

AI Will Give Pilots an Unmanned Wingman, Pentagon Officials Say



An F-16 Fighting Falcon from the 36th Fighter Squadron at Osan Air Base, South Korea, lands in Singapore. Future aircraft could fly with the aid of artificial intelligence. U.S. Air Force / Master Sgt. Val Gempis

ARLINGTON, Va. — Despite rapid advances in artificial intelligence (AI), including the recent defeat of a human fighter pilot in a virtual dogfight, AI won't replace combat pilots, but team up with them in the future, a top U.S. Defense Department research and engineering official says.

An AI algorithm developed by Heron Systems, operating an F-16 simulator defeated an experienced F-16 fighter pilot in all five rounds of virtual air combat Aug. 20. The Alpha Dogfight Trials were the culmination of a year-long competition originally involving eight teams, as part of the Defense Advanced Research Projects Agency (DARPA) Air Combat Evolution program.

"I don't see human fighter pilots being phased out. I see their effectiveness being enhanced by cooperation with artificial intelligence systems," Dr. Mark J. Lewis, the Acting Deputy Under Secretary of Defense for Research and Engineering, DUSD(R&E), said Sept. 10 at the virtual Defense News Conference.

While the simulation's conditions were not a completely realistic version of aerial combat — the Heron system did maneuvers and took shots no human pilot would — its 5-0 score in five matches was an impressive step in research on automation in air combat and developing trust in AI systems.

“The key takeaway was the artificial intelligence system did so well because it wasn’t so concerned about self-preservation. It was willing to do things that a human pilot wouldn’t do and that’s the advantage of artificial intelligence,” said Lewis, who as acting deputy undersecretary oversees DARPA activities. “And so, I think the real answer is teaming AI with the human for the combination of both. I’m pretty confident we’re going to have human pilots into the future,” said Lewis, who is also Director of Defense Research and Engineering for Modernization.

A day earlier, at the opening of the Pentagon’s Artificial Intelligence Symposium, Defense Secretary Mark Esper said the AI-controlled competitor’s victories was “an example of the tectonic impact of machine learning on the future of warfighting.” Esper said DARPA’s simulations will continue in a “real-world competition” with full-scale tactical aircraft operated by human pilots versus AI in 2024.

Rather than replacing humans, “we see AI as a tool to free up resources, time, and manpower so our people can focus on higher priority tasks, and arrive at the decision point, whether in a lab or on the battlefield, faster and more precise than the competition,” Esper said.

Acting DARPA Director Dr. Peter Highnam sounded a similar note Sept. 9, at the Unmanned Systems Defense, Protection, Security virtual conference hosted by the Association of Unmanned Vehicle Systems International (AUVSI). The agency’s original vision for AI, he said, was “to turn a room full of metal teletypes, spinning tapes and computers into that wingman, that trusted partner.”