Seminar Series of the

AFRL/VA and AFOSR

Collaborative Center of Control Science (CCCS)

Cooperative Behavior for Autonomous Air Vehicles

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1:30pm, Thursday May 2, 2002
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Abstract: The Department of Defense is currently pursuing several research and development programs associated with Unmanned Combat Air Vehicles and Autonomous Wide Area Search Munitions. While the work on the sensors, target recognition algorithms, airframes and navigation systems shows progress, the research into cooperative behavior and control algorithms is relatively new. LtCol Jacques has been working to improve the effectiveness of autonomous wide area search munitions since 1998. The unique aspect of the munition problem is that a search agent is lost whenever an attack is executed. This significantly impacts the overall effectiveness in a multi-target/false target environment. Recent work provides extensions to some classic work in the area of search and detection. Closed form analytic expressions provide probability factors for making the decision to attack a sensed target vs. continue searching for a higher priority target. These factors have been incorporated into cooperative behavior algorithms, and the effectiveness of the multi-agent system has been evaluated via Monte-Carlo simulation.

Biography: LtCol Jacques is an Assistant Professor and Deputy Head of the Department of Aeronautics and Astronautics at the Air Force Institute of Technology. Prior to being assigned to AFIT, he headed up $30M prototype demonstration program for an autonomous wide area search munition at Eglin AFB, FL. He has a PhD in Aeronautical Engineering, and his primary research concentration is in the area multi-vehicle control.