Editorial

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Pedro Peris-Lopez is an Associate Professor with the Department of Computer Science, Carlos III University of Madrid, Spain. He holds an MSc in Telecommunications Engineering (2004) and a PhD in Computer Science (2008) from Carlos III University of Madrid. His research interests are in the field of cybersecurity, e-health, and artificial intelligence. He has published many articles in specialised journals (62) and conference proceedings (45). His works have more than 5150 citations, and his h-index is 32.

1   Introduction

Innovation, core technology, trends and connectivity are four keys to the success of smart living construction. Innovation is the prerequisite for new ideas and inventions for smart living. Any kinds of hardware, software and real-world applications for smart living need innovation. The core technologies, such as chips and device design, cloud and fog computing, big data mining, artificial intelligence, wireless communications, and Internet of Things (IoT), are all included for smart living development. The fast-changing state of the market brings out a strong appetite among academic scholars and industry professionals to look for the newest trends and future potential areas, such as NarrowBand-Internet of Things (NB-IoT) and Smart Home. The concept of connectivity is an essential factor within the smart home industry as the whole smart living eco-system is constituted of different technologies.

However, there are still many research topics or practice issues to be investigated and advanced. This special issue concentrates on smart living technology and AIoT innovations in cities, governance, FinTech, public transportation, manufacturing and personal daily living. The topics relevant to this issue include, but are not limited to, the following: (1) the impact of new smart living technologies on the design and implementation of the above potential application domains; and (2) new AIoT frameworks and apps for providing the intelligent services for smart living environments.

2   Papers in the issue

The first theme of this special issue focuses on 'Theories, models, and algorithms for smart living technologies'. Zhang and Zhang used machine learning algorithms to detect the air quality of the urban ecological environment. The experimental results showed the machine learning approaches can be helpful for the regional ecological landscapes designs. Han et al. built a Vietnamese named entity recognition model based on residual dense block (RDB) and convolutional neural network (CNN)

models. The proposed algorithm can convert the input corpus into word vectors to obtain new word vectors, and then use the dense residual network to extract the features of word vector. This research can be served as a good reference for the natural language processing (NLP) researches. Tang presents an intelligent logistics application of de-noising automatic coding networks based on random forest and back-propagation neural network in freight volume prediction. The prediction accuracy, error fluctuation, and model stability obtained by the proposed model outperformed the de-noising auto-coding method. Tian et al. present a chaotic encryption integrating the wavelet coefficient matrix algorithm with binary sequence that improves the anti-compression ability of digital watermarks. This mechanism can be applied into many smart living technologies.

The second theme of this issue focuses on 'New AIoT framework for intelligent services and apps'. Zhu proposes a WLS (weighted least-squares) algorithm and builds a multi-sensor data fusion system for sports fitness. The experimental results illustrated the wireless communication of a multi-sensor data fusion system can make the massive data transmission characteristics in the IoT environment more reliable. Xu and Yang developed a divide and conquer strategy for neural translation mechanism based on deep learning and AIoT. The experimental results showed the accuracy rate and average operation time can more efficient than traditional methods. Cao and Zhan used the LSTM (Long Short-Term Memory) model to construct the motion data monitoring system. Finally, the performance metrics of confusion matrix proved the significant prediction capability. Zhang integrated the convolutional neural network and Dempster-Shafer (DS) evidence theory to design and implement a fitness and health management system around the AIoT environment. To sum up, the users

can real-time record and track personal health status more efficiently. Ju et al. applied the internet of things and big data technology to the power management and control platform, and improved the intelligent level of power management and control. It shows that the proposed power intelligent management and control platform can realise the intelligent analysis of multi-source data, and its good management and control performance can be used in practice. Du and Sun adopted a support vector machine model to evaluate and predict the electromagnetic bearing and the elastic foil gas bearing level. Deng et al. developed the remote monitoring system for ship energy efficiency based on big data technology, 6G communication technology and embedded technology. The system can offer a means of to detect ship energy efficiency.

3 Conclusion

Overall, the 11 papers in this special issue illustrate multiple perspectives and approaches, with contributions for the theories, models, and algorithms used in smart living and its AIoT applications. These papers present and evaluate the frameworks and techniques based on machine learning and deep learning approaches, facilitating the field to move towards a better comprehension of smart living technologies and new IoT frameworks and applications.

We would like to thank all the contributors of this special issue for their outstanding participation and precious scientific contributions. Most important of all, we deeply appreciate the Editor-in-Chief, Professor Fatos Xhafa, for his kind support. We are confident that readers of *IJGUC* and scholars researching in the smart living and AIoT area will find this special issue of great interest and benefit.