

A Workshop/Tutorial proposal for the

IEEE International Symposium on Robot and Human Interactive
Communication (IEEE RO-MAN 2016)

New York, USA, August 26-31, 2016.

Title

Applying HRI Research to the Defense Sector: Human-Agent Teams

Format

Workshop – half-day

Main organizer

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Statement of objectives – intended audience

Human-agent teaming is a primary area of investment across the U.S. Department of Defense (DoD) and international defense sectors. As with industry, a new paradigm for agent systems is symbiotic cognitive learning systems, where the human and agent collectively and seamlessly learn, adapt and collaboratively perform complex cognitive tasks instead of, or in addition to, procedural action-oriented tasks – The agent functions and is perceived as a teammate. The new vision for U.S. Army ground robotics is “robot as a member of the unit.” The U.S. Airforce is targeting “synergistic airman-autonomy teams.” The U.S. Navy’s goal is a hybrid force of “heterogeneous unmanned/manned naval systems.” These goals/visions of the future go well beyond the traditional brittle automation paradigms with limited capabilities or consideration of human operators. As such, novel, multimodal, interdisciplinary, and systems-driven approaches are required. First and fundamentally, on the agent side, artificial intelligence, multi-agent systems, robotics, machine vision, natural language processing, speech technologies, human-computer interaction, social computing, user experience and interactive design are key areas of consideration. Second, greater attention will need to be given to the human side of the equation. Integration of theories and evidence from the behavioral, biological and social sciences such as cognitive science, neuroscience, physiology, social psychology, human factors and organizational psychology (teams and training) must be considered. The intent of this workshop is to present details of this vision to the HRI community and elicit feedback and interest in this DoD research priority area.

Target audience: *Target audience will be HRI researchers interested in the broader context of human-agent teaming/collaboration beyond (but not excluding) joint-action considerations. It may be particularly informative for HRI researchers interested in applying their research to the defense sector and getting exposure to program managers.*

List of speakers

*Reza Ghanadan, PhD, Defense Advanced Research Projects Agency
Benjamin Knott, PhD, Air Force Office of Scientific Research
Micah Clark, PhD, Office of Naval Research
James Overholt, PhD, Air Force Research Laboratory
Gregory Trafton, PhD, Navy Research Laboratory
Jessie Chen, PhD, Army Research Laboratory & NATO RTO
Mark Neerincx, PhD, Delft University of Technology & NATO RTO
Kevin Oden, PhD, Lockheed Martin*

Panel presentation and discussion (3hrs): *Program Managers and researchers across international defense departments will highlight their respective organization’s research interests, challenges, findings, and program goals related to HRI. The intent of the panel session is to bring together a wide representation of government defense interest areas for the HRI community, highlighting common themes and potential synergies across the various research programs. The panel session will include open discussion, allowing audience members to ask questions and discuss future research with Program Managers.*

Open discussion (1hr): *Open discussion will be permitted throughout the day, but the final hour will be held for group discussion. In addition to audience-directed questions, topic prompts may include: identified similarities/potential synergies, research gaps noticed,*

critical first-steps (considering near and long-term goals), and key components in evaluative systems for human-agent teaming (i.e., systems-driven perspective to the verification and validation process).

List of topics

Human-agent teaming/collaboration

Multi-agent systems

Multimodal assessment technologies

Social cognitive systems

Training and simulation