Editorial

Algorithms and Devices for Smart Processing Technology for Energy Saving

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Smart system and energy saving has become a topic of focus in current research in engineering, business, computer science, and social science with mathematical foundations. The wording “smart” itself has spread widely since 2007, from the revolutionary iPhone. It has changed the mobile business, user platform, data usage, and software/hardware as well. Social media, calling, text, and various applications are all in mobile phones with efficient energy expense afterward. There are also challenges in ubiquitous systems, city planning, and wireless friendly systems for control, management, and industrial application, as well as in unmanned factories [1]. Together with the development of WiFi infrastructure, recently Internet of Things (IoT) has had a lot of emphasis [2]. The recent development of smart devices, such as smart sensors and actuators, has greatly improved the performance of industrial processes such as smart factories, smart farms, and other related systems [3]. With the needs of developing technology, we aim to provide an open forum on this research idea, specifically in smart devices and their application, and related algorithms/applications. The proposed research outputs are becoming an important foundation for the implementation of smart systems with energy-efficient solutions.

By the consideration of the aforementioned necessities, this Special Issue is a timely opportunity to discuss and summarize the latest developments in this area. We especially focus on the research related to algorithms, smart device development, and applications. After summarizing the papers, we feel that the Issue sets the

goal of addressing the following major challenges with the advent of many challenging issues concerning smart systems:

- (i) Smart processing technologies include applications to complex or networked systems: effective data processing, avoiding signal conflict, and fast and accurate processing.
- (ii) Development of high-performance devices through hardware design is done, relevant to Internet of Things (IoT) to extend the connection with networks. As you increment the dimension, there is the so-called curse of dimensionality. Therefore, the solution should be cooperated with big data analysis at the same time.
- (iii) Together with smart device and algorithm research, complex system coordination for efficient management is also needed. In this case, research on control and consensus for network systems is needed.
- (iv) The link between hardware-level device research and the upper-level management is the final goal to accomplish in the Issue. Despite the fact that there is similar research on “game theoretic approach together with IoT,” “consensus for the networked system,” and others, they have not yet reached acceptable results in the industrial area. Herewith, we need to make a more open topic and share ideas from the relevant researchers.

From the mentioned challenges, new methods and alternative approaches are needed to solve such tough problems. Recently, AI-oriented research has been provided with its fundamental research on application to networked systems [4] and the heuristic and metaheuristic algorithms also obtained much attention based on nature-inspired optimization algorithms [5].

This Special Issue provides a timely platform to discuss and summarize the latest developments in the relevant area. With this opportunity, we have shared the theoretical methodology and mathematical analysis, although applications concerning smart processing and device development are also addressed. A high number of high-quality submissions were received, totalling 27 papers.

From the Special Issue, we can see that the topics range from smart device development and applications to processing algorithm development and applications as well. Clearly, there are many other interesting developments concerning smart processing research not only in engineering and science but also in social science and administrative decision making for smooth processing. However, most of the papers are focussed on hardware development and application, smart algorithm proposal, and verification. We are sure that whilst our Special Issue can only cover a small fraction of the latest developments, on this foundation, we also hope that further research is inspired in this area.

Conflicts of Interest

The Guest Editors declare no conflicts of interest.

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