Industrial & Systems Engineering
Seminar Announcement

Active learning of dynamical system

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Abstract: Data-driven methods have been lately a topic of interest in the control community as they allow system design and analysis using observations. Many algorithms have been established as a supervised learning methodology for estimation, control, and maintenance of linear dynamical systems. Here, we propose an active online learning algorithm with guaranteed error bound on the estimates of linear dynamics generated from linear regression for each time-step. We investigate the optimal control that gives the minimum error of system identification. In addition, utilizing the concept of observability, in conjunction with tools from graph theory and optimization, we develop an algorithm for network synthesis with privacy guarantees. We propose an observability-based design of the communication topology that improves the privacy of a multi-agents system in presence of an intruder. The resulting adaptive system responds to the intrusion in an online manner- in order to reduce the information exposed to the intruder.

Bio: *Atiye Alaeddini* is a Postdoctoral Research Scientist at the Institute for Disease Modeling, Applied Math team. She holds a Ph.D. in Aerospace engineering from University of Washington and a M.Sc. in Computer engineering from University of California, Santa Cruz. Her research interests include stochastic optimization, control theory, online optimization algorithms, networked systems and their applications in epidemiology. As a member of IDMs research team, she is developing a statistical model and optimization algorithm for model calibration and parameter space exploration.

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