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Special Issue on Device-Edge-Cloud End to End Internet-Scale Computing and Data Systems

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With the rapid development of cloud and edge computing, device-edge-cloud networking has become an integral part of new-generation information technology infrastructure. Technologies such as software-defined networking and network function virtualization have brought unparalleled service agility and reduced costs to cloud networks, edge intelligence and hardware-oriented computing designs have brought novel opportunities for accelerating Internet-scale computing tasks. The rapid expansion of the device-edge-cloud consolidates on-premises Internet-scale computing and data systems with service flexibility, business continuity, and cost-effectiveness. This emerging device-edge-cloud paradigm consolidates services to meet particular business requirements, yielding the most desirable results without vendor lock-in. Despite these excellent strides, this kind of device-edge-cloud networks are still challenged pragmatically by the most critical problems: ensuring resource efficiency and network security. In the former case, the multi-tenant infrastructure and intermittent contentions can lead to resource underutilization and performance degradation; in the latter case, advanced threats, the shared-responsibility model, and regulatory concerns can sabotage the device-edge-cloud network infrastructure and lead to security breaches, financial losses, and customer dissatisfaction. This special issue thus serves as a forum for gathering original research outcomes in resource management and security for device-edge-cloud scenarios, with the ultimate goal of advancing robust and reliable Internet-scale computing and data systems.

Scope and Topics

- AI, machine learning, and large language models in device-edge-cloud optimization
- Resource allocation and management for device-edge-cloud networks
- Data confidentiality, integrity, and privacy in device-edge-cloud networks
- Security protocols and architectures for device-edge-cloud infrastructures
- Energy-efficient green cloud and edge computing
- Advanced multi-cloud and hybrid cloud environments
- Environment impact and evaluation for data centers
- Tools to monitor and optimize device-edge-cloud environments
- Intelligent resource provision and load balance in edge-cloud networks
- Side-channel threats and defenses in novel device-edge-cloud environments

Important Dates

- Submission deadline: October 1, 2024
- First-round review decisions: January 30, 2025
- Deadline for revision submissions: March 30, 2025
- Notification of final decisions: May 30, 2025
- Tentative publication: July 30, 2025

Submission Information

Please refer to https://dl.acm.org/journal/toit/author-guidelines and select “SI: Device-Edge-Cloud End to End” in the TOIT submission site, https://mc.manuscriptcentral.com/toit
For questions and further information, please contact qiumeikang@yahoo.com.