Editorial

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Biographical notes: S. Sountharrajan has completed his PhD from the Anna University in the Faculty of Information and Communication Engineering in the year 2017 and currently working as an Associate Professor in the School of Computing (SOC) at Amrita Vishwa Vidyapeetham, Chennai Campus. He is presently associated as the Program Head for the BTech, Computer Science and Engineering Program. He was sanctioned with an amount of Rs.38 Lakhs from the funding agencies like DST, AICTE and ICMR. He has published 35 papers at reputed International journals and 16 international/national conferences papers.

R. Maheswar has completed his BE in ECE from the Madras University in 1999, ME in Applied Electronics from the Bharathiyar University in 2002 and PhD in Wireless Sensor Network from the Anna University in 2012. He has about 21 years of teaching experience at various levels and presently holding the responsibility as the Director In-Charge in the Centre for Research and Development, the Head of Centre for IoT and AI (CITI) as well as Professor in the Department of ECE, KPR Institute of Engineering and Technology, Coimbatore, India.

Peter Han Joo Chong is the Associate Head of School (Research) at the School of Engineering, Computer and Mathematical Sciences, Auckland University of Technology. Between 2016 and 2021, he was the Head of Department of Electrical and Electronic Engineering at AUT. He received his BEng. (with distinction) in Electrical Engineering from the Technical University of Nova Scotia, Canada, in 1993, and MASc and PhD in Electrical and Computer Engineering from the University of British Columbia, Canada, in 1996 and 2000, respectively. He is a Fellow of the Institution of Engineering and Technology (FIET), UK.

Wearable e-healthcare systems represent a novel and stylish addition to the expanding realm of personal devices, incorporating advanced hardware and software features, including transmission modules. These devices not only serve fashionably but also play a crucial role in integrating artificial intelligence (AI) methodologies, leveraging extensive data availability. Employing techniques such as supervised learning, unsupervised learning, semi-supervised learning, and reinforcement learning, these systems have been employed in academia to develop and refine wearable e-healthcare systems for health monitoring. The continuous advancements in smart healthcare, driven by wearable e-healthcare systems, have the potential to revolutionise the health industry by empowering individuals to self-assess their health. Presently, various smart wearables are tailored for sustainable healthcare applications, enabling real-time monitoring of vital signs such as heart rate, glucose levels, blood pressure, and brain activity. Extensive research has been conducted on sustainable engineering, wearable systems, and the integration of cutting-edge technologies like AI and big data analysis in e-healthcare through

personalised mobile applications. The deployment of physical layered wearable devices has proven effective in diverse medical applications, enhancing the likelihood of obtaining valuable medical data. Advanced methodologies like experience sampling methods (ESMs) have been utilised for thorough analysis and correlation studies in this context.

The goal of this special issue is to provide the research community with a compilation of articles that highlight both the challenges and solutions related to wearable device technology, healthcare system administration, medical imaging and diagnostics, data and technology integration, technological innovations in healthcare aiming to contribute valuable insights to the field. The first article 'A trusted and adaptive security mechanism for wearable e-healthcare systems' focuses on the critical mission of wearable e-healthcare systems within the internet of things (IoT), integrating wearable sensors, wireless devices, and intelligent environmental monitoring. The primary objective of these systems is to identify and diagnose patients by recognising correlated features. The challenge lies in the potential interference of malicious entities attempting to obscure the recognition of wearable objects for their own gain. Despite existing security and efficiency proposals, these solutions may incur computational and management overhead. The paper proposes a trusted and efficient communication mechanism for e-healthcare, specifically addressing the accurate identification of wearable objects. Moreover, the proposed mechanism incorporates blockchain technology to ensure transparency and security within the network during information sharing. The efficacy of the proposed mechanism is validated against various security threats, considering multiple security parameters.

Authors of 'Ubiquitous monitoring of liver transplantation patients' addressed the postoperative care of liver transplant patients, considering liver transplantation as the most effective treatment for end-stage liver disease. Following transplantation, patients require immunosuppressive treatment that necessitates monitoring. The study advocates for the use of mHealth systems, emphasising the cost reduction and enhanced effectiveness of monitoring through wireless body sensor networks. The proposed system features a dedicated software application for remote monitoring of liver transplant patients using data from a body sensor network, facilitating out-of-hospital follow-up. Additionally, the application offers a forum, frequently asked questions section, and direct communication with healthcare specialists. The research highlights the correlation between patients' activity levels and emotions with the information derived from parameters collected through the body sensor network devices.

In 'Data security enhancement in internet of things using optimised hashing algorithm', recognises the security difficulties arising from the communication between smart devices in IoT networks and proposes blockchain as a decentralised solution. While acknowledging challenges like high computing complexity and limited scalability, the research develops a tailored blockchain paradigm to address IoT requirements. The process involves collecting and normalising data from IoT sensors, validating it through smart contracts, and storing it securely using a proof-of-work consensus protocol. An optimal key search fuzzy hashing algorithm (OKSFHA) is proposed for data security enhancement, utilising spider monkey optimisation (SMO) for optimisation. The efficiency of the suggested system is demonstrated through a comparison with traditional algorithms.

Authors of 'NEAT activity detection using smartwatch' proposed a system designed to differentiate between non-exercise activity thermogenesis (NEAT) and non-NEAT activities within a home setting. NEAT encompasses energy expended on activities other than sleep, eating, or traditional exercise. The study focuses on specific NEAT activities like cooking, sweeping, mopping, walking, climbing, and descending, as well as non-NEAT activities such as eating, driving, laptop work, texting, cycling, and watching TV/idle time. Parameters including classification features, data sampling frequency, upload rate, and window length are analysed for their impact on battery depletion rate and classification accuracy. The research addresses a gap in previous studies by examining lower frequency data sampling (10 Hz and 1 Hz), particularly in the context of NEAT activities like cooking and cleaning. The findings recommend the use of statistical features, a 1 Hz sampling rate, and optimisation of upload rate and window length for efficient battery management.

Article of 'Optimal hybrid classifier with fine-tuned hyper parameter and improved fuzzy C means segmentation: skin cancer detection' focused on the development of a new early-detection model for more manageable skin cancer treatment. The proposed model employs a median filter (MF) for pre-processing, followed by a modified fuzzy C means (FCM)-based segmentation process. Recognition is accomplished through a hybrid model incorporating bi-LSTM and ANN.

These five articles have provided valuable insights into diverse research areas. We extend our sincere thanks to the authors for their impactful contributions, as well as to the reviewers and editorial team for their essential roles in shaping this collection. The depth and diversity of these discussions set the stage for continued exploration and advancement in their respective fields.