

# 8th International Conference on Pattern Recognition and Machine Intelligence



# PreMI

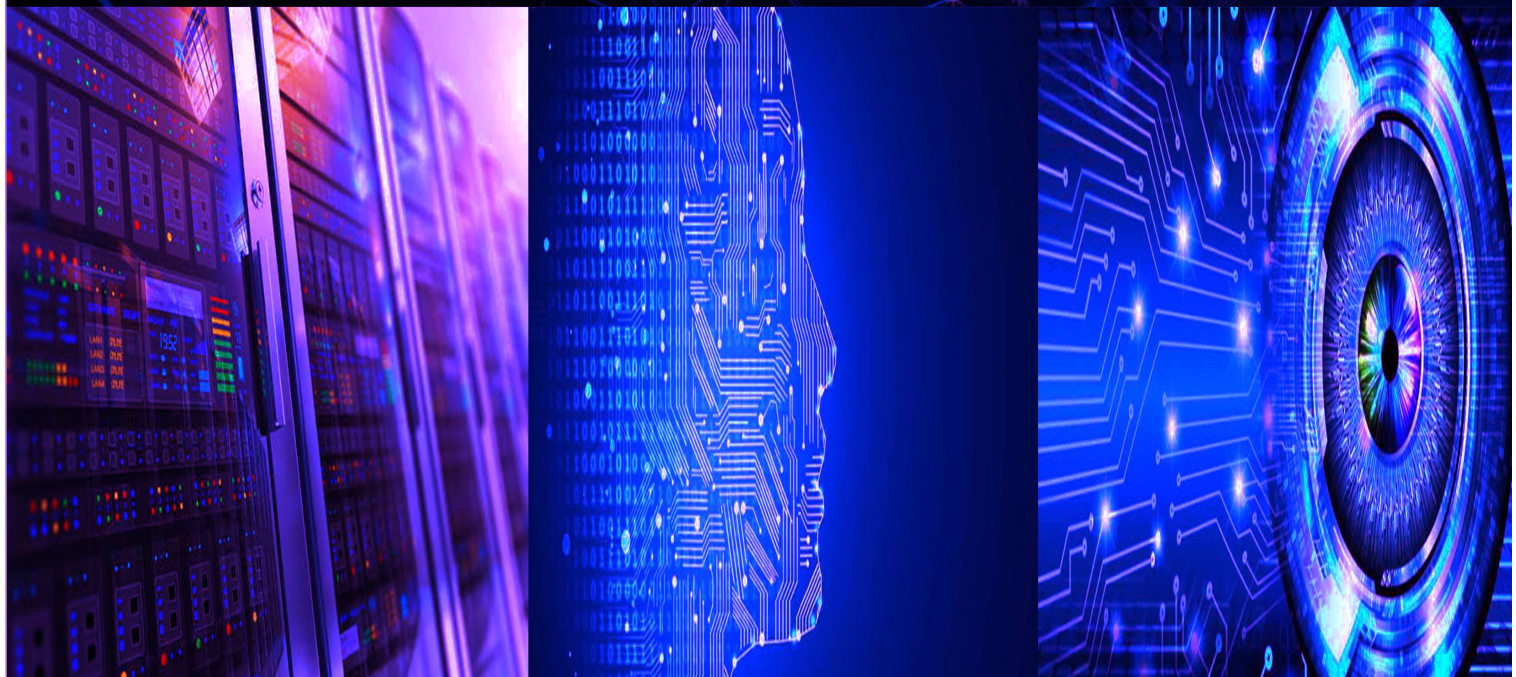
December 17-20, 2019

Organized by

## Tezpur University

*in collaboration with*

MIU, Indian Statistical Institute (ISI), Kolkata &  
Dept of EEE, Indian Institute of Technology Guwahati



## JOURNAL SPECIAL ISSUES



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## About PReMI

The primary goal of the conference is to present state-of-the-art scientific results, encourage academic and industrial interaction, and to promote collaborative research activities in Pattern Recognition, Machine Intelligence and related fields, involving scientists, engineers, professionals, researchers and students across the globe. The conference was originated from the Machine Intelligence Unit (MIU), Indian Statistical Institute (ISI), Kolkata, India in 2005. This is being organized every alternate year. The successive editions were held in ISI, Kolkata, India (2007); IIT, Delhi, India (2009); Higher School of Economics (HSE), Moscow, Russia (2011); ISI, Kolkata, India (2013); Warsaw University of Technology, Warsaw, Poland (2015) and ISI, Kolkata, India (2017). PReMI'19 will take place at the Tezpur University from December 17-20, 2019 at Tezpur, India.

## Tezpur University

Tezpur University came into existence on 21<sup>st</sup> January 1994 by an Act of Parliament of India, The Tezpur University Act, 1993 (Act No. 45). It is a unitary and residential Central University. The University is located at Napaam, about 15 km east of Tezpur town in Sonitpur District of Assam. The University has a campus area of about 262 acres. The sprawling and verdant beauty of the campus, the striking and well maintained academic buildings, and the engaging staff and student activities make the campus very vibrant. The academic programmes offered in the University have a distinct focus on Science, Technology, and Humanities and Social Sciences, reflecting the objective of the University. Currently the University is offering Doctor of 3 Philosophy programmes (Ph.D.) in 17 disciplines, Masters programmes in 23 disciplines, PostGraduate Diploma in 3 disciplines, B. Tech. in 6 disciplines, Certificate programmes in 3 disciplines, Integrated M. Sc. programmes in 4 disciplines, Integrated B. A. B. Ed. Programme in 1 discipline, Integrated M. A. in 1 discipline, Integrated B. Sc. B. Ed. programmes in 3 disciplines, Integrated M. Com., Diploma and Advanced Diploma Programme in 1 discipline each. The University has already developed a number of state-of-the-art laboratories, computing facilities, internet connectivity, a dedicated power supply system and a relatively small but rich library having connectivity to several digital libraries. While students' accommodation is provided in 12 well-designed hostels, several residential quarters have been built for accommodating teachers and non-teaching staff. Other basic amenities like, central water supply, campus security, guesthouse, canteen, gymnasium, indoor & outdoor sports facilities with floodlights, post office, banks with ATMs, schools, etc. are also available on the campus to cater to the various needs of the university community. Tezpur University has emerged as one of the most sought after Universities in the North East. The University has a pan India look with students from all states taking admission here and the percentage of such students coming to this University is on the rise. The University can rightly be proud of what it has achieved in the last 25 years since its inception. However, there is no room for complacency as the environment around us is rapidly changing, technologies are constantly being upgraded, innovations are changing our lifestyles and



newer areas of research are emerging. The University shall play a proactive role in providing impetus to guide these changes.

### **Department of Electronics and Communication Engineering**

Established in 1997, the Department of Electronics and Communication Engineering is one of the oldest departments in the University. Starting with an M.Tech. programme in Electronics Design and Technology in 1997, the department has subsequently introduced another M.Tech. programme in Bioelectronics under the 'Teaching and Research in Interdisciplinary and Emerging Areas' scheme of the University Grants Commission. The department expanded its academic activities to undergraduate programmes with a B.Tech. programme in Electronics and Communication Engineering in 2006. The department also offers Ph.D. programme in different areas including Signal and Image Processing, Bioelectronics, Biosensors, Microwave Engineering, Communication Engineering and Microelectronics. The department is supported by external funding agencies including DST-FIST, MeitY, UGC-SAP (DRS-I), ISRO and AICTE. The B.Tech. course in the department is AICTE approved and NBA accredited and M.Tech. courses are AICTE approved.

### **Department of Computer Science and Engineering**

The Department of Computer Science and Engineering was established in 1994 and it is one of the oldest Departments of the University. The department has been recently recognized as a Centre of Excellence in Machine Learning and Big Data Analytics by MHRD, Government of India under FAST. The department is also recognized by UGC under Special Assistance Programme (SAP DRS Phase II). During 2005-2009 and 2018-2023 the department received support from the Department of Science and Technology (DST), Govt. of India under its FIST-programme. The department has also been recognized as ISEA member, MeitY, GoI and BRICS-NU Member. The department has been carrying out active research in the fields of computational theory, computer networks, network security, mobile computing, soft computing and data mining, natural language processing, workflow management, qualitative spatial reasoning, web services, rehabilitation robotics, pattern recognition, computer vision, bioinformatics, image processing algorithms, speech processing, algorithms and optimization techniques, machine learning and remote sensing image analysis. The B.Tech. course in the department is AICTE approved and NBA accredited and M.Tech. course is AICTE approved.

## **Message from the Honorary General Chair**

I am delighted to see that the eighth edition of the biennial International Conference on Pattern Recognition and Machine Intelligence, PReMI-19, is being held, for the first time, in the North-east region of our country, viz, at Tezpur University, Tezpur, Assam during Dec 17-20, 2019. Assam is the most vibrant among eight states in North-east, rich in natural resources, and has charm for tourism. The earlier edition (PReMI-17) was held in the year that marked the 125th birth anniversary of late Professor Prasanta Chandra Mahalanobis, the founder of our Indian Statistical Institute (ISI). PReMI-19, on the other hand, is being organized when our ISI is preparing to celebrate the birth centenary of another doyen in statistics, namely, Prof. C.R. Rao, a living legendary. Prof. Rao has always been an inspiration to us and was associated in different capacities with PReMI.

Since its inception in 2005, PReMI had always drawn big responses globally in terms of paper submission. This year, PReMI 2019 is not an exception. It has a nice blend of Plenary and Invited talks, and high-quality research papers, covering different facets of pattern recognition and machine intelligence with real life applications. Both classical and modern computing paradigms are explored. Special emphasis has been given to contemporary research areas such as big data analytics, deep learning, AI, internet of things, smart and intelligent sensors through both regular and special sessions. Some pre-conference tutorials are also arranged for the beginners. All these make the PReMI 2019 an ideal state-of-the-art platform for researchers and practitioners to exchange ideas and enrich their knowledge.

I thank all the participants, speakers, reviewers, different Chairs, and members of various committees for making this event a grand success. My thanks are due to the sponsors for their support, and Springer for publishing the PReMI proceedings under the prestigious LNCS series. Last, but not the least, I sincerely acknowledge the support of Tezpur University in hosting the event nicely. I believe, the participants would have an academically fruitful and enjoyable stay in Tezpur.

December 2019

**Sankar Kumar Pal**

INSA Distinguished Professor

Indian Statistical Institute, Kolkata



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## Program Schedule

	Time	Program to be held
Day 1: Tuesday 17 <sup>th</sup> December 2019	8:30-9:30	<b>Breakfast</b>
		Registration, Deans Building
	9:30-11:00	<b>Tutorial 1:</b> Brief History of Topic Models <b>Speaker:</b> Prof Chiranjib Bhattacharya, <i>IISc Bangaluru</i> <b>Chair:</b> Prof. Partha Pratim Sahu, <i>Tezpur University</i> <b>Venue:</b> Seminar Hall, Dept. of CSE
		<b>Tutorial 2:</b> Introduction to Compressed Sensing <b>Speaker:</b> Dr. Ajit Rajwade, <i>IIT Bombay</i> <b>Chair:</b> Dr. Arjit Sur, <i>IIT Guwahati</i> <b>Venue:</b> Gallery, SoE, Deans Building
	11:00-11:15	<b>Tea/Coffee Break</b>
	11:15-12:15	<b>Tutorial 3:</b> Novel Nonparallel Support Vector Machines for Classification Problems <b>Speaker:</b> Dr. M. Tanveer, <i>IIT Indore</i> <b>Chair:</b> Dr. Arjit Sur, <i>IIT Guwahati</i> <b>Venue:</b> Gallery, SoE, Deans Building
		<b>Tutorial 4:</b> EEG Characterization of Motor Imagery-Induced Mental Fatigue <b>Speaker:</b> Prof. Shyamanta M. Hazarika, <i>IIT Guwahati</i> <b>Chair:</b> Dr. Nayan Moni Kakoty, <i>Tezpur University</i> <b>Venue:</b> Seminar Hall, Dept. of CSE
	12:15-12:45	<b>Special Lecture 1:</b> Quantum Optic Processing <b>Speaker:</b> Prof. Partha Pratim Sahu, <i>Tezpur University</i> <b>Chair:</b> Dr. Soumik Roy, <i>Tezpur University</i> <b>Venue:</b> Gallery, SoE, Deans Building
		<b>Special Lecture 2:</b> CNT based Biosensor for Clinical Applications <b>Speaker:</b> Prof. Jiten Chandra Dutta, <i>Tezpur University</i> <b>Chair:</b> Dr. Vijay Kumar Nath, <i>Tezpur University</i> <b>Venue:</b> Seminar Hall, Dept. of CSE
	12:45-1:30	<b>Inauguration of Space Technology Exhibition</b>
	1:30-2:30	<b>Lunch Break</b>
	2:30-3:50	<b>Session:</b> Doctoral Symposium <b>Chair:</b> Dr. Arjit Sur, <i>IIT Guwahati</i> <b>Venue:</b> Gallery, SoE, Deans Building
		<b>Title:</b> Novel Strategies for Image Retargeting: Energy Design, Acceleration and Scene Awareness <b>Graduate Student:</b> Mr. Diptiben Patel, <i>IIT Gandhinagar</i>
		<b>Title:</b> Pre-charge Free Content Addressable Memory: Binary and Ternary Storage <b>Graduate Student:</b> Mr. Telajala Venkata Mahendra, <i>NIT Meghalaya</i>
		<b>Title:</b> Fingerprint Quality Assessment for Enhancement and Liveness Detection <b>Graduate Student:</b> Mr. Ram Prakash Sharma, <i>IIT Indore</i>
		<b>Title:</b> Compressed Multimedia Forgery Detection through Blind Digital Forensics <b>Graduate Student:</b> Mr. Jaimimamul Bakas, <i>NIT Rourkela</i>
	3:50-4:10	<b>Tea/Coffee Break</b>
	4:10-5:30	<b>Session:</b> Doctoral Symposium <b>Chair:</b> Dr. Arjit Sur, <i>IIT Guwahati</i> <b>Venue:</b> Gallery, SoE, Deans Building
		<b>Title:</b> Development of Compressed Sensing Reconstruction Techniques for Rapid MRI <b>Graduate Student:</b> Mr. Sumit Datta, <i>Tezpur University</i>
		<b>Title:</b> Identity Independent Face Anti-Spoofing <b>Graduate Student:</b> Mr. Balaji Rao Katika, <i>IIT Guwahati</i>
		<b>Title:</b> Integrative Analysis of Multimodal Data <b>Graduate Student:</b> Mrs. Ankita Mandal, <i>ISI Kolkata</i>

		<b>Title:</b> Modeling Control Dynamics of Integrated Bio-chemical Pathways: A Control Theoretic Approach <b>Graduate Student:</b> Mr. Abhijit Dasgupta, <i>ISI Kolkata</i>
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Day 2: Wednesday 18 <sup>th</sup> December 2019	<b>Time</b>	<b>Program to be held</b>
	<b>8:30-9:30</b>	<b>Breakfast</b>
		<b>Registration</b> , Deans Building
	<b>9:30-10:30</b>	<b>Inauguration</b> , Gallery, SoE, Deans Building
	<b>10:30-10:40</b>	<b>High Tea/Coffee Break</b>
	<b>10:40-11:20</b>	<b>Invited Talk 1:</b> Cognitive Analysis using Physiological Sensing <b>Speaker:</b> Prof. Sanjoy Kumar Saha, <i>Jadavpur University</i> <b>Chair:</b> Prof. Kuntal Ghosh, <i>ISI Kolkata</i> <b>Venue:</b> SoE Gallery, Deans Building
	<b>11:20-11:50</b>	<b>Special Lecture 3:</b> Image Forensics Methods: From Machine Learning to Deep Learning <b>Speaker:</b> Prof. Prabin K. Bora, <i>IIT Guwahati</i> <b>Chair:</b> Prof. Bhogeswar Borah, <i>Tezpur University</i> <b>Venue:</b> SoE Gallery, Deans Building
		<b>Special Lecture 4:</b> Machine Learning for Cardiovascular Abnormalities <b>Speaker:</b> Prof. Samarendra Dandapat, <i>IIT Guwahati</i> <b>Chair:</b> Dr. Nayan Moni Kakoty, <i>Tezpur University</i> <b>Venue:</b> Seminar Hall, Dept. of CSE
	<b>11:50-12:35</b>	<b>Invited Talk 2:</b> Imparting Sentiment and Politeness on Computers <b>Speaker:</b> Prof. Pushpak Bhattacharyya, <i>IIT Patna</i> <b>Chair:</b> Prof. Utpal Sharma, <i>Tezpur University</i> <b>Venue:</b> Smart classroom, SoE, Deans Building ( <i>Over Skype</i> )
	<b>12:35-1:35</b>	<b>Session I:</b> Machine Learning and Deep Learning <b>Chair:</b> Prof. Shyamanta M. Hazarika, <i>IIT Guwahati</i> <b>Paper ID:</b> 31, 38, 56, 71 <b>Venue:</b> Smart classroom, SoE, Deans Building
		<b>Session II:</b> Machine Learning and Deep Learning <b>Chair:</b> Prof. Kuntal Ghosh, <i>ISI Kolkata</i> <b>Paper ID:</b> 80, 105, 117, 131 <b>Venue:</b> Seminar Hall, Dept. of CSE
		<b>Session III:</b> Machine Learning and Deep Learning <b>Chair:</b> Prof. Prabin K. Bora, <i>IIT Guwahati</i> <b>Paper ID:</b> 216, 249, 252, 314 <b>Venue:</b> Classroom I, Deans Building
	<b>1:35-2:30</b>	<b>Lunch Break</b>
	<b>2:30-3:15</b>	<b>Industrial Talk 1:</b> How to escape saddle points efficiently? <b>Speaker:</b> Dr. Praneeth Netrapalli, <i>Microsoft Research India</i> <b>Chair:</b> Prof. Shyamanta M. Hazarika, <i>IIT Guwahati</i> <b>Venue:</b> SoE Gallery, Deans Building
	<b>3:20-4:05</b>	<b>Session IV:</b> Short Oral Presentation <b>Chair:</b> Dr. Nayan Moni Kakoty, <i>Tezpur University</i> <b>Paper ID:</b> 7, 9, 11, 44, 46, 47, 51, 57, 69, 75, 76, 94, 100, 106 <b>Venue:</b> Smart classroom, SoE, Deans Building
		<b>Session V:</b> Short Oral Presentation <b>Chair:</b> Prof. Bhogeswar Borah, <i>Tezpur University</i> <b>Paper ID:</b> 111, 112, 125, 130, 132, 139, 145, 147, 167, 195, 197, 204, 218, 233 <b>Venue:</b> Seminar Hall, Dept. of CSE
		<b>Session VI:</b> Short Oral Presentation <b>Chair:</b> Prof. Prabin K. Bora, <i>IIT Guwahati</i>



		<b>Paper ID:</b> 237, 257, 262, 265, 266, 268, 275, 300, 301, 305, 306, 311, 320, 352 <b>Venue:</b> Classroom I, Deans Building
	<b>4:05-4:15</b>	<b>Tea/Coffee Break</b>
	<b>4:15-5:00</b>	<b>Invited Talk 3:</b> Internet of Things: Enabling Cross-domain Convergence and Innovation <b>Speaker:</b> Prof. Sudip Misra, <i>IIT Kharagpur</i> <b>Chair:</b> Prof. Partha Pratim Sahu, <i>Tezpur University</i> <b>Venue:</b> SoE Gallery, Deans Building
	<b>5:00-6:00</b>	<b>Session:</b> Poster Presentation <b>Chair:</b> Dr. M. Tanveer, <i>IIT Indore</i> , Dr. Praneeth Netrapalli, <i>Microsoft Research India</i> , Prof. Manabendra Bhuyan, <i>Tezpur University</i> <b>Paper ID:</b> 7, 9, 11, 44, 46, 47, 51, 57, 69, 75, 76, 94, 100, 106, 111, 112, 125, 130, 132, 139, 145, 147, 167, 195, 197, 204, 218, 233, 237, 257, 262, 265, 266, 268, 275, 300, 301, 305, 306, 311, 320, 352 <b>Venue:</b> In front of ECE Building

Day 3: Thursday 19 <sup>th</sup> December 2019	<b>Time</b>	<b>Program to be held</b>
	<b>8:30-9:30</b>	<b>Breakfast</b>
		<b>Registration</b> , Deans Building
	<b>9:30-10:30</b>	<b>Plenary Talk 1:</b> Anatomy-guided AI for Body-wide Medical Image Analysis <b>Speaker:</b> Prof. Jayaram K. Udupa, <i>University of Pennsylvania, USA</i> <b>Chair:</b> Prof. Dhruva K Bhattacharyya, <i>Tezpur University</i> <b>Venue:</b> SoE Gallery, Deans Building
	<b>10:35-11:35</b>	<b>Session VII:</b> Medical Informatics <b>Chair:</b> Prof. Samarendra Dandapat, <i>IIT Guwahati</i> <b>Paper ID:</b> 42, 58, 66, 95 <b>Venue:</b> Smart classroom, SoE, Deans Building
		<b>Session VIII:</b> Medical Informatics <b>Chair:</b> Dr. Vijay Kumar Nath, <i>Tezpur University</i> <b>Paper ID:</b> 127, 137, 154, 198 <b>Venue:</b> Seminar Hall, Dept. of CSE
		<b>Session IX:</b> Medical Informatics <b>Chair:</b> Prof. Manabendra Bhuyan, <i>Tezpur University</i> <b>Paper ID:</b> 221, 234, 287, 291 <b>Venue:</b> Classroom I, Deans Building
	<b>11:35-11:45</b>	<b>Tea/Coffee Break</b>
	<b>11:45-12:30</b>	<b>Industrial Talk 2:</b> Machine Learning and its Application in Remote Sensing Data Classification Applications <b>Speaker:</b> Prof. Anil Kumar, <i>IIRS-ISRO</i> <b>Chair:</b> Prof. Samarendra Dandapat, <i>IIT Guwahati</i> <b>Venue:</b> SoE Gallery, Deans Building
	<b>12:35-1:35</b>	<b>Session X:</b> Pattern Recognition and Remote Sensing <b>Chair:</b> Prof. Manas Kamal Bhuyan, <i>IIT Guwahati</i> <b>Paper ID:</b> 24, 98, 104, 183 <b>Venue:</b> Smart classroom, SoE, Deans Building
		<b>Session XI:</b> Pattern Recognition and Remote Sensing <b>Chair:</b> Prof. Pradipta Maji, <i>ISI Kolkata</i> <b>Paper ID:</b> 245, 264, 269, 272 <b>Venue:</b> Seminar Hall, Dept. of CSE
		<b>Session XII:</b> Pattern Recognition and Remote Sensing <b>Chair:</b> Dr. Sanjit Maitra, <i>ISI NE Center, Tezpur</i> <b>Paper ID:</b> 280, 282, 297, 340 <b>Venue:</b> Classroom I, Deans Building

	1:35-2:30	<b>Lunch Break</b>
	2:30-3:15	<b>Invited Talk 4:</b> The Rise of Hate Content in Social Media <b>Speaker:</b> Dr. Animesh Mukherjee, <i>IIT Kharagpur</i> <b>Chair:</b> Prof. Smriti Kumar Sinha, <i>Tezpur University</i> <b>Venue:</b> SoE Gallery, Deans Building
	3:20-4:35	<b>Session XIII:</b> Intelligent Sensors and Information Retrieval <b>Chair:</b> Prof. Manabendra Bhuyan, <i>Tezpur University</i> <b>Paper ID:</b> 26, 35, 146, 161, 178 <b>Venue:</b> Seminar Hall, Dept. of CSE
		<b>Session XIV:</b> Intelligent Sensors and Information Retrieval <b>Chair:</b> Prof. Jiten Chandra Dutta, <i>Tezpur University</i> <b>Paper ID:</b> 244, 261, 279, 302, 339 <b>Venue:</b> Smart classroom, SoE, Deans Building
	4:35-4:45	<b>Tea/Coffee Break</b>
	4:45-6:00	<b>Plenary Talk 2:</b> Granular Artificial Intelligence: A New Avenue of Artificial Intelligence for Modeling Environment and Pattern Recognition <b>Speaker:</b> Prof. Witold Pedrycz, <i>University of Alberta, Canada</i> <b>Chair:</b> Prof. Dhruva K Bhattacharyya, <i>Tezpur University</i> <b>Venue:</b> KBR Auditorium (Over Skype)
	6:00-8:00	<b>Cultural Program</b> , KBR Auditorium
	8:00-10:00	<b>Banquet Dinner</b>

Day 4: Friday 20 <sup>th</sup> December 2019	<b>Time</b>	<b>Program to be held</b>
	8:30-9:30	<b>Breakfast</b>
		<b>Registration</b> , Deans Building
	9:30-10:10	<b>Special Lecture 5:</b> Machine Learning in Gene Expression Data Analysis: A Big Data Analytics Approach <b>Speaker:</b> Prof. Dhruva K Bhattacharyya, <i>Tezpur University</i> <b>Chair:</b> Dr. Siddhartha S. Satapathy, <i>Tezpur University</i> <b>Venue:</b> SoE Gallery, Deans Building
		<b>Special Lecture 6:</b> Instrumentation and Artificial Intelligence <b>Speaker:</b> Prof. Manabendra Bhuyan, <i>Tezpur University</i> <b>Chair:</b> Dr. Soumik Roy, <i>Tezpur University</i> <b>Venue:</b> Seminar Hall, Dept. of CSE
		<b>Session XV:</b> Signal, Image and Video Processing <b>Chair:</b> Dr. Swarnajyoti Patra, <i>Tezpur University</i> <b>Paper ID:</b> 119, 122, 129, 141, 149 <b>Venue:</b> Smart classroom, SoE, Deans Building
	10:15-11:30	<b>Session XVI:</b> Signal, Image and Video Processing <b>Chair:</b> Prof. Samarendra Dandapat, <i>IIT Guwahati</i> <b>Paper ID:</b> 85, 168, 169, 177, 179 <b>Venue:</b> Seminar Hall, Dept. of CSE
		<b>Session XVII:</b> Signal, Image and Video Processing <b>Chair:</b> Dr. Sarat Saharia, <i>Tezpur University</i> <b>Paper ID:</b> 181, 192, 199, 200, 211 <b>Venue:</b> Classroom I, Deans Building
		<b>Session XVIII:</b> Signal, Image and Video Processing <b>Chair:</b> Dr. Prithwijit Guha, <i>IIT Guwahati</i> <b>Paper ID:</b> 219, 223, 232, 241 <b>Venue:</b> Classroom II, Deans Building
		<b>Session XIX:</b> Machine Learning and Soft Computing <b>Chair:</b> Dr. Sanjit Maitra, <i>ISI NE Center, Tezpur</i>
	11:30-11:45	<b>Tea/Coffee Break</b>
	11:45-12:45	<b>Session XIX:</b> Machine Learning and Soft Computing <b>Chair:</b> Dr. Sanjit Maitra, <i>ISI NE Center, Tezpur</i>

		<b>Paper ID:</b> 15, 29, 91, 99 <b>Venue:</b> Smart classroom, SoE, Deans Building
		<b>Session XX:</b> Machine Learning and Soft Computing <b>Chair:</b> Dr. Arindam Karmakar, <i>Tezpur University</i> <b>Paper ID:</b> 115, 162, 164, 191 <b>Venue:</b> Seminar Hall, Dept. of CSE
		<b>Session XXI:</b> Machine Learning and Soft Computing <b>Chair:</b> Prof. Samarendra Dandapat, <i>IIT Guwahati</i> <b>Paper ID:</b> 208, 231, 283, 331 <b>Venue:</b> Classroom I, Deans Building
	12:45-1:30	<b>Invited Talk 6:</b> Beyond Text Detection and Recognition: Emerging Opportunities in Scene Understanding <b>Speaker:</b> Prof. C. V. Jawahar, <i>IIT Hyderabad</i> <b>Chair:</b> Prof. Shyamanta M. Hazarika, <i>IIT Guwahati</i> <b>Venue:</b> SoE Gallery, Deans Building
	1:30-2:30	<b>Lunch Break</b>
	2:30-3:30	<b>Session XXII:</b> Signal, Image and Video Processing <b>Chair:</b> Dr. Swarnajyoti Patra, <i>Tezpur University</i> <b>Paper ID:</b> 243, 274, 276, 277 <b>Venue:</b> Smart classroom, SoE, Deans Building
		<b>Session XXIII:</b> Signal, Image and Video Processing <b>Chair:</b> Prof. Manabendra Bhuyan, <i>Tezpur University</i> <b>Paper ID:</b> 284, 285, 309, 310 <b>Venue:</b> Seminar Hall, Dept. of CSE
		<b>Session XXIV:</b> Signal, Image and Video Processing <b>Chair:</b> Prof. Bhogeswar Borah, <i>Tezpur University</i> <b>Paper ID:</b> 332, 342, 348, 351 <b>Venue:</b> Classroom I, Deans Building
	3:30-4:00	<b>Invited Talk 5:</b> TBA <b>Speaker:</b> Prof. Sanghamitra Bandyopadhyay, <i>ISI Kolkata</i> <b>Chair:</b> Prof. Partha Pratim Sahu, <i>Tezpur University</i> <b>Venue:</b> SoE Gallery, Deans Building
	4:00-4:45	<b>Valedictory</b> , Gallery, SoE, Deans Building
	4:45-5:00	<b>Tea/Coffee Break</b>



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9	Satyabrat Malla Bujar Baruah, Plabita Gogoi and Soumik Roy	Neuronal Dendritic Fiber Interference Due to Signal Propagation
11	Dhanya M. Dhanalakshmy, G. Jeyakumar and C. Shunmuga Velayutham	Analytical Study and Empirical Validations on the Impact of Scale Factor Parameter of Differential Evolution Algorithm
15	Abhijit Dasgupta, Ritankar Das, Losiana Nayak, Ashis Datta and Rajat K. De	Two-class in silico Categorization of Intermediate Epileptic EEG Data
24	Kannan Karthik and Balaji Rao Katika	Identity Independent Face Anti-spoofing based on Random Scan Patterns
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