



December 10, 2021

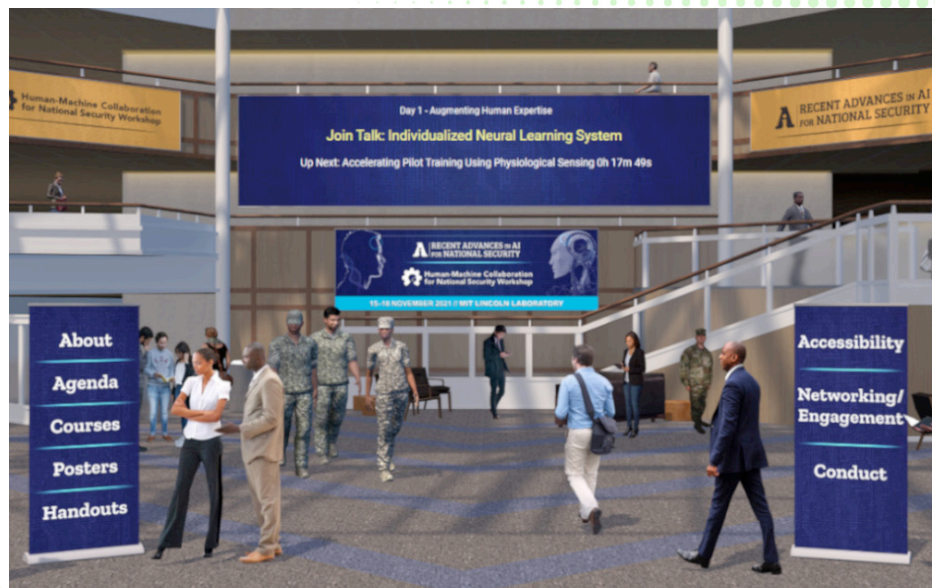
Laboratory Workshops Highlight Use of Artificial Intelligence in National Security

Division 5: Cyber Security and Information Sciences | Lincoln Laboratory

Artificial intelligence (AI) is a rapidly developing field, and engineers and scientists around the world are working to use AI to enhance existing technologies or develop entirely new ones. Teams at the Laboratory are no exception, and are using AI to address national security challenges in collaboration with other organizations.

To facilitate this research and promote collaboration with other organizations, the Laboratory virtually hosted the third annual Recent Advances in Artificial Intelligence for National Security (RAAINS) and Human-Machine Collaboration for National Security (HMC) workshops from 15–18 November. More than 650 attendees from 222 organizations representing government, national laboratories, industry, military, and academia joined the workshops to hear about the work the Laboratory is doing in these areas as well as share their own work in these areas.

The theme of this year's HMC workshop was "Human-Centered AI." The Department of Defense (DoD) and other national security organizations have recently highlighted this as a crucial focus for AI research and development, and also have called for a focus on AI ethics and reliability as AI increasingly becomes an equal partner in



Technical Communications personnel assisted in creating interactive posters and a virtual lobby, which was also used last year, for the two workshops.

important national security work.

"Our sponsors are looking for us to learn more about recent advances in these areas, and how they translate into their mission space," said Diane Staheli, Assistant Group Leader, Artificial Intelligence Technology, Group 01, who was a co-chair of HMC. "These events facilitate connections among a diverse group of attendees across the government, which leads to improved mission outcomes as well as opportunities for the Laboratory and our collaborators to have a greater impact."

The RAAINS workshop was designed to "bring together a community of AI researchers, practitioners, and users," said Dr. Sanjeev Mohindra, Group Leader, Group 01, who was a co-chair of RAAINS. Keynotes opened each day of the workshop, including a keynote address from retired General Stephen Wilson, formerly the Vice Chief of Staff of the U.S. Air Force; a presentation titled "Ethics and AI Engineering" from Matthew Gaston, director of the AI Division and Emerging Technology



Laboratory Workshops Highlight Use of Artificial Intelligence in National Security (continued)

Center at Carnegie Mellon's Software Engineering Institute; and a presentation titled "Augmenting Intelligence using Machines" from John Beieler, science and technology director at the Office of the Director of National Intelligence.

RAAINS focused on ethical issues around AI as well as human-machine teaming. The workshop also highlighted large AI training models that could be easily adapted for DoD applications, reducing the need to develop and train custom models, which takes a large investment of time and resources. With an even wider range of topics, the third day of RAAINS featured classified sessions, a new challenge for organizers due to the online format of the workshop.

"These sessions provided a unique opportunity for attendees to learn about classified mission applications of AI and follow up with presenters to address their needs," said Dr. Joseph Campbell, Group Leader, Artificial Intelligence Technology and Systems, Group 52, who was a co-chair of RAAINS.

"I was really grateful to get in for the classified sessions," said an attendee from the National Security Agency. "It's hard to fathom how much work goes into a conference like this!"

Like past years, the Laboratory also offered optional courses in the days leading up to the workshops that offered introductions to AI topics like natural language processing, human-machine teaming, and AI ethics. This allowed attendees to either refresh their knowledge or learn more about an area they may not have been as familiar with.

This year, RAAINS and HMC organizers worked to make the workshops more accessible to people with disabilities by hosting 35 technical posters online in an ADA-compliant format. The website provided descriptions of graphics and ensured the posters could be interpreted by screen readers

and other accessibility tools. In addition, both workshops as well as the courses had real-time closed captions for all but the classified sessions and posters.

"Although there are more advances to be made in this area, the accessibility offerings at this event represent a novel approach to how the Laboratory can host workshops in a more inclusive way," said Michelle Lloyd, Radio Frequency Technology, Group 86, who served as the accessibility chair of both workshops.

Past HMC workshops have led to new collaborations between the Laboratory and other organizations. As a result of expertise demonstrated at the 2020 HMC workshop, the Laboratory was invited to contribute to a study that explored how the U.S., United Kingdom, and French Air Forces could better utilize human-machine teaming to gain a strategic advantage.

"The workshops provide a unique forum for DoD researchers, program managers, and stakeholders to learn more about the latest events and trends in AI as they relate to national security," said Dr. William Streilein, Principal Staff, Biotechnology and Human Systems, Division 2, who was a co-chair of RAAINS. "Specifically, we can compile best practices in areas like robustness and fair and ethical AI that can be leveraged by others going forward."