Editorial

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Biographical notes: Zheng Xu is currently a Professor at the Shanghai Polytechnic University, China. He is with over 4,000 citations (H-index 31). He has authored or co-authored more than 200 publications. He is also the associate editor of Springer ECR journal and Springer DIoT journal. He won the Best Editor Award of the Year 2022 of Springer Journal Discover Internet of Things. His paper titled 'Ensemble-based multi-filter feature selection method for DDoS detection in cloud computing' obtained EURASIP Best Paper Awards 2019.

Jemal H. Abawajy is a Professor at the School of Information Technology, Deakin University, Australia. He is currently the Director of the Parallel and Distributing Computing Laboratory. He is a senior member of the IEEE Technical Committee on Scalable Computing, the IEEE Technical Committee on Dependable Computing and Fault Tolerance, and the IEEE Communication Society. His leadership is extensive, spanning industrial, academic, and professional areas.

Fractional dynamics, along with fractional calculus, through the investigation of fractional-order integral and derivative operators with real or complex domains in science and engineering, has accordingly merged with the advances in the high-speed and applicable computing technologies; and hence, computational processing analyses, as a method of reasoning and a main pillar of majority of current research, can be of aid to tackle nonlinear dynamic problems in complex systems through novel strategies based on observations and complex data. To be able to provide feasible and applicable solutions within the dynamic processes of the complex nonlinear systems, methods related to analytical, numerical, simulation-related and computational analyses can be employed by taking into consideration the control-theoretic aspects thereto associated. Thus, this stance can enable to bridge the gap between mathematics and computer science besides the other wide array of sciences so that transition from integer to fractional order methods

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can be ensured. Along this strand, fractional derivatives and fractional differential equations are extensively employed in the mathematical modelling of diverse dynamic processes in the physical and natural world, providing ample aid for the accurate description of complex, dynamic and nonlinear behaviours of nature. All these aspects are important for the optimal prediction solutions, critical decision-making processes, optimisation, quantification, multiplicity, controllability, observability and stabilisation of fractal, fractional, quantum-related, neural and computational systems amongst many others.

This special issue aims to provide a way towards original multi-, inter- and intradisciplinary as well as intrinsic goal-oriented research based on advanced mathematical modelling and computational foundations. Thus, we expected to get studies submitted on theoretical and applied dimensions of nonlinear, dynamic and complex systems merging mathematical analysis, methods and computing technologies to be presented in order to demonstrate the significance of novel integrative approaches in real systems and related realms.

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