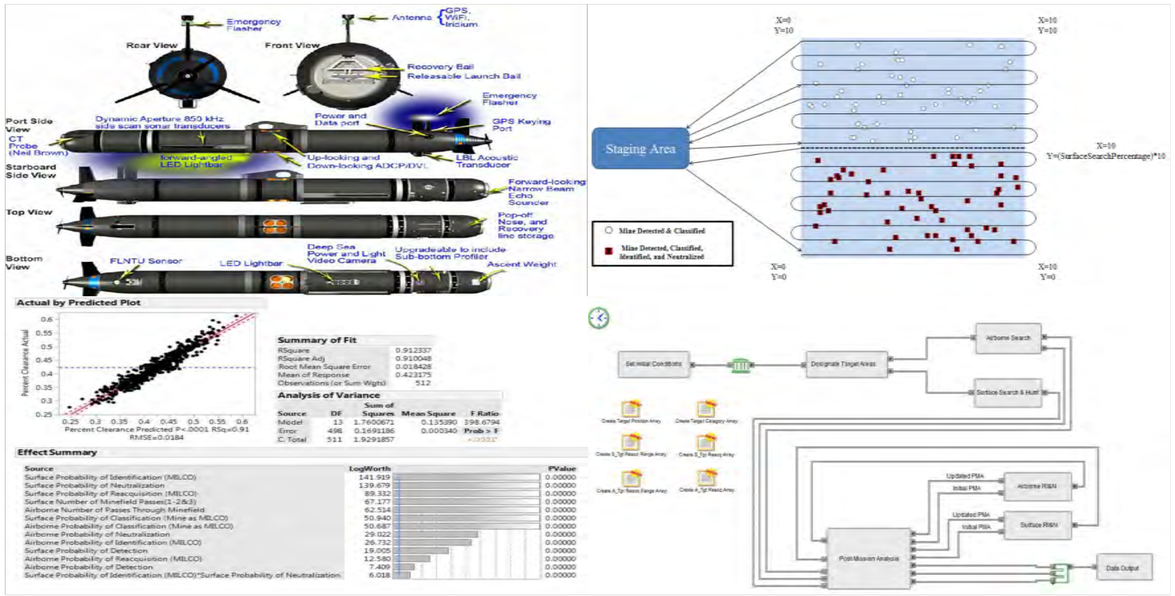
Investigation of Requirements and Capabilities of Next Generation Mine Warfare Unmanned Underwater Vehicles

Naval Postgraduate School



Clockwise from top left: Mk 18 Mod2, Conceptual Simulation, UUV Operational Simulation, Analysis Example

What?

- The U.S. Navy formally cancelled the Remote Minehunting System (RMS) component of the Littoral Combat Ship (LCS) Mine Countermeasures (MCM) mission package on 24 March 2016
  - This leaves a potential capability gap
- The Mark 18 Mod 2, an existing Unmanned Underwater Vehicle (UUV), has been used successfully to replicate some of the intended operational MCM capabilities of the RMS
- This research develops an in-depth operational simulation capable of representing the operational performance of the Mark 18 Mod 2, comparing it to existing systems, and identifying key performance parameters and operational implementation decisions

How?

- Analytic and Architectural System Descriptions
  - Identification of requirements, functions, sequencing, and operational procedures to develop measures of effectiveness (MOEs)
  - Identification of physical system components
- Model Construction and Analysis
  - Development of an operational simulation (discrete event model)
  - Compare mine countermeasures (MCM) capable unmanned underwater vehicles (UUVs) to legacy systems
  - Identify key performance drivers and operational decisions for MCM capable UUVs

Why?

- By conducting a detailed performance analysis of the Mark 18 Mod 2 (and potential variations) this study demonstrates:
  - An analytical comparison of MCM capable UUVs vs. existing MCM systems
  - The key performance parameters and operational decisions that have the largest impact on operational effectiveness of MCM capable UUVs
  - This demonstrates the potential operational utility of UUVs in an MCM environment
  - This identifies the characteristics and implementation strategies for MCM capable UUVs to ensure maximum operational effectiveness

CRUSER Consortium for Robotics and Unmanned Systems Education and Research

FY17 Call for Proposals

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