

Invited Talk

Wednesday, January 24th | 11:00 AM | BYENG 210

On Navigation, Planning and Verification of Autonomous Systems

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Group



Abstract

In this talk I will give an overview of various different research topics on autonomous systems I have been pursuing in the last 5 years. I will attempt to put the different topics in a broad context. In particular, I plan to cover work I have done on navigation using qualitative information, multi-objective path planning under localization constraints, mission level planning, and recent novel methods for modeling, abstraction and analysis of complex systems of systems. In this talk, I will touch upon methods that combine more “classical” tools, such as filtering and optimization, with new emerging mathematical methods from areas such as algebraic topology and category theory.

Biography

Alberto Speranzon received the “Laurea” degree in computer engineering from University of Padova, Italy in 2000, and a Ph.D. in automatic control from the School of Electrical Engineering, Royal Institute of Technology (KTH), Stockholm, Sweden in 2006. In September 2015 he joined Honeywell Labs in Minneapolis, MN, USA where he is a research scientist.

Biography *(Cont)*

At Honeywell, Alberto is working on autonomous systems, leading such research area as program manager and principal investigator, and involved in a NASA sponsored project aimed at developing novel methodologies for systems of systems design and analysis. Before joining Honeywell, he was a research scientist at United Technologies Research Center (UTRC), in East Hartford, CT, USA where, since 2008, he covered various roles of increasing responsibility. At UTRC, Alberto served as project manager and principal investigator of various DARPA sponsored projects on novel methods for navigation in GPS degraded/denied and new mathematics for swarm autonomy where methods, cutting across robust adaptive filtering, artificial intelligence, graph theory and algebraic topology were combined. His research interests are mainly in the area of autonomy and cyber–physical systems, and in particular on distributed control, estimation and optimization, planning in complex environments and abstraction methods for swarm intelligence. Before joining UTRC, between October 2006 and September 2008, he was a Marie Curie Research Fellow at Unilever R&D, Port Sunlight, UK, working on biomimetic robotics applications for personal care. During 2006–2008 he was a regular visitor at the University of California at Berkeley, working on decentralized estimation over sensor networks. Alberto received the Best Poster Award at the “Hybrid Systems: Computation and Control (HSCC) conference” in 2017 and the Outstanding achievement Award in 2009 from UTRC, highest award given by UTRC. He is an associate editor of the IEEE Transactions on Control Systems Technology and part of the Technical Program Committee of various conferences in the area of cyber–physical systems, robotics and networked control systems.

Hosted by: Siddharth Srivastava

