



# UAS TEST SITE

## Summer Internship Program 2018

**Organization:** UMD Unmanned Aircraft Systems Test Site, a part of the Clark School of Engineering, Aerospace Engineering Department

**Location:** 44181 Airport Road, California, MD 20619

**Duration:** 11 weeks during the summer, optional part-time continuation into academic year

**Student:** Undergraduate

**Citizenship:** United States/permanent resident (required due to ITAR equipment)

**Contact info:** Sara Lloyd, sjlloyd@umd.edu, 301.862.7824 x800

***Rolling acceptance, do not delay! Best consideration date of March 31, 2018***

**The University of Maryland Unmanned Aircraft Systems (UAS) Test Site offers researchers, students, government and industry access to extensive resources and pools of expertise in every aspect of UAS research.**

### ***Vision***

A world where unmanned aircraft systems are safely and responsibly used to improve lives.

### ***Mission***

As a leader in research, development, testing and education, we leverage and enhance existing skills, expertise and resources to safely and responsibly integrate and advance unmanned aircraft systems.

### **Description:**

The UMD UAS Test Site leverages the capabilities of the people and infrastructure in Southern Maryland and the University System of Maryland for technical and policy issues associated with UAS. UAS work by the University, the Naval Air Systems Command (NAVAIR) and industries throughout Maryland is supported by federal, state and local governments, as well as industry and other sectors.

The Test Site brings together:

- Intellectual expertise and experts, many of whom have been conducting collaborative UAS research for decades
- Airspace, both segregated and non-segregated, to fly UAS
- Research and development infrastructure, both existing and planned expansions, to support UAS development
- Education opportunities, ranging from K-12 through the world-recognized and ranked capabilities of the University of Maryland, to prepare the workforce of tomorrow

The existing relationships between the University and NAVAIR are a cornerstone of our capability, in addition to growing partnerships with industry, academia and government agencies. We stand ready to assist the FAA with integrating UAS into the National Airspace System (NAS).

As an intern, you will work with researchers, your mentor, and test site staff on the modeling, design, analysis, simulation, assembly, and experimentation of UAS. Tasks may include:

- Modeling and analysis of UAS performance, capability, and cost
- Developing models and establishing statistical relationships between component attributes and behaviors
- Performing aerodynamic and aeromechanic analyses of aircraft and components
- Applying generative design techniques to structural components
- Participating in additive manufacturing process setup and part assembly
- Applying statistical analysis and experimental design techniques to intelligently perform simulation of models
- Applying mathematical modeling techniques to explore relationships between design variables, technologies, and requirements
- Flight research with UAS

As a member of the UMD UAS Test Site staff you will be integrated directly into the day-to-day operations of the Test Site.

#### **Qualifications:**

Required:

- Currently enrolled in an accredited undergraduate technical degree program (not limited to engineering) from rising sophomore to rising senior
- Students may come from UMD College Park; any other USM institution; Southern Maryland Higher Education Center UMD undergraduate programs; St. Mary's College of Maryland; College of Southern Maryland
- Ability to work full-time for 11 weeks during the internship
- Live and work for the summer in southern Maryland (housing is available at St. Mary's College of Maryland or elsewhere in the local area)
- United States citizenship or permanent resident (green card holder)
- ***Interest in UAS***

Desired qualifications may include, depending on project:

- Computer programming/scripting experience
- Intermediate knowledge of statistical data analysis tools and languages
- Intermediate knowledge of aerodynamics of fixed wing and rotary wing vehicles
- Basic knowledge of system modeling, system analysis, and time-based event analysis
- Basic knowledge of additive manufacturing principles and techniques
- Technical writing skills commensurate with conference or journal publications

Over the course of your internship you will have the opportunity to interact with test site and partner subject matter experts who possess academic and applied knowledge through years of experience, work side-by-side with researchers whose aim is to discover, innovate, and transition technologies and capabilities for society at large, and be expected to work directly with your mentor in your field of study.

#### How to apply:

- Identify a faculty mentor who will work with you to identify a project that is related to UAS and remain as your advisor and primary source for project assistance throughout the internship
- Apply directly to Sara Lloyd, [sjlloyd@umd.edu](mailto:sjlloyd@umd.edu), above with
  - your resume
  - an agreement from your mentor who has agreed to work with you (email or short note)
  - a short description of your proposed project (no more than one page)
  - proposed budget
- Projects must be approved by the Test Site for applicability, scope and budget
- Applicants are reviewed and approved on a rolling basis, so apply as early as possible. Best consideration date will be March 31, 2018.

#### Expectations:

- Interns are expected to work full-time at the Test Site for the summer, beginning May 29, 2018 and concluding August 10, 2018; limited deviations from this schedule are negotiable (to include requests for unpaid vacation time)
- It is up to the intern, the mentor and the Test Site if the internship continues into the academic year at their home campus
- All internships are paid at an agreed hourly rate, both summer and academic year
- Each intern's work will be established and supported by their mentor, and *supervised* by a Test Site staff member
- All projects will be relatable to a flying UAS research project, and may include hardware, software, or both; and may include any portion of the UAS, to include but not limited to vehicles, sensors, software, data links, ground control station or human integration
- It is a requirement that all projects *fly* by the end of summer
- At the end of the summer, interns will present an out-brief at the UMD UAS Test Site location to Test Site staff and mentors on the project and its outcomes
- All project budget allocations/transactions will be coordinated through Test Site staff, to include a proposed budget at the outset of the project
- If required by the faculty mentor there will be a written report or technical paper on the project

#### Examples of past projects:

- Defense UAS converted into a commercial off-the-shelf (COTS) version of higher capability
- Using virtual reality to visualize swarm data
- Hybrid domain unmanned vehicles (air/water); quadcopter rover transforming vehicle
- Development of payload systems
- Thermal points for search and rescue map