COMBINING AI WITH M&S TO MEET EMERGING MILITARY CHALLENGES

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ABSTRACT

The U.S. is returning to a state of great power competition. The U.S. military must once again contend with near-peer adversaries that can bring to bear advanced weapon systems that are used in coordination with diplomatic, information, military, and economic (DIME) instruments of national power. In response to these challenges, the U.S. military is turning to new concepts of warfare such as Multi-Domain Operations (MDO) and Joint All-Domain Command and Control (JADC2). These concepts seek to orchestrate capabilities more tightly across domains (land, air, maritime, space, and cyberspace) as a means to converge effects rapidly and dynamically. This approach to warfare can provide U.S. commanders with a greater variety of options while presenting an adversary with multiple simultaneous dilemmas; however, it can also present U.S. commanders and their staffs with a far more complex battlespace and much shorter planning and decision timelines than they have faced in the past. The U.S. Department of Defense is looking to artificial intelligence (AI) and machine learning (ML) as potential technologies to support the execution of MDO and JADC2. AI and ML are often combined with models and simulations (M&S) to provide enhanced capabilities. This talk will present different configurations that combine AI/ML with M&S and discuss their potential military applications. It will conclude with a presentation of a prototype course of action (COA) analysis tool that has been developed for the Army, including the specific way this tool combines AI with M&S and future work that will enable it to better support MDO and JADC2.

AUTHOR BIOGRAPHY

PETER SCHWARTZ is a Principal Artificial Intelligence Engineer for the MITRE Corporation in the Artificial Intelligence & Autonomous Systems department where he serves as the Artificial Intelligence Joint & Services Domain SME. He supports multiple Department of Defense sponsors as an AI subject matter expert, leads MITRE's Army AI Community of Practice, and serves as the AI Domain Capability Area Lead for MITRE's Army Program. He has taught AI for the MITRE Institute and has served on a variety of AI panels and conference committees. Before joining MITRE in 2016, he was a Senior Data Scientist at Penn Medicine, and before that he was a Senior Mathematician at ORSA Corporation. He received a Ph.D. in computer science and intelligent systems from the University Michigan in 2007, and a B.S. in computer science and a B.A. in psychology from the University of Maryland in 2001.