

Rajanikanth Aluvalu, M. A. Jabbar and Jalpa Kantaria

Session 8.6	Intelligent Transport Sys-III		
428	Prime Distance Graphs and Applications V. Yegnanarayanan		
360	On Prime Distance Labeling of Graphs V. Yegnanarayanan		
256	Evaluation of the Performance Metrics of a 4 Bit Universal Shift Register and its Implementation in an Arithmetic & Logic Unit Suchismita Sengupta and Ananya Dastidar		
413	Automatic Control of Road Traffic using Video Processing S. Ashwin, R. Akshay Vasist, Sanket S. Hiremath and H. R. Lakshmi		
289	Dynamic Power Factor Regulation Using Thyristor Switched Capacitor for Industrial Loads S. Rekha and V. Keshava Murthy		
524	Analysis of PV Module with Buck-Boost and Zeta Converters with Incremental Conductance Maximum Power Point Tracking Method Manoj Kumar Chaurasia and Lata Gidwani		
1090	Segmentation of Oil Palm crop bunch from Tree images S Siddesha, S K Niranjan and V N Manjunath Aradhya		

Roadmap for Building Effective Complex Enterprise Architecture in Digital Transformation An

**Experience-based Industry Best Practices Summary** 

1091

#### **Author Index**

A Ababu, Habtewolde 1016 Abdulgadder, Ihsan H. 432 Abubakar, Babangida 233 Agrawal, Monika 400 Ahmed, Ahmed Abdalazeem 617 Ahmed, J. S. Fareduddin 092 Ahuja, Rajesh Kumar 746 Ain, Antara 268 Aishwarya Nair 193 Ajai Kumar, 022 Ajay Kumar, P. 552 Ajai Kumar, 022 Aki, Aravindh 113 Akkasaligar, Prema T. 454 461 Akshaya P. 232 Aladi, Harsha B. 375 Aleena Swetapadma 545 Ali, Tanweer 166 248 359 Aluvalu, Rajanikanth 473 534 Amaresh, H. 220 Amaresha, S. K. 219 220 227 Amritha, K. 313 Anand, R. 324 Anand, Rishabh 010 Anandh, N. 033 Angadi, Shanmukhappa A. 107 Anil Kumar, C 044 084 Anirudh Kumar, G. 374 Anisetty, Suresh Kumar 269 Anish, A. N. 046 Anitha, G. S. 078 Anvekar, Dinesh K. 571 Archana, B. 214 Arora, Neha 711 901 Arreola., Alicia Garc:a 419 Arunkumar, G. 218 Arun Kumar, N. 345 Arun Kumar, S. 587 Arvind, R. Yadav 204 Arya, S. 144

Ayshwarya.B 549

Asha, K. N. 510

Ashwin, S. 413

Athira, V. 491

Athira ps 600

Attimarad, Girish V. 354 Ayush, Sandhu 138

Azhagumurgan, R. 272 Aziz, Israa T. 432 450 В

Babu, N. Sarat Chandra 468 Babu, S. Sumanth 152 Badrinath, S. 160 Bai, Chao 265 Bajaj, Ria 711 901 Balaji N. 232 Balaji kumar, T. 556 Balacoumarane, V. 314 Bande, Swapnil 613 Bang, Tushar 114 Banga, M. K. 448 Bangarraju, J. 313 Bansal, Monika 213 Bansal, Shilpi 891 Basavaraj, G. N. 257 Basu, Aparna 375 Bavalatti, Anita 517 Belwal, Meena 189 Berwer, Rajiv Kumar 503 Bhavya Shahi 017 Bhadauria, Madhulika 762 Bhadra, Jayati 448 Bhagat, Swapnil P. 599 Bhajantri, Lokesh B. 073 Bhandarkar, Kiran 553 Bharamagoudra, Manjula R. 034 Bhardwaj, Osheen 866 Bhat, Shubha 559 Bhatia, Deepanshu 342 Bhatia, Hemant 353 Bhatia, Nitish 581 Bhatt, Ninad 217 Bhattacharjee, Sayandeep 544 Bhattacharya, Soumyajyoti 206 Bhavana, T. 128 Bhushan, Kriti 513 Bindushree D 438 Biniyam 496 Biradar, G. S. 431 Biradar, Rajashekhar C. 166 359 Biradar, Rajashree V. 494 Biradar, Shobha 492 Biradar, Sunanda 454 Birje, Mahantesh N. 378 388 Biswal, Abhinna Chandra 399 Brundha, S. M. 182

C

Chaithanya, Seetha 284 Chakrasali, R. L. 380 Challagidad, Praveen S. 378

Chandak, Manoj B. 511	E
Chandr, Manish 607	
Chandra, J. 433	Ekanavaka I D 207
Chandu, Y. 046	Ekanayake, J. B. 207
Chattoraj, Mrinmoyee 424	Ekbote, Bhumika 029
Chaudhari, D. S. 100	Ezhilarasan, K 167 109
Chaudhari, Madhuri A. 114	
	F
Chaudhari, Shilpa 409	
Chaudhary, Roopal 762	F. 1. D. 1. G.1. 450
Chaurasia, Manoj Kumar 524	Farhan, Bashar Sakeen 450
Chawla, Rohan 813	Fathima, Nikhat 359
Chayapathy, V. 078	Fatima, Mehtab 010
Chetanraj, K. Y. 210	Flaih, Firas M. F. 432
Chethan, H. D. 300	Fusic, S. Julius 033
Chiranthan, CV 610	
Chodhury, Tanupriya 932	G
Chopra, Chetan 724	u .
Choudhary, Rohit 232	
Choudhury, Tanupriya	Gambhir, Jaimala 585
968 905 769 788 912 918 927 888 89	Gangopadhyay, Sayantan 155
	Garg, Anchal 762
1	Garg, Gauri 788
Chouhan, Bharatveer Singh 439	Garg, Harshul 932
Chouksey, Dr. Pradeep 530	Garg, Radhika 260
Cisneros, Marco Antonio P&#:rez 419</td><td>Gautam, Mayank 586</td></tr><tr><td></td><td></td></tr><tr><td>D</td><td>Gavas, Rahul Dasharath 202</td></tr><tr><td></td><td>Gayathri G. 109</td></tr><tr><td></td><td>Geetha, D. D. 253</td></tr><tr><td>Dadapeer 527</td><td>Gidwani, Lata 524</td></tr><tr><td>Dagale, Haresh 587</td><td>Girish, G. 055</td></tr><tr><td>Dalai, Sumant Kumar 379</td><td>Gopal, Sunita 580</td></tr><tr><td>Daliya, V. K. 102</td><td>Gopalakrishnan, Abhilash 399</td></tr><tr><td>Darbari, Hemant 022</td><td>Gope, Jyotirmoy 612</td></tr><tr><td>Das, Debabrata 148</td><td>Goudar, R. H. 243 244 245 246 388</td></tr><tr><td>Das, Dibakar 148</td><td>Goutham, Dr. M. A. 044 084</td></tr><tr><td>Das, Ruchika 537</td><td>Govindraj, Vignesh 233</td></tr><tr><td>Dasgupta, Pallab 268</td><td>Gowrish, B. 042</td></tr><tr><td></td><td>Goyal, Mansi 017</td></tr><tr><td>Dastidar, Ananya 256</td><td></td></tr><tr><td>Dattatray Bade 1089</td><td>Gulati, Kamal 891</td></tr><tr><td>Deepa, K. 552 591</td><td>Gupta, Abhinav 653</td></tr><tr><td>Deepa, T. P. 362</td><td>Gupta, Alisha 516</td></tr><tr><td>Deepali 513</td><td>Gupta, B. B. 516</td></tr><tr><td>Delpha, J. 160</td><td>Gupta, Divya 837 858</td></tr><tr><td>Deogirikar, Jyoti 979</td><td>Gupta, Jyoti 416 420 426</td></tr><tr><td>Deshpande, S. L. 228</td><td>Gupta, Rajendra 519</td></tr><tr><td>Deshpande, Santosh L. 226</td><td>Gupta, Shibakali 326</td></tr><tr><td>Devangavi, Anil D. 519</td><td>Gupta, Shikhar 711 901</td></tr><tr><td>Devaraddi, Shilpa M. 317</td><td>Gupta, Subhash Chand 927</td></tr><tr><td>Dhanalakshmi, R. 175 180</td><td>cupia, suchasi chana 72,</td></tr><tr><td>Dharmasa . 505</td><td></td></tr><tr><td></td><td>Н</td></tr><tr><td>Dheeraj, M. 579</td><td></td></tr><tr><td>Dilla, Eyassu 496 500</td><td>Hada, Kanak 416 417 420</td></tr><tr><td>Dipak Kumar, 379</td><td>Hada, Kanak 426</td></tr><tr><td>Divya, B. 160</td><td>Halbhavi, S. B. 380</td></tr><tr><td>Dixit, Sunanda 596</td><td></td></tr><tr><td>Dodmane, Radhakrishna 133 209</td><td>Haribabu, P. 468</td></tr><tr><td>Dwarakanath, Kshama 1038</td><td>Haridas, S. L. 076</td></tr><tr><td>Dwarakanath, V. Tulasi 468</td><td>Hawale, Shradha Srikant 593</td></tr><tr><td></td><td>Hayath, T. M. 527 589</td></tr></tbody></table>	

Hedaoo, Dhananjay 511 Hegde, Pratibha V. 300	К
Hemantharaj, R. 449	Kaddi, Shweta S. 423
Hemant Kumar, 355	Kagawade, Vishwanath C. 107
Hire, Vaishnavi 029	Kailasam, Dr. Lakshmanan 355
Hiremath, Manjunatha 433	
Hiremath, Sanket S. 413	Kaja, Sachin 858
Hiremath, Shiddalingesh S. 073	Kakkasageri, Mahabaleshwar S.
Hiremath, Sujatha 485	357 393 396 479
Hiremath, Sujatha S. 391	Kalra, Payal 353
Hiremath, Sushant 291	Kalyani, Tejashwini 518
	Kamat, Dattaguru. V. 602
Hiremath, Vijayamahantesh 057	Kamath, B. Rajesh 041
Holla, Nanda Kishora 136	Kamath, Dattaguru V. 603
Hosmani, Smita S. 181	Kambalimath, Mahantesh G. 357
Hosur, Amruta 485	Kamble, Sudhir S. 607
Hulipalled, Vishwanath R. 430 478	Kanagasabapathi, C. 535 582
Hulipalled, Viswanath R. 337	Kavitha C.R 113
	Kandala, Harish 035
I	Kansal, Shivam 1077
	Kantaria, Jalpa 473
Imran, Rasool M. 432 450	Kanteti, Dharmini 655
Indravasan, N. M. 527	Karanam, Vaishnavi 470
Ingole, D. T. 006	Karthik, B. 314
Ingole, M. D. 006	Karthikeyan, S. Prabhakar 452
Ishwarya, M. 175	Kaulgud, Narasimha 181
Iddalagi,Pavan Hanumantarao 123	Kaulgud, Sanjeev P. 337
	Kaur, Bhavneet 342 346 347
T	Kaur, Gera Tarlochan 138
J	Kaur, Harsupreet 213
	Kaur, Jaskiran 342 353 358
Jabbar, M. A. 473 534 596	Kaur, Komalpreet 342 358
Jadon, Jitender 746	Kaur, Ranjit 342 358
Jadon, Jitender Singh 711 901	
Jagadisha, K. R. 041	Kaur, Ravneet 138
Jaidhar, C. D. 257	Kavya, N. 035
	Kawde, Piyush 555
Jain, Ayushi 417	Keerthana, T. 458
Jain, Sajal 888	Kenchannavar, Harish H. 306
Jain, Samkeet 260	Khadar, A. Abdul 221 589
Jain, Sanjay Kumar 612	Khade, R. H. 100
Jain, Shikha 022	Khaleeq, Mohammed Muzammil 248 359
Jamnani, Jitendra G. 079	Khalid, Tarig Ahmed 617
Jantkal, Bhagyashri Anand 226	Khan, Fatima Sartaj 968
Japali, Savitha B. 214	Khan, Mohd Anas 545
Jatti, Dr. Anand 153	Khandelwal, Maneesh 114
Jayalakshmi, C. 565	Khanna, P. K. 408
Jayanand, B 600	Kharbanda, D. K. 408
Jayaraman, Shobhna 912	Kiran, M. 152
Jerabandi, Markandeshwar 071	Kiran, S. L. 574
Jha, Shambu Kumar 866	
Ji, Hang-Hui 265	Kiranagi, Vinodkumar H. 139
Jin, Hai 432	Kiranmayi, R. 116 284
	Kishore, Swapnil 544
Johni, Preeti 622	Kittali, Rashmi M. 184
Jonnagiri, Nagarjuna Reddy 615	Kodabagi, Mallikarjun M. 071 134 512
Joshi, Raghavendra 335	Kohli, Bhaumik 918
Joshi, Vaishnavi Bheemarao 246	Konduru, Venkateswara Raju 034
Jyoti, G. T. 354	Koppad, Deepali 485
	Kothari, D. P. 452

Kothari, Sourabh 167
Koushik Reddy 113
Krishn, V. Sai 552
Krishnan, Dr. M. B. mukesh 318
Kulkarni, Deepti V. 306
Kulkarni, Dr. R. N. 425
Kulkarni, Sameer 1038
Kulkarni, Shivani P. 243
Kulkarni, Umesh M. 306
Kulloli, Shwetha S. 244
Kumar, B. I. D. 652
Kumar, S. M. 189
Kurian, Abu 375
Kumbar, Veena 454
Kumaraswamy, S. 329

#### L

Lakshmi, D. Sri 374 Lakshmi, H. R. 413 610 Lakshmi, P. 182 Lalitha, L. A. 430 Lenine, D. 615 618 Li, Jie 265 LilashSah 260 Lin, Mu 366 Lohith, Ram 587 Loza, José Miguel Morán 419

#### M

Maalinii, G. Bala 153 Mahajan, Arushi 837 Mahajan, Pratik 029 Mahesh, M. 324 Mallikarjuna, M 566 Malviya, Meenakshi 433 Mamilla, Sreenivasulu 269 Mimansa Sharma 1089 Manaktala, Arpit 342 358 Mandadi, P. Nagaraju 116 Mandi, Dr. Rajashekar P. 398 Mandi, Rajashekar P. 577 Manoj Kumar, K. 035 Mandi, Rajashekhar P. 409 Manikumar, S. 1016 Manitha, P. V. 591 Manjula, R. 338 Mahesh Kumar, 504 Manjunath, T. N. 365 Manmohan, Atul 452 Manu, Osho 353 Manyi, Sunilkumar S. 357 422 488 Marathe, Nilesh 599 Math, Shrishail 221 Math, Usharani 461

Mathad, Akshata 485

Mathew, Jose Alex 232 Medhini, D. 552 Meena, P. 072 Megha, H. N. 245 Mihir, M. Patel 204 Minz, Manisha 404 Miranda, Marita 110 Mishra, Anuranjan 498 Misra, Anuranjan 622

Mittal, Aayush 968 Mittal, Divesh 346 347 Mittal, Divya 382 Mitul, M. Patel 204 Mohammed, Akrem 496 Mohan, C. V. 568 Mohandas, Amal 491 Moharkan, Zaid Ajaz 932 Monik, BK 227 Motekar, Ravindra 380 Mohan Kumar S 167 Monisha D. 109 Monisha Jayaker 109 Mounika, A. 552 Mrunal, T. V. 365 Mudengudi, Shailaja S. 479 Muhammed, Mustafa Alghali Elsaid 617 Mukhopadhyay, Adwitiya 491 Mundle, Pratik 114 Munghate, Tanuja 614 Munnoli, Shilpa B. 228 Murthy, M. Vinayaka 448 Murthy, Supreetha R. 522 Murthy, V. Keshava 289 Murtuza, Aenel 010 Murugeshwari, P. 478 Mutalik, Pramod 584 Mutha, Sunil 114 Mydhili Nair K. 329

#### N

Nagaraj, S. 494 Nagraj, M. S. 589 Naik, Midde. Venkateswarlu 112 Naina 746 Nallapaneni Manoj Kumar 404 Nandihalli, Rudranna 171 Narsimlu, Madduri. 112 Nattuthurai, Senthilnathan 490 Navalyal, Geeta U. 202 Naveen, C. S. 210 Naveen, K. 216 Navin, K. 318 Navothna, Bhogula 404 Nayak, Shreya 486 Nayana, M. 522 Nayanar, Aparna S. 595 Pradyumna G.R. 110 Neelamegham, Rajkumar 490 Prasad, Krishna 610 Nerkar, Harshada 401 Prasanna, M. Venkata 035 Niharika Kumar. 157 Prathap, M. 012 Nighot, Mininath K. 502 Prema K. 017 Nirwane, Pranoti Rajendra 593 Pushpa, S. K. 365 Nischita, N. J. 055 Nishanth 1038 R Nithya, M. 128 Ragu Chand R 349 0 Raagapriya, S 268 Omkar, G. 150 Radhakrishnan, JK 607 Raghulan, R. 152 Raheem, SyeD Abdul 108 P Raipurkar, Abhijeet 511 Raj, Rohit 206 Raghav S, 580 Padiya, Puja 599 Raj, Shekhar 529 Pal, Meghna 813 Rajagopal, V. 313 Pallavi, B. 313 Rajan, Sharanya 234 Pallavi, M. Rama 269 Rajesh, M. 128 144 193 Pande, Darshan 114 Rajkumar, R. 510 514 Pandey, Abhishek Kumar 545 Raju, H. B. Phani 568 Pandya, Maulikkumar C. 079 Rakesh, N. 531 537 Pankaja, H. G. 072 Rakshitha 133 Pathmanathan, Prassanna 462 Ramachandran, S. Shreyas 272 Pati, Malini M. 423 Ramagond, Sunita 535 Patil, A. Rajeshree 398 Ramaiah, Narayana Swamy 496 Patil, Asharani 431 Ramaprasad, Arkalgud 005 Patil, Gowri 541 Ramavenkateswaran N 506 Patil, Madhuri Shivaling 593 Ramesh, H. 033 Patil, Padmapriya 425 Ramesh, N. 409 Patil, S. S. 337 Ramesh, T. K. 102 655 Patil, Soumya B. 488 Ramprabhakar, J. 458 Patil, Uttam 493 Rana, Neenu Negi 514 Patil, Venakangouda C. 584 Ranjith, Rinu Sara 333 Paulraj, D. 449 Rahul K 443 Pawale, Trupti P. 380 Ramprabhakar Shankar J. 443 Pawar, Nilesh 006 Rao, K. V. S. 382 397 400 439 Pentyala, Shiva Kumar 999 Rao, P. N. Koteswara 552 Penumutchi, Bujjibabu 082 Rao, Rohan 1038 Phani, A. R. 210 Rao, Sushmitha 486 Poonia, Abhishek 566 Rao, V. Sambasiva 553 Poulier, Ryan 462 Rashmi, C. 512 Prabhakar, M. 108 Rahul Kumar, 042 Prabhukhanolkar, Ninad Vivek 046 Rashmi, S. R. 559 Prajapati, Devang 614 Rastogi, Anshika 022 Prajwal, B. K. 152 Rathan, M. 478 Prajwal, N. 219 Rakesh Kumar, K. S. 046 Prakash, S. R. Jaya 391 Rathore, Yogesh Singh 888 Prakashe, Veena 511 Ravali, A. 411 Pranav, K. V. Sai 314 Ravindranath, Gurram 004 Pranava, G. 004 Ravishankar, S. 486 Praveen Kumar Raviteja, Aku Venkata 572 968 905 722 724 769 788 912 918 927 888 891 Rawal, Sushma 046 932 Rawat, Parshant 346 347 358 Prasad, Akhil 452 Rawat, Seema 905 724 Prasad, D. Ravi 041

Rawat, Tarun Kumar 581	Shalini, N. 180
Reddy, A. Trivikram 239	Shankar, S. 458
Renukadevi 600	Shanthini, Dr. A. 318
Reddy, B. Sandhya 248	Sharath, B. 078
Reddy, B. Subba 618	Sharief, Nayab Z 167
Reddy, G. M. Sreerama 876	Sharma, Aditi 607
· · · · · · · · · · · · · · · · · · ·	
Reddy, K. Ramesh 004	Sharma, Akanksha 397
Reddy, Krishna Mohan 113	Sharma, Ashok Kumar 416 417 420
Reddy, N. Sudhakar 556	Sharma, Mayank 346 347 358
Reddy, NV Subba 017	Sharma, Shilpi 769 788 918 793
Reddy, P. Preetham 591 594	Shastry, P. M. Mallikarjuna 254 492
Reddy, P. Thirumal 591	Shavi, Suchit 097
Reddy, R. Venkata Siva 271	Sheeparamatti, Arshath 184
Reddy, Thanika 486	Sheeparamatti, B. G. 184
· · · · · · · · · · · · · · · · · · ·	•
Reddy, V. Naga Bhaskar 284	Shete, Virendra V. 613
Rohini R 506	Shivashankar, Shreyas Gulur 291
Rekha, S. 289	Shreyas, RY 610
Ren, Hai-Peng 265	Shruthi, N. 1016
Roka, Sanjay 362	Shukla, Akshat 511
Roy, C. Tejaswini 374	Shushrutha, K. S. 210
Rukkumani, V. 216	Shyam, Gopal Krishna 139
,	Siddesh, G. M. 488
	Sidhu, Ekambir 342 346 347 353 358
S	
	Sidnal, Nandini 493
Saadh AW, Mohammad 166 248	Singh, Amartya 365
Saarika, P. S. 515	Singh, Damanpreet 346 347 353
	Singh, Tripty 355
Sasikala T 113	Singh, Jaskaran 353
Sagar, B. S. 577	Singh, K. Sainadh 313
Saha, Sanchari 571	Singh, Manoj Kumar 498
Saha, Snehanshu 375	Singh, Priyanshi 806
Sahu, O. P. 529	Singh, Raytej 138
Saini, Parag 905	•
Sakunthala, S. 116	Singh, Shashi Pal 022
Sambhay 232	Singh, Sukhjeet 358
Satish Kumar, R. 618	Singh, Upendra Kumar 607
	Singh, Vaibhav Pratap 468
Sampath, Nalini 572	Sindhu Nair S. 505
Sandeep, S. Anupam 314	Sinha, Sourish S. 401
Sandeep, S. R. 171	Sisodia, Jignesh 029
Sandeep, T. S. 556	Sivapriyan, R. 218
Sandhya, K. 515	Sivaraman, K. 272
Sandhya, P. 317	Sorayya, Ria 476
Sangeeta, K. 411 587	Sravya, Chinasani 472
Sankar, M. 593	· · · · · · · · · · · · · · · · · · ·
Santhanalakshmi, S. 182	Sree, Mallojjala. Raja 112
Sarangapani, R. 565	Sreedharan, Rajkumar P. 144 193
Saraswathi, K. 486	Sreeharsha, M. S. 152
Sataraddi, Mamata J. 393	Sreeraj, S. 050
	Srikar, D. V. S. 655
Sathiyanarayanan, Mithileysh 233 234	Srilatha, P. 338
Satti, Harichandraprasad 082	Srinivas, CH. 095
Saxena, Bharat Kumar 382 397 400 439 586	Srinivasamurthy 221
Saxena, Garv 927	Srinivasan, G. 593
Saxena, Pulkit 493	
Seetharam, K. 568	Srinivasan, K. 216
Sekhar, S. R. Mani 488	Srividya, Ch. 538
Sengupta, Suchismita 256	Sudha, T. 515
Senthil, Dr. 366	Suhas, C. 365
	Suja, P. 540 541
Senthil.s 549	Sujani, G. 876

Sujith, Mini 410 V Sudarshan TSB 470 472 Sunilkumar, Sanchala Bharat 204 VaibhavkrishnaBhosle 260 Supriya, C. 334 Vaid, Ishan 722 Supriya, M. 574 579 Vasanth, G. 652 Suresh, P. V. B. 591 Vasantha Kumar, S. 150 Suresh Kumar, S. 254 Vasist, R. Akshay 413 Santhosh Kumar, 050 Veeraraghavan, A. K. 272 Santosh Kumar, 503 Vella, Satyanarayana 082 Sudhanshu Kumar, 010 Venkataratnam, P. 057 Sushil Kumar, 1056 813 Venkatesh, Anuya 607 Suryanarayanan, Sindhu 531 Venugopal, C. 108 Survanegara, Muhammad 476 Venugopal, K. R. 337 Sushmitha, H. M. 478 Venugopala, P. S. 335 Sushmitha, V. C. 559 Verma, Gyanendra K. 555 Sutagundar, Ashok V. 517 518 Verma, Jayavant Krishna 353 Suresh Kumar, N. G. 050 Veena K.N 123 Swamy, Nirmala Kumar 231 Vidhate, Amarsinh 979 Swathi, Y. 334 Vignesh, N. 587 Swathi M. 109 Vikesh, R. S. 239 Swetapadma, Aleena 544 545 Vinay, H. S. 012 Swetha, K. M. 540 Vinod, M. 012 Syal, Arshdeep Singh 653 Vishal, V. 155 Syamkumar, Uma 601 Vishnu, C. 601 Vishwanth, V. 216 T Vijaya Kumar, M. 615 Vishwas, H. N. 333 Viswanatha, V. 271 Tahilramani Nikunj 217 Vivek, D. 155 Tabassum, Nikhath 253 Vohra, Akshat 826 Tadse, Surekha K. 076 Vyas, Hir 614 Tangade, Shrikant 422 Tapale, Manisha T. 388 Teja, G. Sai 579 Tejashwini, S. G. 527 Tejaswini, H. 209 Wang, Shaorong 450 Tesema, Guta 496 Wasson, Tarushi 769 Thakral, Abha 806 813 826 Wickramagedara, M. W. B. K. 207 Thakur, Chandanita 326 Wong 366 Thakur, Tilak 585 Thampatty, Sindhu 314 Y Thomas, Milchah V. 582 Thota, Sailaja 409 Tikotikar, Ahelam 134 Yadahalli, Safi 502 Titus, Sunny David 232 Yathendra, N. 579 Tiwari, Shreedhar 410 Yegnanarayanan, V. 360 428 Tomar, Pavan Singh 416 420 Yekkala, Indu 596 Yellampalli, Siva 136 535 345 219 220 227 522 582 U Yerramilli, Rama 231 Yuvaraj, R. 272 Udaya Rani 438 424

Z

Zade, Shrikant D. 530

Ujjinimatad, Rohitha 092

Upadhyay, Dharmendra K. 1056 1077

Umahsnakar, S. 218 Upadhyay, Bhargavi R. 595