Technology in Ecology Internship Oppotunity

3 to 6-month paid internship opportunity with housing options

At SERC, the Technology in Ecology Lab collaborates extensively to design and support technological innovation and production to serve ecological research, experimental design and data infrastructure. We develop and support several ongoing climate change experiments such as SMARTX, GENX, and MERIT, and maintain sensor and data infrastructure for the MarineGEO chemical and physical observations program. Additionally, we have been developing open source, "D-I-Y" solutions for ecological research. Ongoing work includes Arduino and Xbee-based dataloggers and feedback controllers for ecosystem manipulation experiments and developing methods for DIY measurements of CO_2 and methane production in coastal wetland systems. We operate at the interface of ecology, engineering, and programming and leverage work from experiments to build lower cost sensor systems.

We are seeking an intern to advance our Breathe Baltimore Community-Based Air Quality Monitoring Project. Co-led by the EJJI, this initiative aims to advance low-cost air quality monitoring to support communities in South Baltimore affected by poor air quality. Traditional air quality monitoring methods often lack the spatial and temporal resolution needed to capture hyperlocal variations, leading to mischaracterization of regional air quality. By developing affordable sensor-based solutions, our project seeks to increase the accessibility of real-time air quality data and empower communities.

We are seeking a curious and proactive individual who thrives in an adaptive learning environment and can work both independently and collaboratively. The ideal candidate should be eager to troubleshoot challenges, confidently seek guidance when needed, and contribute their own ideas to improve system design and implementation. This internship will offer hands-on experience working with emerging environmental sensor technology, electronic prototyping, and data processing. Work will be conducted in both lab and field settings, with occasional outdoor testing to evaluate sensor performance in real-world conditions.

Key Responsibilities:
- Designing, fabricating, and programming electronics, sensors, and DIY monitoring systems
- Maintaining technical documentation and open-source protocols to support research accessibility
- Analyzing sensor data to ensure quality and reliability
- Participating in modest fieldwork, including sensor deployment and environmental testing
- Providing technical support for multiple ongoing projects within the lab

You May Be a Great Fit If You Have:
- Familiarity with prototype fabrication, documentation and DIY production.
- Understanding of environmental sensor care, calibration, and design
- Programming experience (Arduino/C++, Python, MATLAB, and/or R)
- Knowledge of telemetry, and IoT and Radio networks for data transmission
- ETL/ELT data processes
- Experience with CAD/production tools (Autodesk Fusion 360, Eagle, or similar)
- Educational background in:
    - Mechanical Engineering/Electrical Engineering/Environmental Engineering/Systems Engineering
    - Computer Science/Data Science

We understand that candidates may not have expertise in every area listed above. Our lab offers opportunities to develop skills in:

- Topics related to ecology, biodiversity, climate change, and wetland science
- Electronics prototype production and fabrication
- Environmental data analysis, including QA/QC methodologies for sensor data
- Advanced use of Eagle, Autodesk, and Campbell Scientific dataloggers
- R-Shiny for interactive data visualization
- GitHub for collaborative coding and project management

A VALID DRIVERS LICENSE IS REQUIRED FOR THIS POSITION

As a single PDF, please send a brief cover letter outlining how you meet the qualifications, a resume, and the names of two references to richr@si.edu.

SERC is focused on understanding the causes and consequences of environmental change for marine, freshwater, and terrestrial ecosystems. The main campus is a 2,650-acre research site on the shores of the Chesapeake Bay in Edgewater Maryland. Nearby cities include historic Annapolis, Maryland's capital, and D.C. Dorm housing on the SERC campus will be available for the duration of the internship.