

**Seminar:**

**Dr. Mariam Faied, University of Detroit Mercy  
Humans to Unmanned Vehicles.....Inverting the Ratio  
Thursday, March 8, 2018, 12 Noon, 202 ECEC**

Abstract: As stated in *Unmanned Aircraft System (UAS) Roadmap 2005 – 2030* “an important near future goal is to allow more Unmanned Vehicles (UV) than humans in the operations. Therefore, advanced supervisory control architectures must be built to organize in a hierarchical way humans and autonomous controllers.”

This talk demonstrates research on UV autonomy in three different perspectives: classification, resource allocation, and dynamic mission management. Starting with classification decisions, two scenarios are presented. First one: a set of autonomous sensors with incomplete information deployed autonomously in a contested area to classify moving object. Second scenario: an autonomous classifier that plans its path to optimize classification decision. After classification decisions, mission planning-in terms of resource allocation and trajectory planning- should be made optimally. In this talk broad class of mission planning problems, which include both combinatorial and stochastic complexity given in terms of complex logical and temporal constraints, is described. Missions are planned to satisfy specifications and minimize desired cost function. In the presence of dynamically active and intelligent opponents, friendly teams should be able to adapt intelligently to changes during operations. Lastly, dynamic configuration strategy for teams of UV is posed.

Bio: Dr. Mariam Faied has been an instructor at the University of Detroit Mercy since 2016. She was a visiting research professor at the University of Michigan-Ann Arbor. Her research interests lie in the broad area of design, analysis and optimization of planning and control algorithm for robotics. During PhD, her research was at University of Michigan Aerospace, Robotics and Control (ARC) laboratory on collaborative control of multiple unmanned vehicles, adversarial strategies, and advanced mission planning. In 2010, she worked as a post doctorate at University of Michigan. She supervised undergraduate, master, and PhD students and served as PhD committees' member. She worked as interim director for ARC laboratory for six months. Dr. Faied was appointed as an assistant professor in 2012 at Fayoum University-Egypt. She developed Mechatronics Engineering department curriculum, which was audited by the Egyptian Supreme Council of Universities and approved. In 2013, she was selected to serve as Mechatronics program chair at Fayoum University. Dr. Faied received both an outstanding program coordinator honor and best paper in session award.