

Proposal for Special Session on
**“Computational intelligence for biomedical data and
imaging”**
**IEEE Symposium Series on Computational Intelligence
(IEEE SSCI 2018)**
November 18-21, 2018, Bengaluru, India

Organized by:

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Aims and Scope:

Researchers in machine learning including those working in computer vision, image processing, biomedical analysis and related fields when tied with experienced clinicians can play a significant role in understanding and working on complex medical data which ultimately improves patient care. To develop a novel machine learning algorithm specific to medical data is a challenge and need of the hour. Healthcare and biomedical sciences have become data-intensive fields, with a strong need for sophisticated data mining methods to extract the knowledge from the available information. Biomedical data contains several challenges in data analysis, including high dimensionality, class imbalance and low numbers of samples. Although the current research in this field has shown promising results, several research issues need to be explored as follows. There is a need to explore novel feature selection methods to improve predictive performance along with interpretation, and to explore large scale data in biomedical sciences.

This special session aims to bring together the current research progress (from both academia and industry) on novel machine learning methods to address the challenges to biomedical complex data. Special attention will be devoted to handle feature selection, class imbalance, and data fusion in biomedical and machine learning applications. It will attract medical experts who have access to interesting sources of data but lack the expertise in using machine learning techniques effectively.

Topics:

The main topics of this special session include, but are not limited to, the following:

- Computer aided detection and diagnosis
- Machine learning methods applied to biomedical data
- Deep learning for medical image analysis
- Biomedical image classification
- Evolutionary computing in bioinformatics
- Pattern recognition for Medical imaging and genomics
- Big data analytics on biomedical applications
- Cloud computing based biomedical data analysis

Special Session Organizers:

1. Dr. M. Tanveer (mtanveer@iiti.ac.in)
Indian Institute of Technology Indore, India
2. Dr. Sonali Agarwal (sonali@iiita.ac.in)
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5. Dr. Reshma Rastogi (nee Khemchandani) (reshma.khemchandani@sau.ac.in)
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Important Dates:

Paper submission due: June 15, 2018
Notification of acceptance: August 15, 2018
Author registration deadline: September 15, 2018

Paper Submission:

The papers should be submitted through IEEE SSCI's submission central. After logging into the submission system, you need to choose Special Session on "**Machine learning techniques for biomedical data and imaging**".

Information for Authors: <http://iee-ssci2018.org/submission.html>

Information about IEEE SSCI 2018: <http://iee-ssci2018.org/>

We look forward to receiving your high-quality submissions.

Dr. M. Tanveer is Assistant Professor and Ramanujan Fellow at the Discipline of Mathematics of the Indian Institute of Technology, Indore. Prior to that, he spent one year as a Postdoctoral Research Fellow at the Rolls-Royce@NTU Corporate Lab of the Nanyang Technological University, Singapore. He received the Ph.D degree in Computer Science from the Jawaharlal Nehru University, New Delhi, India. Prior to that, he received the M.Phil degree in Mathematics from Aligarh Muslim University, Aligarh, India.

His research interests include support vector machines, optimization, applications to Alzheimer's disease and dementias, biomedical signal processing, and fixed point theory and applications. He has published over 24 referred journal papers of international repute. He is the recipient of the 2016 DST-Ramanujan Fellowship in Mathematical Sciences and 2017 SERB-Early Career Research Award in Engineering Sciences which are the prestigious awards of INDIA at early career level. He is a member of the editorial review board of Applied Intelligence, Springer (International Journal of Artificial Intelligence, Neural Networks, and Complex Problem-Solving Technologies). He has also co-edited one book in Springer on machine intelligence and signal

analysis. He has also been organizer and invited speaker in many international conferences and Symposiums. Dr. Tanveer is currently the Principal Investigator of 04 major research projects funded by Government of India including Department of Science and Technology (DST), Science & Engineering Research Board (SERB) and Council of Scientific & Industrial Research (CSIR).

Dr. Sonali Agarwal is working as an Assistant Professor in the Information Technology Department of Indian Institute of Information Technology (IIIT), Allahabad, India. She received her Ph. D. Degree at IIIT Allahabad and joined as faculty at IIIT Allahabad, where she is teaching since October 2009. She holds Bachelor of Engineering (B.E.) degree in Electrical Engineering from Bhilai Institute of Technology, Bhilai, (C.G.) India and Masters of Engineering (M.E.) degree in Computer Science from Motilal Nehru National Institute of Technology (MNNIT), Allahabad, India Her main research interests are in the areas of Big Data, Big Data Mining, Complex Event Processing System, Support Vector Machines, Stream Analytics and Software Engineering. She is having hands on experience on stream computing and complex processing platforms such as Apache Spark, Apache Flink and ESPER. She has focused in the last few years on the research issues in Data Mining application especially in Big Data, Stream Computing and smart cities. She has attended many National and International Conferences/workshops and she has more than 70 research papers in national / international journals and conferences. She has completed her Masters Thesis work at Liverpool John Moores University (LJMU), Liverpool, U.K. during November 1999 to February 2000 under Indo-UK REC Project, a collaboration in between School of Computing & Mathematical Science, LJMU Liverpool UK and Motilal Nehru National Institute of Technology, Allahabad. She has also taken part in Indo Swiss Joint Research Program (ISJRP) and full financial support was awarded to carry out joint research work and to gain knowledge regarding the recent research and experimental facility/work at EPFL, Switzerland, from December 2011 to January 2012. She has also visited Thailand and Sri-Lanka for attending/organizing international level conference/Workshops. She has also a member of IEEE, ACM, CSI and Supervising three Ph.D. Scholars and several graduate and undergraduate students in Big Data Mining.

Dr Savitha Ramasamy received her PhD from Nanyang Technological University, Singapore in 2011. Her PhD thesis on 'Complex-valued Neural Networks and their Learning Algorithms' was nominated for the IEEE CIS Outstanding PhD Dissertation Award with strong support, in 2012. She held a post-doctoral position at the Computational Intelligence Laboratory, School of Computer Engineering, Nanyang Technological University, Singapore between 2011 and 2013. Currently, she is a Data Scientist at the Institute for Infocomm Research, A*STAR, Singapore. Her research interests are in predictive analytics using artificial neural networks and deep learning algorithms, leading specific efforts in advanced manufacturing and engineering, and healthcare domain. She has published about 50 papers in several SCI indexed conferences and

journals (IEEE Transactions, MIT Press, Elsevier and Springer), and a research monograph published by Springer-Verlag, Germany.

Dr. Vigneshwaran is a research fellow at the Agency for Science, Technology and Research (A*STAR), Singapore. He obtained his Ph.D (Computational Neuroscience) and M.Eng (Neural networks for array signal processing) degrees from Nanyang Technological University, Singapore. He had earlier obtained the B.E (Electronics and Communication Engg.) from Bharathiyar University, India. He also has more than 12 years of professional experience at leading research facilities in the academia (Living Analytics Research Center, Singapore Management University) and industry (SiemensVDO Pte Ltd/Continental Automotive Pte Ltd). He had earlier co-founded Uoolabs, a startup funded by the Infocomm Development Authority of Singapore, focusing on mobile device management solutions. His research interests are in the areas of wearable sensors, ubiquitous and pervasive computing, fMRI analysis and neural networks. He has published more than 30 articles in leading international conferences and journals in these areas, which include the best paper at IEEE WristSense 2015, runner up at International Symposium for Wearable Computers 2012. His published work also includes entries at leading international data analytics competitions such as the winning entries at ImageCLEF Lifelog task 2017, NTCIR Lifelog Semantic Access Task 2017 and a finalist at CIKM Analytic cup 2017.

Dr. Reshma Rastogi (nee Khemchandani) is an Assistant Professor in the Department of Computer Science, South Asian University (SAARC), New Delhi. Prior to that, she spent six years working in Finance at Royal Bank of Scotland. She received her Master's and Ph.D degree from Indian Institute of Technology, Delhi, India. Her Ph.D supervisors were Professor Suresh Chandra and Professor Jayadeva. Her research interests include machine learning, twin support vector machines, image processing, computer vision, financial modeling and optimization. Amongst recent notable work by her, is the Twin Support Vector Machine, which has been cited more than 700 times and is the subject of many review articles in reputed international journals and conferences. She has authored more than 50 research papers in reputed international journals and conferences. She has also co-authored two books, one on financial domain and other on Twin Support Vector Machines and its applications. She has also been organizer and invited speaker in many international conferences and Workshops. She is a member of IEEE and currently supervising four Ph.D. Scholars and several graduate students.