

Distinguished Lectures

Spring 2025



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Democratizing Edge Computing – Enabling Open and Scalable AI at the Edge

Monday, April 7, 2025

Reception with Refreshments: 10:30 a.m.

Lecture: 11:00 a.m. - 12:00 noon

Lory Student Center - University Ballroom

Vehicular Edge Services

Tuesday, April 8, 2025

Lecture: 9:30-10:30 a.m.

Lory Student Center - Room 324

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Colorado State University's Information Science
and Technology Center (ISTeC)

In conjunction with the Department of Computer Science and
Department of Electrical and Computer Engineering Seminar Series

Abstracts

Democratizing Edge Computing – Enabling Open and Scalable AI at the Edge

In a world driven by data, access to computing power should not be limited to a select few. This talk explores how democratized Edge Computing (EC) and Edge Intelligence (EI) can unlock affordable, scalable, and inclusive AI-driven solutions for diverse industries. Rather than relying on expensive, centralized infrastructure, our approach leverages underutilized, heterogeneous edge devices, from smartphones to IoT sensors, to create an intelligent, resource-aware computing ecosystem. By optimizing resource allocation, benchmarking edge devices, and designing adaptive, self-organizing networks, we can expand access to AI at the edge without proprietary constraints. This talk will highlight cutting-edge techniques for task scheduling, federated learning, service continuity, and autonomous decision-making enabling resilient applications, from smart cities to industrial automation. We explore how democratized edge computing can transform AI accessibility, innovation, and efficiency on a global scale.

Vehicular Edge Services

The rise of Autonomous and Connected Vehicles (AVs and CVs) has created a need for innovative edge computing solutions to meet their growing demands and leverage their computational power. By utilizing the unused resources of these vehicles, we can offload intensive tasks for parallel processing at the extreme edge, drastically reducing latency. However, since AVs and CVs are user-owned and highly dynamic, their availability can be intermittent, leading to uncertainty and impacting Quality of Service (QoS). To tackle this, we predict vehicle availability to adapt to the dynamic nature of vehicular edge computing and integrate these predictions into resource allocation. We also enhance reliability by developing a reputation scoring system that assesses vehicle reliability based on past performance, allowing for proactive task replication. Additionally, we address the growing demands of AVs and CVs by enabling quality-aware offloading of tasks related to cooperative perception, improving traffic situational awareness. By minimizing perception redundancy and maximizing the Value of Information (VOI), our strategies improve road safety, traffic management, and the overall driving experience in intelligent transportation systems.

Speaker Biography

Hossam Hassanein is a leading researcher in the areas of broadband, wireless and mobile networks architecture, protocols, control and performance evaluation. His record spans more than 700 publications in journals, conferences and book chapters, in addition to numerous keynotes and plenary talks in flagship venues. Dr. Hassanein has received several recognition and best paper awards at top international conferences. He is the founder and director of the Telecommunications Research Lab (TRL) at Queen's University School of Computing, with extensive international academic and industrial collaborations. He is the recipient of the 2016 IEEE Communications Society Communications Software Technical Achievement Award for outstanding contributions to routing and deployment planning algorithms in wireless sensor networks, and the 2020 IEEE IoT, Ad Hoc and Sensor Networks Technical Achievement and Recognition Award for significant contributions to technological advancement of the Internet of Things, ad hoc networks and sensing systems. Dr. Hassanein is a fellow of the IEEE, and is a former chair of the IEEE Communication Society Technical Committee on Ad hoc and Sensor Networks (TC AHSN). He is an IEEE Communications Society Distinguished Speaker (Distinguished Lecturer 2008-2010). URL: <https://www.hossamhassanein.ca/>