Guest Editorial

S. Satheeskumaran

Department of Electronics and Communication Engineering,
Anurag University,
Venkatapur, Hyderabad – 500088, India
Email: satheeskumaranece@cvsr.ac.in

Vigna Kumaran Ramachandaramurthy

Department of Electrical Power Engineering,
College of Engineering,
Universiti Tenaga Nasional,
Jalan Ikram-Uniten, Kajang, 43000, Malaysia
Email: vigna@uniten.edu.my

K. Nithiyananthan

Department of Electrical Engineering,
King Abdulaziz University,
Rabigh, 560037, Kingdom of Saudi Arabia
Email: nithiieee@yahoo.co.in

Biographical notes: S. Satheeskumaran received his PhD from Anna University in Information and Communication Engineering in 2016. Currently he serves as a Professor and Research Head in the Department of Electronics and Communication Engineering, Anurag Group of Institutions, Hyderabad, India. He is a guest editor for few Inderscience and Emerald journals and served as a volume editor for Springer conference proceedings. He has research and teaching experience of more than 18 years and his research interests include Internet of things, machine learning, biomedical signal processing and artificial intelligence based healthcare applications. He has published more than 50 research papers in SCI/Scopus journals and reputed conferences. He is a reviewer for IEEE, Elsevier, Springer, Taylor & Francis, Wiley and IGI Global journals.

Vigna Kumaran Ramachandaramurthy completed his PhD at UMIST, UK in 2001. He is presently a Professor and heads the Power Quality Research Group in University Tenaga Nasional, Malaysia. He also leads several research and consultancy projects. His main research interests are power system studies, power system protection, power quality, renewable energy integration and grid impact of distributed generation. He has been appointed as the Principal Consultant by Tenaga Nasional Berhad to conduct Power System Studies for Renewable Energy farms in Malaysia and completed more than 250 projects on behalf of Tenaga Nasional Berhad.

K. Nithiyananthan is currently working as a Professor in the Department of Electrical Engineering, King Abdulaziz University, Rabigh, Kingdom of Saudi Arabia. He has rich professional experience of 20 years in academic

governance through his services in various academic committees and boards. He guided many post graduate students in power systems, embedded system, design drives and controls for automation and currently guiding 12 PhD research scholars. He serves as Editor and Guest Editor for many Scopus indexed journals and published more than 100 papers in international journals and conferences

Biomedical data science and engineering has developed in a big way in recent years and there are many challenges related to handling large amounts of generated biomedical data such as patient age and background, heart rate, blood pressure, blood sugar level, cholesterol and calorie count, etc. Wearable computing devices generate further data in addition to daily clinical practices. Traditional data analysis has many shortfalls and issues in the processing of biomedical data; hence it is highly essential to apply soft computing and optimisation techniques such as fuzzy logic, neural networks, genetic algorithms, evolutionary computing, metaheuristics and swarm intelligence to biomedical data mining and analysis.

Soft computing and Optimisation techniques are being deployed in data mining and the analysis of biomedical signals/images to improve diagnosis accuracy without human intervention. Deep learning techniques combine preprocessing and feature extraction of biomedical signals and images to develop affordable and efficient biomedical devices. Wireless body area networks are important in wireless healthcare-based biomedical data analysis to build a better healthcare ecosystem. This special issue attracted many interesting papers in soft computing and optimisation techniques that are applied for biomedical data mining and analysis. This special issue comprises of few interesting contributions such as biomedical signal processing, machine learning based biomedical data mining, artificial intelligence based cancer and chronic diseases detection and optimisation techniques based voice and biomedical signal analysis.

In the first paper 'Recursive subspace based feature selection approach for early risk prediction of chronic disease in patients', a novel recursive subspace based feature selection (RSFS) algorithm is proposed for early identification of diabetes Miletus disease with good accuracy. The feature subspace is obtained by recursively computing the covariance matrix and eigenvalue pairs. The paper titled 'Nearest neighbour-based feature selection and classification approach for analysing sentiments' performs feature selection and classification for sentiment analysis. It uses neighbour based classifier and tunes the hyper parameters to get the optimal value that improves the model accuracy.

The paper entitled 'ANN model for detection and classification of sleep and non-sleep stages' proposes an efficient approach to discriminate sleep stage from non-sleep stage or wakefulness by analysing EEG signals from frontal lobes. A second order FIR filter is designed to segregate Delta and Theta waves from EEG and Empirical Mode Decomposition technique is adopted to extract distinct features. In the paper 'Privacy preserving reversible watermarking in the encrypted domain through self-blinding' by Jeeva and Sheeba, develops robust image-based reversible watermarking in the encrypted domain. Two algorithms with high embedding rate are proposed for embedding data in a homomorphic encrypted domain using Paillier encryption scheme. Both algorithms exploit the self-blinding property of Paillier scheme to accomplish flexibility in extraction.

In the paper 'Optimisation of sub-space clustering in a high dimension data using Laplacian graph and machine learning' presents an optimisation of sub-space clustering for learning models using Laplacian graph on a high-dimension data of inheritable factor and metamorphosis. It addresses the curse of dimensionality problem through Laplacian matrix function which eliminates the diagonal components or elements from input data matrix to minimise the data redundancy within sub-space. 'Artificial neural network model for detection and classification of alcoholic patterns in EEG' investigates alcoholic and normal states by analysing EEG signals recorded from Frontal lobes of brain.

The paper titled 'Configuring artificial neural network using optimisation techniques for speaker voice recognition' develops speaker recognition using ANN and optimisation technique that finds wide variety of applications. 'Gestational age determination of ultrasound foetal images using artificial neural network' extracts various features of ultrasound foetal images for better understanding of developmental stages. To accomplish this, suitable biometric parameters are monitored manually and the accuracy of this manual determination relies on skilled sonographer or image qualities. In the paper 'Classification of breast cancer images using completed local ternary pattern and support vector machine', a completed local ternary pattern operator is applied on breast cancer images for better classification accuracy.

The guest editors would like to appreciate all the authors for submitting their high quality research works and valuable contributions. We are thankful to all the anonymous reviewers for their support in completing the review process in time. Guest editors are confident that the impact of this special issue will be of great help in developing soft computing approaches and optimisation techniques for biomedical data mining and analysis. We would like to appreciate the tireless support and encouragement granted to us by Professor Yi Pan, Editor-in-Chief of *International Journal of Bioinformatics Research and Applications*.