Collaborative UAV Control for Information Acquisition: ONR Sponsored Research at C3UV

Raja Sengupta, William Hodge

Center for Collaborative Control of Unmanned Vehicles (C3UV)

University of California, Berkeley

http://c3uv.berkeley.edu/
Bat IV

- 25 lbs payload
- 13 foot wingspan
- 27m/s at cruise
- 8 hour duration

- Piccolo Autopilot
  - GPS and Pitot Static
  - 900 mHz radio for ground station communication
  - Allows for waypoint and turn rate tracking.

- Computing
  - 2 x 1.8 GHz Pentium
  - Onboard sensing, planning and control
  - Vehicles cooperate over an 802.11b ad-hoc network

- Sensors
  - Visual, near infrared, and thermal cameras
  - Three axis sensor gimbal
Berkeley Zagi

- 6oz sensor payload
- 6 foot wingspan
- 14 m/s at cruise
- 30 min flight duration

Piccolo Autopilot
  - GPS and Pitot Static
  - 900 MHz radio for ground station communication
  - Allows for waypoint and turn rate tracking.

Computing
  - 1.6 GHz Pentium
  - Onboard sensing, planning and control
    - Vehicles cooperate over an 802.11b ad-hoc network

Sensors
  - Visual or near infrared camera
Rascal

- 12 lbs payload
- 9 foot wingspan
- 22m/s at cruise
- 1.5 hour duration

- Piccolo Autopilot
  - GPS and Pitot Static
  - 900 mHz radio for ground station communication
  - Allows for waypoint and turn rate tracking.

- Computing
  - 1.8 GHz Pentium
  - Onboard sensing, planning and control
  - Vehicles cooperate over an 802.11b ad-hoc network

- Sensors
  - Visual, near infrared, and thermal cameras
  - Left looking single axis sensor gimbal
A Flight Ops Day
Multi-UAV Search and Localization

Actual flight data

- 2006: Fake Sensor
- 2007: Sensor in the loop
  - Static target
- 2008: Sensor in the loop
  - Moving target
  - Search
  - Localize
  - Track (loop not yet closed)
Sensing: Grid-based Bayesian Estimation

- **Likelihood function** $p(z \mid X)$
- **Posterior distribution** $p(X \mid z)$
- **Sensor Modeling**
- **Filtering**
Making it easy: Aerobots on the web

http://www.google.com/search?client=safari&rls=en&q=berkeley+uav+iphone&ie=UTF-8&oe=UTF-8

Berkeley Group Uses iPhone to Control UAV Squadron - UAVs - Gizmodo

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