

Edge intelligence enabled Internet of Things

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Abstract

The IoT provides billions of smart devices connectivity to the Internet, which drives a number of promising applications range from smart home to the artificial intelligence (AI) enabled vehicle-to-everything (V2X). This editorial will introduce the emerging edge intelligence enabled IoT systems, including smart home, QR based indoor navigation system, dyslexia monitoring system, and wearable device tracing against the COVID-19.

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1. Introduction

The diversity of the applications in the Internet of things (IoT) makes the edge computing become a challenge to deal with different devices, services, and protocols. The artificial intelligence (AI)-powered edge computing, namely edge computing, becomes an effective solution to address this challenge, which results new advances in AI, devices, and edge computing. In recent, the edge intelligence has been widely discussed and believed as the key to the success of the future Internet of Things (FIoT). Also, the edge intelligence enable IoT device process data using utilise machine learning and AI techniques and further drive intelligent IoT applications.

The edge intelligence shows great potentials in a number IoT applications, including smart home, intelligent transportation system, e-healthcare, wearable devices, *etc.* With edge intelligence, the IoT will enable IoT devices process data locally to reduce the data transmission over the IoT systems, which mitigate the workload from the current data centres to the edge and only necessary data needs to be exchanged or shared. This can also reduce the risks to pose data on the IoT. This issue discusses four key applications of edge intelligence enabled IoT: smart meters [1], indoor navigation using IoT devices [2], smart healthcare [3], and intelligence wearable IoT solutions [4].

This work will introduces the latest research findings in edge intelligence enabled IoT and details can be found in Section 2.

2. The Papers

In the paper entitled "IoT Based Smart Electrical Meter for Smart Homes" [1], Martinez-Blanco *et al.* discussed key components in IoT based smart home and developed an intelligent smart meter using ESP32 microcontroller, which can enable user real-time manage smart home using a mobile app.

In the paper entitled "QR Code based Indoor Navigation system for Attender Robot" [2], Sneha1 *et al.* developed a QR code based indoor navigation solution that can help the low-cost mobile robot. The QR is a widely used technique in IoT systems, which can be easily generated by a smart device. The developed QR-based navigation system is a low-cost but accurate solution for IoT devices. The experimental result shows the solution can provide navigation service for robots.

In the paper entitled "Review: Mass Screening framework for children with dyslexia using IOT and computing analysis", Mulakaluri1 *et al.* developed an e-healthcare IoT solution that can help to monitor dyslexia for children with learning difficulties [3]. This work compared the IoT devices collected Electroencephalogram (EEG) to analyse brain process and related functions. This work also compared the existing solutions using different technologies, mobile edge computing (MEC), ANN, fuzzy logic, *etc.*

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In the paper entitled "IoT-Q-Band: A low cost internet of things based wearable band to detect and track absconding COVID-19 quarantine subjects" [4], Singh *et al.* investigated the possibility to use IoT devices to trace the spread of COVID-19. In this work, an IoT based wearable quarantine band (IoT-Q-Band) solution is proposed that can trace and further prevent the spread of COVID-19.

3. Concluding Remarks

This editorial discussed the most recent edge intelligence in the IoT and introduced the solutions in *smart home, navigation, smart healthcare, and wearable IoT*. The edge intelligence can significantly reduce workload at the IoT device and provide better real-time insights. The main aim of this issue is to motivate more research efforts on the edge intelligence enabled IoT and bring more intelligent IoT solutions.

We also express our sincerely thanks to all authors and reviewers for kindly sharing their research findings and valuable comments. We would also like to thank all staff member for making this excellent issue.

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