

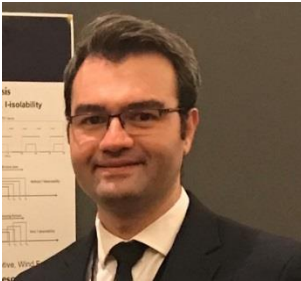


Spring 2017 Colloquium Series

Tuesday, January 31, 2017

1:30-2:00 pm – Meet and Greet –BB340

2:00-3:00 – Seminar Talk – GC Metals Hall



Dr. Farshad Harirchi, Post-Doctoral Fellow, EECS, University of Michigan

Model-Based Decision Making in Cyber-Physical Systems

Abstract:

Cyber-Physical Systems (CPS) are combinations of physical processes and embedded computers, which shape the basis of our future smart systems. The potential impact of these systems will far exceed the simple embedded systems of today. The use of CPS ranges from critical infrastructures such as smart cities, power and water grids, traffic networks and the Internet of Things (IoT) to smaller-scale personal and family items, such as smart phones, vehicles and wearable technologies. This notable integration of CPS give rise to many new challenges in reliability, safety, security, scalability and adaptability of these systems. In this talk, I will present model-based passive and active model discrimination techniques, which are employed for fault and attack diagnosis in a wide range of cyber-physical systems. These fault and attack diagnosis schemes provide formal guarantees on the detection and isolation of faults and attacks. In addition, an application of active model discrimination in intention-aware autonomous vehicles will be presented.

Bio:

Farshad Harirchi is a post-doctoral research fellow in the Electrical Engineering and Computer Science Department at the University of Michigan. Prior to this, he earned a Ph.D. degree in Electrical Engineering from the Colorado School of Mines, where he received the Outstanding Research Award for his doctoral research. He published about twenty articles in the areas of dynamical systems and controls and signal processing. The main focus of his research is on reliability, security, resiliency, privacy and scalability of large-scale cyber-physical systems and penetration of renewable energy resources into future smart grids.