



*Finding, Tracking and Attitude Estimation for Intercept Guidance*

## How

- This research will involve 13 students and be focused on
  - Applying a systems engineering approach and performing a conceptual design of the Fast Recon UAS
  - Conducting analysis of alternatives including cost estimates, and estimating Technology Readiness Levels of major subsystems, components, and the system as a whole
  - Demonstrating a feasibility of the proposed solution by developing and testing a scaled prototype
- A prototype of a Fast Recon UAS will feature a foldable design to fit within the AIM-9 Sidewinder air-to-air missile.
- A series of computer simulations and flight tests will be conducted at Mojave Desert and Camp Roberts.

## What

- The objective of this research, responding to a Marine Corps Warfighting Laboratory challenge, is to conduct the conceptual and preliminary design and prototyping of unmanned aerial system (UAS), launched and operated from MV-22B Osprey tiltrotor military aircraft, that would provide short-term aerial reconnaissance of a landing zone prior to Osprey arrival with the goal of supporting expeditionary assault and raid operations.

## Why

- The MV-22 Osprey became the primary assault support aircraft for the U.S. Marine Corps (USMC). Its unique design allows carrying 24 Marine combat troops twice as fast and five times farther than previous helicopters while still assuring the vertical take-off and landing, therefore drastically enhancing Marine assault operations.
- Currently there is a program to equip all USMC aviation platforms for combat, surveillance and reconnaissance. An extended range of Osprey, however, poses a challenging problem not yet addressed.
- A flight to a landing zone (LZ) may take hours. During this time the chosen LZ that thought to be safe at the time of an assault mission planning and launch may become hostile.