Guest editorial

Intelligent computing and communication technologies for autonomous unmanned platforms (AUP)

The issue of "*Intelligent Computing and Communication Technologies for Autonomous Unmanned Platforms (AUP)*" contains a collection of 17 research articles and that includes how computing and communication technologies play a vital role in AUP.

This special issue covers the collection of state-of-the-art research works that proposed sustainable and intelligent AI-driven computing and communication frameworks for autonomous unmanned systems. Specifically, this special issue discusses the role of computing and communication technologies related to secure unmanned systems. These technologies provide an efficient quality of service and quality of experience to the users and act as the backbone to unmanned systems. Additionally, the recent intelligent computing technologies include deep learning, machine learning, sentiment analysis and classification techniques incorporating the security issues to process with communication technologies and provide an efficient system for AUP.

This special issue contains 17 novel research articles and that relate unmanned systems to intelligent computing and communication frameworks for efficient results. The first article entitled "*An RSSI based Sybil attack detection system with continuous authentication using novel lightweight multimodal biometrics,*" which helps to detect Sybil attacks in mobile *ad hoc* networks. The Sybil attack will be detected based on the received signal strength indicator with the multimodal biometric application. This scheme provides authenticity based on their localization. The second paper is entitled "*Query processing over secure perturbed data over hybrid cloud*" for maintaining the retrieval solution for hybrid clouds by using k-mean clustering and R-tree indexing. This research work provides an efficient data retrieval process by using the R-tree indexing approach. The third article is entitled "*Internet of things (IoT)-based unmanned intelligent street light using renewable energy,*" which helps to reduce the energy consumption of metropolitan applications. It will increase the lifetime of streetlights and recharge electric vehicles automatically with the help of the Internet of things. The fourth paper entitled "*Verification of pattern unlock and gait behavioral authentication through a machine learning approach*" proposed the Gait pattern authentication scheme to verify the own user authenticity. This scheme increases the accuracy rate and reduces the error rate of the proposed scheme. The fifth paper entitled "*Intrusion detection in a mobile ad-hoc network using hybrid reactive search and bat algorithm*" introduced the hybrid reactive search and bat (HRSB) mechanism for the detection of intrusion, and additionally, it helps to avoid the entering of misbehaving nodes in the network. The sixth paper is entitled "*Electroencephalogram (EEG) Signal Classification for brain Computer interface using Discrete Wavelet Transform (DWT),*" and this proposed technique used different machine learning algorithms for classification and yields better accuracy compared to other state of art techniques.

Tumors are classified into two variants such as cancerous and non-cancerous. The severe stage of the tumor is named malignant and it is denoted as cancerous. A magnetic resonance imaging scheme is used to detect brain tumor severity. A novel technique implemented in the article entitled "*A novel approach for Brain Tumour Detection by Self Organizing Map (SOM) using Adaptive Network-based Fuzzy Inference System (ANFIS) for Robotic Systems*" helps to identify the brain tumor by using the self-organizing map with the help of ANFIS model. The eighth paper entitled "*Minimizing path loss and improving security in wireless body area networks*" proposed the secure routing protocol for the improvement of the security in the

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wireless body area network. Distance and path loss is the most important parameter analyzed here. This proposed approach calculates the distance between the nodes and path loss has been reduced by using the localization techniques. Next paper entitled "*Modelling of Lightweight Security Framework for Identifying Efficient Route for Secure Communication in WSN*" helps to provide secure communication based on secure hash functions. Additionally, the proposed model is suitable for both homogenous and heterogeneous networks. The tenth paper entitled "*Design and Implementation of High speed and Low Power Consumption Moore Based LoopBack Adder on FPGA*" proposed the vedic multiplier (VM) and Moore-based loop back adder (MLBA) approach-based optimal FIR filter. The proposed technique had minimum energy consumption compared to other existing techniques. The eleventh paper entitled "*MIMO antenna miniaturization standards for future 5G*" designed the miniaturized MIMO antenna for mobile applications and it gives high speed with more number of users. The next paper entitled "*Automatic Detection of Optic Disc using Distance Regularized Level Set Segmentation for Glaucoma Screening System*" calculated the novel optic disc division with different levels of optic disc images. The proposed approach helps to detect the correctness of the optical disc image and it produces high accuracy results compared to other existing techniques. Thirteenth paper entitled "*PMI based Polarity Computation for SVM-NN based Sentiment Classification from User-Generated Reviews*" performed the Senti-WordNet (SWN)- and pointwise mutual information (PMI)-based polarity computation. The proposed work updates the correct polarity of the words and it includes both positive and negative comments from the database. Next paper entitled "*Hybrid Multi Beamforming and Multiuser Detection Technique for MU-MIMO System*" proposed the radix-factorized FFT-multibeam forming (RF-FFT-MBF) architecture for the reduction of energy consumption and hardware complexity.

Next paper entitled "*Design and Simulation of Robot Hand for Writing and Correction Assistant Applications*" designed a robot model for handwriting assist applications with horizontal and vertical lines. This robot helps to mark the lines by using 3D printing technology with the simple Arduino. The sixteenth paper entitled "*Scale to estimate the aspect-oriented sentiment polarity under anaphors influence (SPAI)*" performed the aspect-based sentiment polarity of the tweets, the anaphors of the tweets which helps to assess the weightage of the tweets toward the sentiment polarity. And the last paper entitled "*Optimum bug fixing rate and bug fixing time detection by software reliability modeling*" enhanced the new approach to identify the best path to rectify the bug fixing time and bug fixing rate. This proposed approach improves the software quality by increasing the bug fixing time.

From these 17 research articles, we observed that intelligent communication and computing technologies are actively engaged to overcome security issues and enhance the overall performance in the automated unmanned domain.

V. Bindhu, V
Department of Electronics and Communication Engineering, PPG Institute of Technology, Coimbatore, India

Joy Iong-Zong Chen
Dayeh University, Changhua, Taiwan

Badrul Hisham Bin Ahmad
Department of Electronic and Communication Engineering, Universiti Teknikal Malaysia–Main Campus, Durian Tunggal, Malaysia, and

Faizal Khan
Department of Computer Science, Shaqra University, Al-Dawadmi, Saudi Arabia