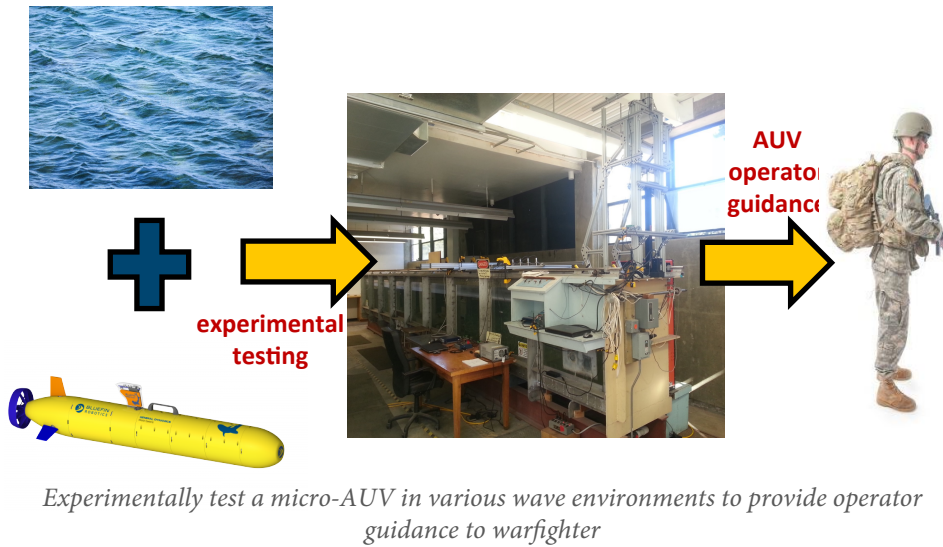
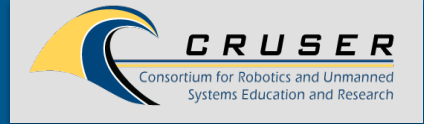


Identification of Wave Environments that Degrade the Performance of AUVs Operating Near-Surface



METHODOLOGY

- Multi-disciplinary approach involving the SE and MAE departments and incorporating hydrodynamics, autonomy, and controls in experimental testing
 - Testing a man-portable Bluefin Robotics SandShark micro-AUV
 - **Investigate how wave environments degrades the ability of the AUV to maintain desired speed, depth, and heading**
 - Continues the creation of a new Navy relevant research program by NPS faculty with involvement from students:
 - 3 previous MS theses students
 - 2 previous STEM summer inters
- Follow-on work partnerships with NSWC-Carderock and UC-Berkeley possible

BACKGROUND

- Growing U.S. Navy interest to increase the use of autonomous underwater vehicles in a wide range of operational missions to support the warfighter
- Currently AUVs used primarily in deep-water mission operations
 - Degraded performance occurs due to strong underwater currents
- Next generation of missions will require AUVs to operate near-surface in waves
 - Missions include ISR, networked communication, and near-shore operations
 - **Unknown how severe degraded performance will be due to wave-induced loads in certain wave environments**
- Naval Postgraduate School has the tools required to address this issue:
 - New wave-generating tow tank in Halligan Hall
 - Currently unused micro-AUV resides on campus

IMPORTANCE

- Warfighter is increasingly depending on unmanned systems to support operations
 - One such system is man-portable micro-AUVs
 - It is critical that the warfighter understand how the operating environment of the micro-AUV will potentially degrade its performance
 - **Degraded performance may cause the AUV to be unable to complete its required mission and put the warfighter at risk**
- Research outcomes:
 - Provide degraded performance guidelines based on current wave environment to micro-AUV operators
 - Ultimately ensures micro-AUV performance is able to support the warfighter as expected



FY19 Call for Proposals

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