
Editorial

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Biographical notes: R. Elijah Blessing Rajsingh is the Director (Incubation) from the Karunya Institute of Technology and Sciences and Professor in Computer Sciences Technology. He received his PhD in Information and Communication Engineering from the College of Engineering, Guindy, Anna University, India in 2005. He joined Karunya Institute of Technology and Sciences, Coimbatore in 1997. His research areas include network security, mobile computing, wireless and ad hoc networks, medical image processing, parallel and distributed computing, grid computing and pervasive computing. To his credit, he has a good number of publications and has published articles in Elsevier, Springer, Inderscience, etc. He has been identified as an expert member of National Board of Accreditation (NBA), India. He is also being funded by Indian Council of Medical Research for his research project in health systems research. He is a member of IEEE, CSI, ISTE and has served as an international advisory board member for various international conferences and workshops.

Jey Veerasamy works as the Director of Center for Computer Science Education & Outreach and also as a Teaching Faculty in the Department of Computer Science from the University of Texas at Dallas, USA. Prior to joining UT Dallas in August 2010, he has worked in some US wireless telecom software industry (Nortel and Samsung) for 16 years and taught online courses in several colleges for 11 years in parallel. Center for CS Education & Outreach

offers hundreds of coding camps and clubs to school students in Dallas area – it is one of the nation’s largest CS outreach programs run by any university. Thousands of school students benefit from these programs every year. The centre also conducts technical workshops for UT Dallas students and professionals. After returning to academia to focus on teaching, now, his colleagues and his students have started to travel to India to teach as well.

J. Dinesh Peter is currently working as an Associate Professor in the Department of Computer Sciences Technology from the Karunya Institute of Technology and Sciences, Coimbatore. Prior to this, he was a full time research scholar from the National Institute of Technology, Calicut, India, from where he received his PhD in Computer Science and Engineering. His research focus includes big-data, image processing and computer vision. He has several publications in various reputed international journals and conference papers which are widely referred to. He is a member of IEEE, CSI and has served as session chairs and delivered plenary speeches for various international conferences and workshops.

The boom of cloud technologies and cloud data storage has been a forerunner and enabler to the growth of big data. It has substantial advantages over conventional physical deployments. For organisations that adopt big data, the boundary between the use of private clouds, public clouds and internet of things (IoT) is sometimes very thin to allow better access, performance and efficiency of analysing the data and understanding the data analysis. A common approach is to develop big data in the cloud to deliver everything as a service. These projects regularly exhibit unpredictable, bursting, or immense computing power and storage needs. At the same time the stakeholders expect swift, inexpensive, and dependable products and project outcomes.

This special issue considered substantially extended versions of papers presented at the International Conference on Big Data and Cloud Computing (ICBDCC17) as well as external submissions. This special issue on ‘Cloud computing technologies’ presents a collection of four selected articles which have been carefully reviewed. They present the most current research advances in cloud computing. These four selected articles have been originally presented at the ICBDCC17, Coimbatore, India on 1–2 April 2017. These four selected articles have been selected from 15 submissions.

The first article investigates on a new key generation technique using genetic algorithm for enhancing data security in cloud environment. The proposed genetic algorithm is used for generating a best key which satisfies the specified fitness function. The generated key is sent to the asymmetric addition chaining cryptographic algorithm (ACCA) for encryption. The encrypted key can be used by any one of the symmetric algorithms like AES, DES and Blowfish for encrypting large volume of data. The second article focuses on an encryption algorithm to provide confidentiality to medical images using chaotic maps. The different enhanced chaotic economic maps (ECEM) are derived by substituting sine and cosine functions in basic chaotic economic map (CEM) equation. The ECEMs are studied in detail with respect to their bifurcate nature and Lyapunov exponents to achieve greater robustness in encryption. The improved maps generate different chaotic sequences which are employed in confusing, swapping and diffusing 16-bit DICOM image pixels, thereby assure confidentiality. After scrambling, the different security analyses such as statistical, entropy, differential, key space, key sensitivity, cropping attack, noise attack, decryption efficacy analysis are performed to

prove the effectiveness of the proposed algorithm. The third article proposes an encryption scheme based on the certificateless proxy signature for sharing the sensitive data in the public cloud in a secure manner. The proposed scheme is proven to be unforgeable against the message attacks. When compared with the existing CLPS scheme without random oracles, the proposed scheme offers better data security while ensuring better data sharing performance. And the last article proposes an ontology-based automatic cloud services monitoring and management (ACSMM) with prediction-based service provisioning approach, where cloud service monitoring and management is performed at cloud broker, which is an intermediate entity between the user and service provider. In this approach, when SLA violation is detected, it sends alert to both clients and service providers, and also generates the status report. Based on the status report, broker automatically reschedules the tasks to reduce the further SLA violation.

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