Editorial

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Biographical notes: S. Smys received his Bachelor of Engineering degree in Electronics and Communication Engineering from the Periyar University, India in 2002 and Master of Engineering in Digital Communication and Networking from Anna University, India in 2004. He obtained his PhD degree work from Karunya University, Coimbatore, India in 2012, focused on Virtual Structure Constructions in Wireless Networks.

Jino Ramson is an Experienced Postdoctoral Researcher with a demonstrated history of working in the higher education industry. He is skilled in Wireless Sensor Networks, IoT system design and embedded system design. He is a strong research professional with a PhD focused in Wireless Sensor Networks. Currently, he is developing a self-powered, LoRa technology based IoT system to monitor soil health.

Joy Iong-Zong Chen is currently a Full Professor of Department of Electrical Engineering Dayeh University at Changhua Taiwan. Prior to joining the Dayeh University, he worked at the Control Data Company (Taiwan) as a Technical Manager since September 1985 to September 1996. His research interests include wireless communications, spread spectrum technical, OFDM systems, and wireless sensor networks. He has published a large number of SCI Journal papers in the issues addressed physical layer for wireless communication systems. Moreover, he also majors in developing some applications of the internet of thing (IOT) techniques and he owned some patents authorised by the Taiwan Intellectual Property Office (TIPO).

In this digital era, new innovative technologies are developed by leveraging a significant focus on making the human lives easier even in the unprecedented times. As the information and computer networks are explosively increasing, it becomes both intrinsically and extrinsically susceptible to the cyber-attacks. The current research is more focused on solving the user-related challenges, which remain as a major threat to the cyber world. Developing a more secure and dependable computer networks will make them less vulnerable to the emerging cyber-attacks.

This special issue explores the cyber security in relation to:

1   novel architectures and frameworks

2   methodologies

3   theories

4   applications.

This special issue consists of seven innovative research articles and focuses on novel research works in cyber security paradigm for the purpose of enhancing the security and dependability of the emerging computer and information networks.

The first paper entitled 'An improved cryptanalysis of large RSA decryption exponent with constrained secret key' re-evaluates the RSA public key cryptosystem and revealed more refined bounds using lattice based Coppersmith's method. Nevertheless, the proposed study has detected small roots of the devised polynomial, which helps to factorise the RSA modulus of size up to 1,024-bits. Also, the probability of a specific range of weak keys are measured in an RSA constrained secret key environment.

The second paper entitled 'Accurate and reliable detection of DDOS attacks based on ARIMA-SWGARCH model' investigates the DDoS attack detection process, which further leads to the introduction a new innovative method called hybrid ARIMA-SWGARCH model by analysing the dynamically measured network traffic. The proposed model is applied to efficiently detect the DDoS attacks happening on the network. The overall evaluation of the proposed proved that the proposed research method has ensured the optimal and reliable detection of DDoS attacks occurring on the network.

The third paper entitled 'Secure and uni-fold mining model for pattern discovery from streaming data' analyses the challenges in practicing the data mining process, when performed over continuous data stream. Here, it concludes that the frequent pattern mining on the streams of data as the most crucial process. Furthermore, this paper proposes novel DM algorithms for identifying the frequent patterns from indefinite data streams. Uni-fold mining model is also proposed for performing pattern discovery from streaming data.

The fourth paper entitled 'Sustainable wireless clouds with security assurance' entails improved quality of living with enhanced social, economic development, and public safety by using the cloud computing technology with enhanced decision making and service provisioning capabilities. In this manuscript, the proposed wireless and energy-efficient cloud system is validated in cloudsim with regard to throughput and delay to ensure the systems reliability and timely delivery.

The fifth paper entitled 'A novel binary encryption algorithm for navigation control of robotic vehicles through visible light communication' predominantly analyses the visible light communication (VLC) that has been effectively used for communication

through appropriate transmitting and receiving equipments. Further, a binary encoding algorithm (BEA) is proposed and tested in a multi node environment. Nevertheless, the proposed algorithm remains simple in structure and efficient with precise encryption results as it could be observed from the experimental results.

The sixth paper entitled 'Analysing and comparing the digital seal according to eIDAS regulation with and without blockchain technology' urges the importance of digitalisation in public services. Wherein this paper analyses the properties of the electronic seal, based on eIDAS regulation, in both presence and absences of blockchain technology. Further, a software application has been developed to utilise the traditional means for electronic seal with the locally stored X.509 digital certificates. The proposed application also uses the MultiChain platform for the creation and deployment of private blockchains, which provides a simple API and command line interface to our application.

Finally, the seventh paper entitled 'Mobile agent security using Amrani et al.'s protocol and binary serialisation' which suggests an innovative solution called mobile agent security (MAS) to satisfy the requirements imposed by the emerging distributed systems. The primary focus of this research will be on the security aspect of a mobile agent to shift from one platform to another, by introducing a new approach based on cryptographic mechanism.