Computer Science Master Thesis Presentation

Autonomous Drone Flight in Response to System Events

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Examination Committee:
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Abstract:

Unmanned Aerial Vehicle (UAV) are a booming subject of research as their impact on our lives increase as they become smaller and cheaper to produce. Recent advances in technology and theory in this field is leading to their ubiquitous use in everyday life for recreational, search and rescue, economic, political, and scientific applications. In particular, the CI Rainbow project, which places a wireless sensor network connected to the cloud on Santa Rosa Island, can benefit greatly from these advances. The Parrot AR Drone 2.0 has hit the price point of being an effect tool for exploring the use of drones for autonomous flights in response to a system generated event, and can be a valuable tool for increasing the depth and quality of research possible by the CI Rainbow project.

Integration of drones into the sensor-net adds the capability of autonomously surveilling the environment of a targeted location on the Santa Rosa Island. The ability to respond to a system event that may indicate a fire, flood, or the monitoring and tracking of a difficult to follow animal is an obvious boon to project's goal of studying the island. This thesis paper will break down in detail how an unmanned aircraft system works, how UAVs have been integrated into the CI Rainbow project, and cover in detail the issues that have been run into integrating this technology, provide a look at the recent research into drone capabilities which allow it to overcome some limitations imposed by the environment. Use of the open source Paparazzi autopilot software with the AR Drone 2.0 to implement such a drone will be discussed, and an implementation of some these technologies will be provided to demonstrate the feasibility of such a project.

6:00 pm, Tuesday, May 2nd, 2017
Sierra Hall 1232

All students and faculty are invited

An Academic Affairs Event