

Department of the Navy SBIR/STTR Transition Program

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NAVSEA #2023-0716

Topic # N201-027
Artificial Intelligence Software-Based Autonomous Battle-space Monitoring Agent for a
Distributed Common Operational Picture Software Subsystem
Daniel H. Wagner Associates, Incorporated

WHO

SYSCOM: NAVSEA
Sponsoring Program: PEO IWS 1.0
Transition Target: AEGIS / ICS
TPOC: (540) 653-3052
Other Transition Opportunities: Submarine
Surface Ship
Aircraft Carrier

Notes: AI: Artificial Intelligence
ML: Machine Learning
RL: Reinforcement Learning
SA: Situational Awareness
DCOP: Distributed Common Operating Picture
SABM: Software-based Autonomous Battle-space
Monitoring
LM-RMS: Lockheed-Martin Rotary and Mission Systems
SENSIS: Sensitivity Analysis (Modeling & Simulation Tool)



Inside the CIC aboard the cruiser USS Normandy (CG-60). , Courtesy USN

WHAT

Operational Need and Improvement: The Distributed Common Operating Picture (DCOP) represents information that must be analyzed and interpreted manually. Intelligent automation is needed to ensure optimal, timely decision-making.
Specifications Required: Develop a Software-based Autonomous Battle-space Monitoring (SABM) Agent with the capability to augment and assist combat systems operators and watchstanders in maintaining SA and successfully executing their mission. Integrate with the AEGIS combat system.
Technology Developed: Enhancements to LM-RMS SENSIS. Software for defining mission accomplishment as an RL goal. Software to train Deep Neural Networks for optimal decision-making.
Warfighter Value: Automated optimal decision making. Customized alerts based on optimal decision making.

WHEN

Contract Number: N68335-22-C-0109 **Ending on:** Nov 24, 2023

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Lab Demonstration	Medium	More correct and timely decision making, when compared to human decision maker.	4	1st QTR FY24
Land-Based Test Site Integration	Medium	More correct and timely decision making, when compared to human decision maker.	6	3rd QTR FY24

HOW

Projected Business Model: Continue to work with government sponsor to identify instances of sub-optimal decision making; formulate these problems as RL problems and solve them (i.e., determine the optimal decision making rules). Identify additional customers that could benefit from this technology and integrate it with their domain-specific Modeling and Simulation tools.
Company Objectives: The company objective is to become a trusted provider of reinforcement learning tools to the NAVY and other customers.
Potential Commercial Applications: AI is defined as the ability to learn to make decisions to achieve goals. RL is a general purpose framework for performing AI. Applications of RL include: self-driving cars, industrial optimization, financial optimization, medical diagnosis and treatment, news recommendation, gaming, and robotics.

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