Title:
Security in Networked Cyber Robotic Systems

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Abstract:
Robots play an important role in tasks related to surveillance. Teams of mobile robots and autonomous vehicles are often deployed in civil as well as military scenarios for intrusion detection and monitoring purposes. The intruders are in general adversarial in nature, and this leads to interesting scenarios in pursuit-evasion games. In this talk, I will present a game-theoretic framework to devise motion planning strategies for autonomous vehicles and mobile robots deployed in adversarial scenarios. Since secure communication is an essential requirement in teams of autonomous vehicles and robots deployed in combat scenarios, the first half of my talk will focus on formation control problems that arise when a mobile intruder inflicts a jamming attack on the communication network present within a team of autonomous vehicles. In the second part of my talk, I will present some new results regarding optimal navigation strategies for a mobile robot engaged in visibility based target-tracking applications. I will conclude my talk with some future problems regarding computational aspects of the aforementioned problems.