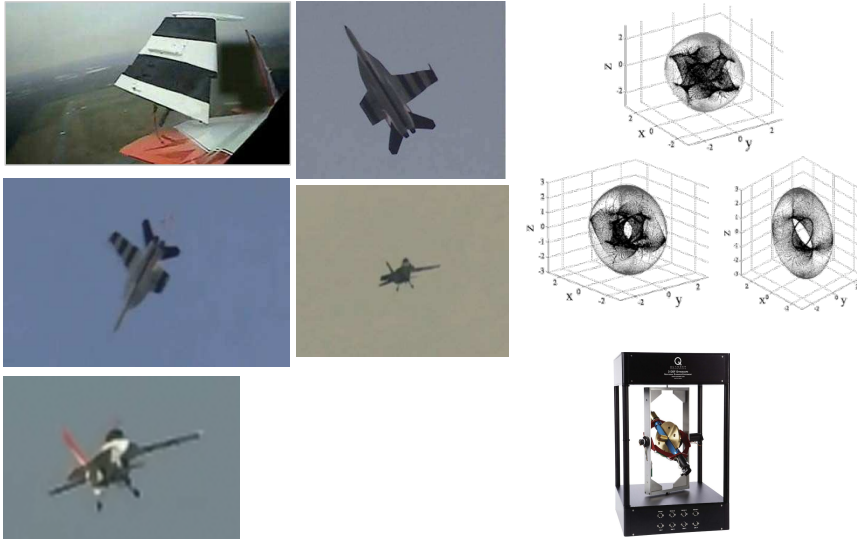
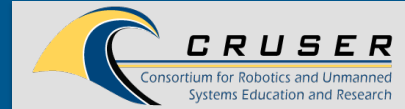


Deterministic Artificial Intelligence for Surmounting Battle Damage



A.I. overcoming significant battle damage actuators

Non-propulsive maneuvering

- Thesis students will be solicited on a continual basis
- One trip to present and defend research findings at conference, including seeking collaboration; leading to at least one professional journal article during this period-of-performance.
 - Findings should at least include the limits of autonomous ability to recover from battle damage without human intervention and articulation of the methodology; and also must include investigation of non-propulsive maneuvering technologies.
- Next year, experimental validation is planned using CAVR vehicles following the successful implementation of this year's research. That effort will comprise follow-on research to be submitted to CRUSER next year.

- Develop new deterministic artificial intelligent (A.I.) methods for unmanned undersea vehicles to autonomously navigate, track trajectories, avoid submersed obstacles, and recover from battle damage without human intervention including zero-propulsive maneuvering. These novel methods have very recently been demonstrated on naval fighter aircraft and also spacecraft, but not yet to unmanned undersea or surface vehicles.

- This research seeks to advance autonomous ocean vehicles capabilities, leveraging deterministic A.I. and non-propulsive maneuvering to continue combat operations despite significant battle damage.
- Unmanned portions of force packages must be a viable first response option for operational Commanders, and therefore must demonstrate robust abilities in battle akin manned systems.
- Persistent and sustained surface and undersea capabilities require a family of multi-domain, hybrid and agile unmanned systems designed from the outset to operate in wartime conditions
- Addressing ASN RD&A's strategic imperative to exploit emergent unmanned & autonomous technology will unleash revolutionary capabilities for naval forces



FY19 Call for Proposals

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