

*FY2003/2004 JHU/APL Thesis Topics*  
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**Air Munitions Scheduling**

Build a decision tool that considers scheduling of munitions for air sorties, considering the decision time cycle, benefit of particular munitions and risk of non-use.

POC: Dr. Alan Zimm, 240-228-5462

**NSFS Ammunition Requirements**

Develop a methodology for determining how much ammunition should be purchased for NSFS gun systems, based on threat, effectiveness, training requirements and cost.

POC: Dr. Alan Zimm, 240-228-5462

**Optimization of munitions-target matching**

Develop guidance for selection of primary and alternate munition-target pairs to optimize the value of fire support and minimize cost.

POC: Dr. Alan Zimm, 240-228-5462

**Modeling C2 of Autonomous Vehicles**

The military is working to push robotic combat vehicles forward in the battle space. These vehicles must interpret their environment, interact and make decisions without direct human control. Develop and examine potential rule sets for behavior and control.

POC: Mr. Jim Hillman, 240-228-8659

**Fusion of Heterogeneous Sensor Data**

The military uses many sensor platforms. Integrating (fusing) information to produce engagement quality data is essential for interoperability. Develop a methodology for combining sensor and track data from disparate sources into quality threat representations.

POC: Mr. Jim Hillman, 240-228-8659

**Optimizing Non-linear Searches**

Develop a method through which simulation and optimization software work iteratively to efficiently search a solution space for optimal results.

POC: Mr. Scott Simpkins, 240-228-3718

**Precision Fires vs. Volume Fires**

Weapon deliveries are becoming increasingly precise, fostering the idea that small quantities of precision munitions (precision fires) should replace large quantities of conventional, unguided weapons (volume fires). Determine the best kind of fires for each kind of mission.

POC: Mr. Alex Ihde, 240-228-4122

**Improving composability of mission-level simulations**

Select two or three different simulations (in topic and construction) and analyze their composability. Assess the feasibility of applying appropriate composability techniques. Recommend to the simulation community methods of improving composability.

POC: Dr. Jim Coolahan, 240-228-5155

**Examine Universal Simulation Scenario Description Language**

Implement a single point of scenario entry that can be used universally across various simulation federates.

POC: Dr. Joe Kovalchik, 240-228-6264