IEEE ICCA/ISCACSD
Tutorial Workshop I

Unmanned Air Vehicles: Coordination, Sensing, and Control

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Unmanned Air Vehicles: Coordination, Sensing, and Control

Why?

- Numerous ***application*** (remote traffic monitoring, search and rescue operations, surveillance, military, etc.)
- Supports new ***research directions*** for automatic control (multi-agent coordination, probabilistic reasoning in control, vision in the feedback loop, sensor fusion, hybrid systems, biologically inspired systems, etc.)
- New sensing and control ***technologies*** (infrared sensors, GPS, Micro Electro-Mechanical Systems, etc.)
- ***Interdisciplinary*** field
- Provides ***new problems***…

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What?

detail

I. Multi-Agent Coordination

II. Navigation and Sensing

III. Single UAV modeling & control

abstraction

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What?

Multi-Agent Coordination

8:15 – 9:00	A probabilistic framework for pursuit-evasion games with UAVs (Maria Prandini)
9:00 – 9:45	Approximate solutions for pursuit-evasion games with UAVs (João Hespanha)

10:00 – 10:45	Simulation and experimentation of coordinated strategies for pursuit-evasion games (Rene Vidal)
10:45 – 11:30	Coordination and Conflict Resolution for Multiple UAVs (Claire Tomlin)

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What?

Navigation and Sensing

11:30 – 12:15 Trajectory generation for UAV designs (Jie Liu)

1:15 – 2:00 Navigation using passive sensors: Integration of vision with inertial sensors using nonlinear filtering (Oleg Yakimenko)

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What?

Single UAV modeling and control

2:00 – 2:45 Complete guide for building UAVs (David Shim)

3:00 – 3:45 Landing an unmanned air vehicle: vision based motion estimation and nonlinear control (Omid Shakernia, Cory Sharp)

3:45 – 4:30 Navigation and control of the Stanford DragonFly UAV (Claire Tomlin)

4:30 – 5:15 Micro-mechanical flying insects flight control: a hierarchical and biologically inspired design (Luca Schenato)

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All talks will be posted at

http://www-rcf.usc.edu/~hespanha/cca00/