Editorial

Polinpapilinho F. Katina

Department of Informatics and Engineering Systems,
University of South Carolina Upstate,
800 University Way,
Media Center 205,
Spartanburg, SC 29303, USA
Email: pkatina@uscupstate.edu

It is with great pleasure and a sense of accomplishment that I present the final issue of the 15th volume of the *International Journal of System of Systems Engineering*. This milestone marks another year of advancing the frontiers of system of systems, with a special focus on the integration and evolution of technical and non-technical systems. Our journal continues to foster dialogue on how independent, self-contained systems can be orchestrated to deliver capabilities far beyond the reach of their individual parts – a concept that underpins much of today's technological and societal progress.

This issue brings together a diverse collection of papers, each exemplifying the power and promise of system of systems thinking:

First, K. Lino Fathima Chinna Rani Vincent and M.P. Anuradha address the scalability challenges inherent in blockchain networks, particularly those using proof-of-work consensus. Their research introduces a proof-of-luck fair-share parallel mining approach, which distributes computational tasks across multiple processors. This innovation significantly increases transaction throughput and energy efficiency, demonstrating that enhanced computational strategies can improve blockchain scalability without compromising security.

Second, P. Devisivasankari and K. Lavanya tackle the critical need for fast and reliable brain tumor segmentation in medical imaging. Their customised UNet-based framework, CUNet-BTS, leverages deep learning and an ensemble of optimised classifiers, further refined by the Pelican Assisted Chimp Optimisation algorithm. This approach streamlines clinical workflows and enhances diagnostic accuracy, offering tangible benefits for healthcare practitioners and patients alike.

Third, Ajanta Das, Debabrata Datta, S. Suman Rajest, Varun Kumar Nomula, R. Dharani and K. Danesh explore the application of quantum computing to numerically solve boundary value problems common in physics, engineering, and beyond. By employing the HHL algorithm and quantum phase estimation, their work demonstrates the potential for exponential speedup in solving complex equations, opening new avenues for research and practical application in fields where computational demands are high.

Fourth, K. Jayaprakash and S.P. Balamurugan present an integrated deep learning framework for the segmentation and classification of tomato plant leaf diseases. Their system combines advanced models such as U2Net, UNet++, InceptionV3, and EfficientNetB2, with an attention-based recurrent unit and the Seeker Optimisation Algorithm for hyperparameter tuning. The result is a robust tool that not only improves

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disease detection accuracy but also recommends suitable pesticides, supporting agricultural productivity and sustainability.

Finally, R. Sudha and K.M. Uma Maheswari focus on the classification of non-small cell lung cancer using a novel deep convolutional neural network within a cloud-based architecture. Their system, the Cloud-Based Lung Carcinoma Classifier, achieves impressive accuracy and scalability, reducing the workload for radiologists and enhancing the consistency of computer-aided diagnosis.

Each paper in this issue not only advances its respective field but also illustrates the transformative potential of integrating independent systems to achieve greater collective outcomes. As we conclude this volume, I extend my gratitude to our authors, reviewers, and readers for their dedication and contributions. Together, we continue to shape the future of system of systems engineering.

I invite you to explore these papers and join us in the ongoing pursuit of innovation and excellence.