

## Planning, Guidance and Control for Multiple UAS Cooperative Operations

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Leveraging the previous research of fleeting targets at AFIT, a research team comprised of various disciplines is working to create a modular system and software architectures for simultaneous control of semi-autonomous small air vehicles in order to accommodate a wide variety of route surveillance missions. Specific algorithms are being developed for the demonstration platform in the areas of sensor aimpoint control, collision avoidance systems, multiple Micro Air Vehicle (MAV) performance subject to transient conditions, and autonomous communication relay positioning. Students are utilizing specialized hardware, simulation software, and small aircraft systems in the Advanced Navigation Technology (ANT) laboratory to build flying prototypes of their concepts. Additionally, the human systems interaction and corresponding desired levels of autonomy are also being explored to better evaluate competing designs. Ultimately, the goal of this interdepartmental team is to demonstrate technologies enabling autonomous reconnaissance in support of convoy operations (routes) using multiple MAV platforms which will scale to other missions.

For more information see Crouse, J., P. Blue, R. Cobb, and M. Mears, "Cursor-on-Target Control for Semi-autonomous UAS", AIAA Guidance, Navigation and Control Conference and Exhibit, 18 - 21 August 2008, Honolulu, Hawaii, AIAA 2008-6798.

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