OAK RIDGE National Laboratory



RESILIENT, AUTONOMOUS, AND INTELLIGENT SYSTEMS

Autonomous Solutions for Geospatial Challenges

MISSION

Accelerate the adoption and protection of autonomous system research, development, engineering, and operations to support national security missions

Autonomous and uncrewed systems are accelerating the way we acquire, exploit, understand and interact with our environment, especially on battlefields and in austere locations. Effective autonomous systems combine the world's most advanced computational technologies to reach previously unreachable areas and provide insights into the world around us.

IMPACT

Autonomous systems equipped with edge computing capabilities enable disaster recovery assistance after hurricanes by assessing energy infrastructure damage, geolocating detected features of interest, and transmitting damage assessment results over constrained communication.

In partnership with ORNL manufacturing experts, the ORNL autonomous systems team is developing agile, containerized manufacturing of UAS to produce UAS tailored to mission needs at the mission site.

ORNL KEY DIFFERENTIATORS

Custom Vehicle Development – Our engineers design and build custom uncrewed and remotely operated vehicles for a variety of government and national security applications.

Computing at the Edge and Data Management Technology – Next-generation UxS manage computational needs data in the field. ORNL scientists and engineers have developed technology such as Mapster, designed to address the challenges associated with managing large amount of disparate data sources. Ongoing research in areas such as Tiny ML continue to push computational proficiency in resource-constrained environments.

Next-Generation Networked Communication Technology – Engineers and software developers at ORNL have unique experience with developing next-generation multi-modal communication systems such as ORNL-developed MAVNet, enabling truly global command and control of uncrewed systems in a size, weight, and power constrained environment.

Test, Evaluation, and Training – ORNL has the most diverse fleet and one of the largest and most experienced teams of operators within the US Department of Energy which provide test and evaluation support for many different aircraft and payloads. Our staff consist of multiple FAA and manufacturer certified instructors with specialized experience in operating in operationally relevant and austere environments.

Remote Sensing, Mapping, and Geospatial Science – Leveraging ORNL's expertise in geospatial science, our scientists conduct remote sensing and geospatial research using a variety of custom and commercial sensors to answer questions in support of the national security mission.







CONTACT:

Andrew Duncan
Autonomous Systems Group Leader
duncanam@ornl.gov

One Bethel Valley Road
Oak Ridge, TN 37831

U.S. DEPARTMENT of ENERGY | Office of Science

OAK RIDGE National Laboratory

www.ornl.gov jobs.ornl.gov

Oak Ridge National Laboratory is managed by UT-Battelle LLC for the US Department of Energy