OTHER FACILITIES

Open Air UAS Flight - an ability supported by the UMD UAS Research and Operations Center (UROC). Operating processes are already in place to fly Uncrewed Aircraft Systems (UAS) within the airport environment and other areas.

Project Assembly Area - a space to create and collaborate. Several workstations are available for reservation.

Students learn 3-D modeling software to print projects at UMD STEM summer camp.

Project Transport Rail - an asset that carries projects through the stages of design and production, and testing and evaluation. The rail has a one-ton capacity and runs the full length of the MATRIX Lab.

Rooftop Antenna Farm - a resource that works with the Open Air-Land Lab. The antennas create a connection to the outside world and support external environment testing.

Collaboration and Post-Doctoral Spaces - areas to openly collaborate or quietly work. Several desks are available for reservation.

ENGINEERING SPACES

- Mechanical Engineering Lab with small wind tunnel
- Electrical Engineering and Microelectronics Labs
- 3D Printing Workshop with Markforged metal 3D printing system
- Electronics Shop with three-step pick-and-place system and printed circuit board prototyping machine
- Metallic and Non-Metallic Machine Shops

DEDICATED SPACE

A multi-purpose facility for basic, applied, and operational research, plus education and outreach. Its unique features are made to advance autonomy and uncrewed systems. The single space for innovation is one of the most recent additions to the state's "autonomy corridor."

TECHNOLOGY EDUCATION HUB

We bring the University System of Maryland's expertise and opportunities to Southern Maryland students, workers, and communities. It is the only USM regional education center to house a research component. Its flexible space can be used for both undergraduate and graduate technology education.

INTEGRATION

The MATRIX Lab provides space for energizing talent, ideas, and resources, plus fostering new relationships and growing current partnerships in research, education, and economic development. It aims to advance equity and foster skills that lead to high-demand careers with family-sustaining wages.

OUTREACH

The MATRIX Lab has a mission to engage with local public schools, colleges, and community groups to provide STEM exposure that leads to job opportunites. We invite students to tour the lab and offer activities and camps. We also participate in community events.

A. James Clark School of Engineering
MATRIX LAB

USMSM
University System of Maryland at Southern Maryland

MATRIX.UMD.EDU

USMSM SMART Building
44219 Airport Rd.
California, MD 20619

For more information:
Lauren Bacon
lbacon1@umd.edu
717.875.3313

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UNIVERSITY OF MARYLAND

MATRIX Lab

MARYLAND AUTONOMOUS TECHNOLOGIES RESEARCH INNOVATION AND EXPLORATION

A new Southern Maryland hub for autonomous technologies and systems research is sparking innovation and building bridges for partnerships in research, education, and economic development.

NAWCAD employee and former UMD Terp works on drone project.

The SMART Building in St. Mary's County, Md., is a joint effort of the University of Maryland (UMD) and the University System of Maryland at Southern Maryland (USMSM). This single space for innovation is one of the most recent additions to the state's "autonomy corridor" and is the home of the UMD MATRIX Lab.

"Brains-on" activity with Hollywood Elementary at STEM 4 All event.

OPEN AIR-LAND LAB

The Open Air-Land Lab is one of the largest labs of its kind in the country. The 80' by 60' space has a minimum 30' ceiling. It is radio frequency (RF) attenuated to allow for GPS and other RF testing while protecting both internal systems and the external airport environment. The lab's two-level, 40-camera Vicon Vantage V16 system has sub-millimeter accuracy. The in-floor water tank allows for water interface testing. The Open Air-Land Lab is an ideal space for flying indoor drones, and testing outdoor drones.

Tech company Shield AI using the Open Air-Land Lab to demonstrate its Nova 2 drone.

HYDROLOGY LAB

The Hydrology Lab is home to the largest water tunnel in the state of Maryland outside NSWC Carderock. It has a capacity of 17,945 gallons, an 80 cm by 130 cm flow visualization test section, and one other viewing window. The lab has a Particle Image Velocimetry (PIV) Laser Measurement system for gathering data, and can be used for aerodynamic and hydrodynamic research. The MATRIX Lab's Project Transport Rail runs through the Hydrology Lab, allowing researchers to easily bring components in and out of the lab space.

The Hydrology Lab water tunnel operates at 0.15 m/s (0.49 fps) to 1.50 m/s (4.92 fps)

OUTDOOR UGV PLAYGROUND

The Outdoor UGV Playground, right outside of the Open Air-Land Lab, is a 750 square foot rock garden comprised of man-made obstacles with varying degrees of difficulty for uncrewed ground vehicles to navigate. The rural location also allows for testing in forest environments.

ANECHOIC CHAMBER

The Anechoic Chamber has a walk-in test space 8 foot by 12 foot by 10 foot high. Carbon-infused tapered cones absorb a large band of frequencies at many angles. Researchers can perform measurements of antenna radiation patterns, electromagnetic compatibility (EMC) and radar cross section measurements.