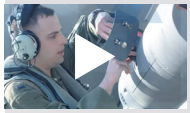
DIGITAL MEDIA SPOTLIGHT

Rotating Detonation Engines

Learn about AFRL's work with rotating detonation engines, or RDEs, and discover how this compact and efficient method creates thrust for a variety of relevant military systems. These mechanically simple engines have no moving parts and are potentially lower cost and simpler to manufacture than gas turbines, enabling a wide range of military propulsion applications. **Watch Here**

Fusion-based Target Recognition Systems



Learn about AFRL's work with single sensor automatic target recognition systems (ATRs) which are less robust to natural and adversary-induced, difficult deployment conditions. Multi-sensor fusion provides robustness as different sensors have complementary capabilities to varied conditions. Fusion combines information from sensors to enhance warfighter capabilities with improved performance. **Watch Here**

AFRL Lab Life - Episode 72: Trek to AFOSR

Col. Janelle Jackson, deputy director and Detachment 14 commander of the Air Force Office Scientific Research, or AFOSR, discusses AFOSR's worldwide operations and the engineers, actors and family members who inspired her education and career. **Listen Here** | **Read More**

MEDIA ARTICLES

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TOP NEWS STORY

DOD A.I. AGENTS SUCCESSFULLY PILOT FIGHTER JET

EDWARDS AFB, CA — A joint Department of Defense team executed 12 flight tests in which artificial intelligence, or AI, agents piloted the X-62A Variable Stability In-Flight Simulator Test Aircraft, or VISTA, to perform advanced fighter maneuvers at Edwards Air Force Base, Calif., Dec. 1-16, 2022. Supporting organizations included the U.S. Air Force Test Center, the Air Force Research Laboratory, or AFRL, and Defense Advanced Research Projects Agency, or DARPA. "This is a historic first demonstrating advanced tactical AI capabilities on a live fighter jet," said AFRL Commander Maj. Gen. Heather Pringle. "The strong partnership with DARPA and AFTC made this achievement possible and is key to advancing our capabilities." AFRL's Autonomous Air Combat Operations, or AACO, and DARPA's Air Combat Evolution, or ACE, AI-driven autonomy agents piloted the U.S. Air Force Test Pilot School's X-62A VISTA to perform advanced fighter maneuvers. AACO's AI agents performed one-on-one beyond-visual-range engagements against a simulated adversary, and ACE's AI agents performed within-visual-range maneuvering, known as dogfighting, against constructive AI agents. Both teams' AI agents executed autonomous tactical maneuvering while maintaining real-world airspace boundaries and optimizing aircraft performance. **Full Story**

PEOPLE OF AFRL

When fans were watching the Jan. 2, 2023 football game between the Buffalo Bills and the Cincinnati Bengals, **Lt. Col. Valerie Sams**, an Air Force surgeon, was on call at UC Health's University of Cincinnati Medical Center not knowing what she was about to face. That night, Buffalo Bills' safety, Damar Hamlin's heart stopped during the game and he was immediately rushed to the hospital and directly into Sams' care. Relying on her experience and extensive training, Sams worked with her UC Medical Center colleagues to care for Hamlin during his time in the hospital's Surgical Intensive Care Unit. "We have taken care of a lot of patients in the military similar to Damar Hamlin, and it is just a basic skill set in critical care," said Sams. **Read More**

AFRL PARTNERS WITH NASA IN CUBESAT NAVIGATION, COMMUNICATION MISSION

KIRTLAND AFB, NM — AFRL's newest sensor experiment deployed from the International Space Station Dec. 29, 2022, hosted on NASA's six-unit cube satellite named petitSat, or Plasma Enhancements in the Ionosphere-Thermosphere Satellite. The CubeSat's mission is to study a layer in Earth's upper atmosphere known as the ionosphere to provide insight into space weather disturbances and their impact on navigation and communication systems. AFRL's sensor, developed at the enterprise's Space Vehicles Directorate, is named Gridded Retarding Ion Drift Sensor, or GRIDS, and is one of two main sensors flying on the mission. The GRIDS sensor is a low size, weight and power sensor built in-house over the past two years that will measure various ions in the ionosphere. "This experiment will increase our fundamental understanding of how the ionosphere works and allow us to determine operational models and strategies to increase the resiliency of the Space Force's space-based assets," said Ryan Davidson, AFRL senior research physicist and program manager for the experiment. "The GRIDS sensor is designed to measure how much plasma is present in the atmosphere and in what direction it is moving." **Full Story**

US REP. MIKE TURNER VISITS AFRL FACILITY

WPAFB, OH — Congressman Mike Turner, who represents Ohio's 10th Congressional District, visited Wright-Patterson Air Force Base's Air Force Research Laboratory, or AFRL, Feb. 13, 2023, for a tour of the Materials and Manufacturing Directorate. Darrell K. Phillipson, Materials and Manufacturing Directorate director, greeted Turner at a Wright Brothers Institute location prior to accompanying him on base. "This visit was an opportunity to showcase some of the talent and recent advancements in the research that help to strengthen our military and sustain our nation's defense," Phillipson said. "I am proud of the energy and effort that our team here in the Materials and Manufacturing Directorate consistently puts forth to help make our organization, and AFRL, the best they can be." AFRL Executive Director Timothy Sakulich also welcomed Turner to the facility, where Phillipson and representatives from the Photonics, Electronics and Soft Matter Division hosted the tour. "The Air Force Research Laboratory plays an essential role in delivering, scaling and integrating emerging technologies into operational warfighting capabilities," Turner said in an official statement to AFRL following his visit. "As our adversaries continue to challenge U.S. influence through technology, it's critical that the lab has the necessary resources to accelerate and deliver these critical programs directly to our warfighter." **Full Story**