USC Viterbi School of Engineering
Ming Hsieh Department of Electrical Engineering

Ming Hsieh Institute Seminar Series
Ming Hsieh Department of Electrical Engineering
Computer Engineering

System and Architecture Design for Safe And Reliable Autonomous Robotic Applications

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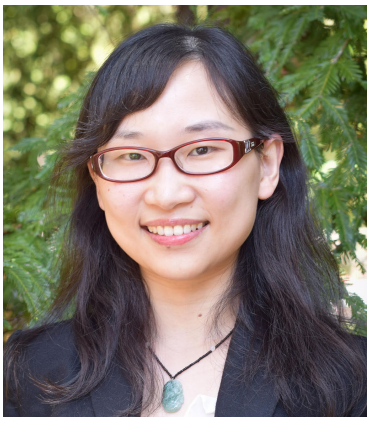
10:30am-12:00p
EEB 248

The rapid development of smart technology in edge computing systems has paved the way for us to embrace the technology movement of self-driving cars and autonomous service robots. To enable the wide adoption of these autonomous robotic applications, reliability is one of fundamental goals of computing system and architecture design. In this talk, I will present our recent exploration of safe and reliable system and architecture design for autonomous robotic applications. I will start by presenting an architecture design of supporting fast system recovery with persistent memory at low performance cost. To evaluate and guide our system design, I will introduce our safety model and architecture design strategies for self-driving cars, based on our field study of running real industrial Level-4 autonomous driving fleets. Finally, I will describe a Linux-container-based resource management framework design to improve reliability and safety of self-driving cars and service robots.



Jishen Zhao is an Assistant Professor in the Computer Science and Engineering Department at University of California, San Diego. Her research spans and stretches the boundary between computer architecture and system software, with a particular emphasis on memory and storage systems, domain-specific acceleration, and system reliability. Her research is driven by both emerging technologies (e.g., nonvolatile memories, 3D-stacked memory) and modern applications (e.g., smart home and autonomous robotic systems, deep learning, and big-data analytics). Before joining UCSD, she was an Assistant Professor at UCSC, and a research scientist at HP Labs before joining UCSC. She is a recipient of NSF CAREER award and a MICRO best paper honorable mention award.