



Computer Science Colloquia

Date: Monday, April 17, 2017

Time: 11:00 am

Location: 223 Atanasoff

Techniques for Constructing Dependable Distributed Systems

Constructing dependable distributed systems is a long-standing area of research due to the inherent complexity of design, implementation, and maintenance of such systems. In this talk, I will discuss a set of orthogonal techniques that attempt to provide different levels of assurance and optimality in constructing distributed systems from various perspectives. These techniques range over deeply theoretical to highly practical approaches.

Specifically, I will present our results on optimal coordination and fault-tolerant runtime monitoring of distributed and autonomous fleet of unmanned aerial vehicles (UAVs). These algorithms essentially solve the vehicle routing problem (VRP) in a distributed fashion, enabling a fleet of UAVs to jointly carry out a mission while minimizing a set of costs. I will also present our recent work on runtime monitoring of security and privacy policies that enable us to inspect the health of complex policies across multiple executions of a system (e.g., information flow and against sophisticated side-channel timing attacks).



Borzoo Bonakdarpour

Borzoo Bonakdarpour is currently an assistant professor at the Department of Computing and Software at McMaster University, Canada, where he is the director of the Dependable Systems Group (DSG). His main area of research is dependable distributed computing, focusing on distributed optimization, monitoring, and code generation as well as runtime monitoring of security and privacy policies. He has published more than 80 articles and papers in top journals and at conferences, and has received two Best Paper Awards, and two Best Instructor Awards. He chaired the Program Committee of the 18th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS) in 2016, and the 14th International Conference on Runtime Verification (RV) in 2014. He received his Ph.D. from Michigan State University where his dissertation, "Automated Revision of Distributed and Real-Time Programs", was nominated for the 2010 ACM Doctoral Dissertation Award.

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