

Intelligent Edge Caching and Computing for Scalable Information Systems

Yudong Zhang^{1,2,*}

¹School of Computing and Mathematical Science, University of Leicester, LE1 7RH, UK

²Department of Information Systems, Faculty of Computing and Information Technology, King Abdulaziz University, Jeddah 21589, Saudi Arabia

Abstract

INTRODUCTION: In scalable information systems, edge computing can help to overcome the challenges of latency, bandwidth, and connectivity in large-scale networks by reducing the amount of data that needs to be transmitted over the network.

OBJECTIVES: The edge devices, such as sensors, cameras, gateways, routers, switches, multiplexers, integrated access devices, etc., can perform initial data processing and filtering, reducing the data volume sent to the central system.

METHODS: This special issue aims to provide the recent progress of intelligent edge caching and computing for scalable information systems.

RESULTS: The guest editors received more than 30 submissions, and finally, ten papers were accepted.

CONCLUSION: This special issue has contributed to advancing academic research and practice in intelligent edge caching and computing for scalable information systems.

Keywords: edge computing; scalable information systems; integrated access devices; internet of things; convolutional neural network; signal-to-noise ratio; optical fiber composite overhead ground wire.

Received on 06 Feb 2023, accepted on 17 April 2023, published on 22 June 2023

Copyright © 2023 Yudong Zhang, licensed to EAI. This is an open access article distributed under the terms of the [CC BY-NC-SA 4.0](https://creativecommons.org/licenses/by-nc-sa/4.0/), which permits copying, redistributing, remixing, transformation, and building upon the material in any medium so long as the original work is properly cited.

doi: 10.4108/eetsis.vi.3021

In scalable information systems, edge computing (EC) [1] can help to overcome the challenges of latency, bandwidth, and connectivity in large-scale networks by reducing the amount of data that needs to be transmitted over the network. The edge devices [2], such as sensors, cameras, gateways, routers, switches, multiplexers [3], integrated access devices (IADs), etc., can perform initial data processing and filtering, reducing the data volume sent to the central system.

This special issue aims to provide the recent progress of intelligent edge caching and computing for scalable information systems. The guest editors received more than 30 submissions, and finally, ten papers were accepted.

[Tang, Y. et al. \(2022\) \[4\]](#) first overview the data rate of wireless-active transmission. The authors then overview the latency of wireless-active transmission, which is

particularly important for the applications of monitoring services. The authors further overview the spectral efficiency of the active transmission, which is particularly important for the battery-limited Internet of Things (IoT) networks. After these overviews, The authors give several critical challenges on active transmission and present feasible solutions to meet these challenges.

[Zhou, Y. et al. \(2022\) \[5\]](#) first examine the power system transformer with one KG node and one eavesdropper E, where the eavesdropper E can overhear the network from the source, which may cause physical-layer secure issue and an outage probability event. To deal with the issue, the authors analyze and design the system-secure performance under the eavesdropper and define the outage probability for system security by providing an analytical expression of outage probability. The authors further

*Corresponding author. Email: yudongzhang@ieee.org

