Lockheed Martin Demonstrates Air Space Control Software That Mimics Human Tasks

DARPA Authorizes Phase-II Research and Development

PRNewswire
CHERRY HILL, N.J.

The Defense Advanced Research Projects Agency (DARPA) has approved Lockheed Martin's Generalized Integrated Learning Architecture (GILA) for Phase II. Developed by Lockheed Martin's Advanced Technology Laboratories (ATL) under a $22 million, 48-month contract, GILA will help U.S. Air Force planners leverage the skills of expert operators to better control air space over a battlefield and to transfer expert knowledge to inexperienced personnel.

Planners in air operations centers use Airspace Control Orders (ACO) to deconflict the spaces in which manned and unmanned aerial vehicles (UAVs) and weapons operate. Improper deconfliction endangers pilots and reduces the effectiveness of aerial assets. Adding to the difficulty are frequent rotations of personnel and reductions in staff. GILA will help create ACOs by automatically learning the planner's tasks from an expert -- often by using only one example. GILA technology could extend to other planning processes, significantly improving the U.S. Air Force's capability to rapidly and safely use large numbers of manned and unmanned aircraft and weapons.

The decision to proceed to Phase II was instigated by a successful "Go/No- Go" test, which measured GILA's performance on a variety of air operations scenarios. A statistical analysis done by an independent, DARPA-selected contractor showed that GILA performed consistently above expectations.

Phase II will be a 12-month, $5.2-million effort. ATL will expand the scope of the domain problem to include more aspects of military air operations. It will also extend GILA's learning and reasoning capability so it can perform on par with a human novice with the goal of eventually exceeding human performance.

Lockheed Martin ATL leads the team that includes Lockheed Martin Information Systems and Global Services, University of Maryland, Georgia Institute of Technology, Georgia Tech Research Institute, University of Illinois, Arizona State University, University of Massachusetts, University of Wyoming, Oregon State University, Rensselaer Polytechnic Institute, and Fujitsu Laboratories of America.

ATL is using advanced machine learning and planning research from top university teammates on U.S. Air Force systems and processes provided by Lockheed Martin IS&GS, Colorado Springs, CO. The goal is to then integrate the results into tools for military planners, starting with WEBAD -- a web-based tool for airspace deconfliction.

Headquartered in Bethesda, Md., Lockheed Martin employs about 140,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. The Corporation reported 2007 sales of $41.9 billion.

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