

School of Engineering Seminar



SAN FRANCISCO
STATE UNIVERSITY

Speaker:

**Dr. Siavash
Farzan**

Assistant Teaching
Professor,
Robotics Engineering
Department,
Worcester Polytechnic
Institute

Date:

Monday
Mar. 6, 2023
1:00-1:50 PM

Location:

Hensill Hall 803

Navigating Uncertainty in Safety-Critical Cyber-Physical Systems: From Optimization to Planning to Perception

Abstract: As we move towards a future dominated by technology, Cyber-Physical Systems (CPS) are poised to play a critical role in shaping the way we live and work. However, these systems are often faced with uncertainty in real-world scenarios, which can significantly impact their performance and safety. This presentation will explore the different methods CPS can use to navigate uncertainty, including Optimization-based safety-critical control, Probabilistic motion planning, Data-driven perception and vision, and Real-time embedded computing and performance. The applications of each method in various CPS, such as autonomous vehicles and robots, will be discussed and demonstrated, providing a comprehensive understanding of the state-of-the-art techniques for handling uncertainty in CPS and their practical applications.

Speaker Bio: Siavash Farzan is an Assistant Teaching Professor in the Robotics Engineering Department at Worcester Polytechnic Institute. Farzan received his Ph.D. in Robotics from the Georgia Institute of Technology in 2021. His research focuses on safety-critical motion planning and control of cyber-physical systems to operate in unstructured and dynamic real-world settings. Farzan has several years of experience in industry as an Embedded Systems Engineer, which informs his research and teaching. He has an interest in innovative instructional technologies, and has co-developed the first lab-based online Mechatronics course (hosted on edX), which brings hands-on engineering education to anyone around the world who wants to learn.