Objective: Facilitate the development of distributed cooperative control algorithms for teams of UAVs that must operate in environments where the communication topology is sparse, unreliable, and constantly changing, and where communication packets are frequently lost.

Principle Investigators: Randy Beard


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Approach
Developed mathematical theory for consensus algorithms over distributed, time-varying, noisy communication channels. Algorithms interface cooperative control algorithms with the communication network.

Results
Successful application in simulation to:

- UAV and spacecraft formation flying
- Mobile ground robots
- Cooperative rendezvous
- Cooperative perimeter surveillance
- Cooperative search

Flight results for cooperative perimeter surveillance demonstrated in 2007.