Special Issue

Next-Generation Cloud–Edge Computing: Systems and Applications

Message from the Guest Editor

With the rapid development of emerging techniques in electronics—such as the Internet of Things (IoT), artificial intelligence (AI), 5G, and cloud computing—data generation and processing have undergone fundamental changes. The widespread deployment of IoT devices has led to exponential data growth across various scenarios, including smart homes, intelligent transportation, and industrial IoT. The traditional centralized cloud-computing model faces challenges such as high latency, limited network bandwidth, and data privacy and security issues when processing these data. Meanwhile, the low-latency and high-bandwidth features of 5G networks strongly support the development of edge computing. As a result, cloud–edge computing has emerged as the next-generation cloud computing paradigm. However, existing edge-cloud computing systems still face challenges such as resource management across hierarchical nodes, maintaining data consistency between cloud and edge nodes, enhancing security and privacy protection mechanisms, and ensuring system reliability. New system-level designs are needed to address these challenges effectively.

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