

Special Issue on
Internet of Things (IoT) Edge Computing

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Edge (and fog) computing represents an emerging paradigm for decentralizing cloud computing by performing data processing at the edges of networks, near the source of data. Edge computing provides multiple benefits when used together with emerging high-performance wireless access networks, such as 5G mobile networks. These benefits include minimized latency and maximized bandwidth between end-nodes and serving nodes, as well as reduced interaction between end-nodes and datacenters. Furthermore, propagation of sensitive data towards public networks can be more effectively controlled. Mobile Edge Computing (MEC) is one of the key concepts of 5G networking, providing a cloud service environment and cloud-computing capabilities at the edge of Radio Access Network (RAN).

One of the key application areas for edge computing is the Internet of Things (IoT). IoT systems can take great benefit of MEC residing at the access network, but edge computing at RAN also has its limitations. In many IoT applications, the local decision-making logic and control of actuators and at least a part of sensor data processing are beneficial to manage locally, since the connection to the access network may be unreliable or low in performance. Thus, it is beneficial to bring edge computing capacity also within IoT clusters.

This special issue aims to present the current state-of-the-art and future trends on various aspects around IoT edge/fog computing and the attempts towards building scalable, adaptive, and efficient IoT smart environments. The major topics cover modeling, design, analysis, deployment, and management of IoT edge computing systems. The special issue will also accept papers discussing the role of various 5G and IoT enabling technologies, resource, and energy-efficient IoT systems, as well as security and privacy.

Potential topics include but are not limited to the following:

- ▶ Fog, edge, and multiaccess edge computing (MEC) for IoT
- ▶ Surveys on edge and fog computing systems
- ▶ 5G, cloud RAN, and Mobile Cloud Computing (MCC) in IoT edge computing
- ▶ Cloudlets and Docker virtualization in IoT edge computing
- ▶ Network virtualization (NV/NFV) in IoT edge computing
- ▶ Software-defined Networking (SDN) in IoT edge computing
- ▶ Data storage, processing, and management at the IoT edge
- ▶ Big data and AI analytics at the IoT edge
- ▶ Resource monitoring and management at the IoT edge
- ▶ Resource-aware load balancing between local serving nodes, MEC servers, and data centers
- ▶ IoT edge service deployment, runtime modification, and lifecycle management
- ▶ Lightweight security and AAA mechanisms on resource constrained devices
- ▶ Privacy and trust management in IoT edge computing
- ▶ Semantic interoperability between edge systems
- ▶ Scalability-enhancing solutions for IoT edge computing
- ▶ Real-life prototyping, validation and testbeds for IoT edge computing
- ▶ Simulation models for IoT edge computing
- ▶ QoS management for IoT edge computing
- ▶ Green and energy-efficient IoT edge computing
- ▶ Resilient and failure-tolerant IoT edge computing

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Papers are published upon acceptance, regardless of the Special Issue publication date.

Lead Guest Editor

Erkki Harjula, University of Oulu, Oulu, Finland
erkki.harjula@oulu.fi

Guest Editors

Andrei Gurtov, Linköping University, Linköping, Sweden
andrei.gurtov@liu.se

Min Chen, Huazhong University of Science and Technology, Hubei, China
minchen2012@hust.edu.cn

Noel Crespi, Institut Mines-Telecom, Evry, France
noel.crespi@institut-telecom.fr

Maria A. Gorlatova, Princeton University, Princeton, USA
mariaag@princeton.edu

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