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SenSIP Seminar Series

Robust Service Placement and Provisioning in Edge Computing

Presenter: Duong Nguyen

Assistant Professor, School of ECEE, Arizona State University

October 30, 2020, 3:00 PM / Zoom https://asu.zoom.us/j/97630576962

Abstract

The emerging edge computing paradigm promises to deliver superior user experience, reduce network traffic, and enable various Internet of Things applications. By placing storage, computing, control, and networking functions closer to end-users and data sources, edge computing enjoys many remarkable capabilities, including local data processing and analytics, localization, edge caching, resource pooling and sharing, and enhanced privacy and security, and reliable connectivity. From the perspective of a service provider, how to jointly optimize the service placement, sizing, and workload allocation decisions is an important and challenging problem, which becomes even more complicated when considering demand uncertainty. In this talk, I will first present a two-stage adaptive robust optimization framework to help the service provider optimally determine the service placement and sizing decisions that can hedge against any possible realization of the demand within a predefined uncertainty set. Then, I will extend it to a multi-period robust model with integer recourse for dynamic service placement, considering spatial-temporally correlated demand uncertainties. I will also discuss ongoing and future research directions of my group.

Biography:

Duong Nguyen is currently an assistant professor of electrical engineering at Arizona State University. He received his doctorate in electrical and computer engineering from the University of British Columbia in 2020, under the supervision of Professor Vijay Bhargava. His research lies at the intersection of operations research, artificial intelligence, economics, and engineering, with a specific focus on developing new mathematical models and techniques for decision-making and economic analysis of large-scale networked systems such as cloud/edge computing, smart grids, and crowdsourcing. His main objectives are (1) to optimize operation and planning of complex systems under uncertainty; and (2) to build intelligent, secure, fair, and efficient multi-agent platforms and marketplaces**.**

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