Research Assistantship Position for Master's Student in Spring 2025
LSU Department of Entomology

Project description:
Monitoring the distribution of Roseau Cane (*Phragmites australis*) and Roseau Cane Scale (*Nipponaclerda biwakoensis*) using high-resolution drone imagery and machine learning.

Overview:
The IGLab provides a range of opportunities for developing professional skills in areas such as precision pest management, machine learning, and GIS-based remote sensing analysis. Our research group values teamwork, mentorship, and inclusivity. Students engage with cutting-edge technology and multidisciplinary projects, gaining hands-on research experience and developing valuable career skills.

We are looking for an enthusiastic graduate student to join an innovative project for Roseau Cane monitoring in the lower Mississippi River Delta. This project uses advanced remote sensing techniques to support restoration efforts. It also explores the application of machine learning for automated detection and counting of Roseau Cane Scale, an invasive species affecting *P. australis*, using remote imagery. By integrating remote sensing, machine learning, and entomology, the project wants to improve species management in aquatic environments. The selected student will work alongside a diverse team of experts in entomology, ecology, and remote sensing at Louisiana State University.

Drone with RGB-Multispectral + LiDAR sensor
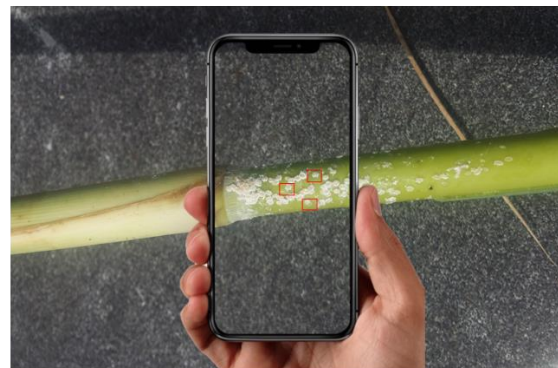
Roseau Cane Scale detection

Key responsibilities:

- Conduct a literature review on wetland remote sensing and machine learning techniques for object detection.
- Collecting and analyzing multispectral and LiDAR data to monitor Roseau Cane distribution in wetland areas using drone technology.
- Developing interactive online maps to visualize Roseau Cane distribution.
- Collecting and analyzing imagery to monitor Roseau Cane Scale distribution.
- Creating and validating machine learning models to detect Roseau Cane Scale.
- Designing a mobile-friendly web interface for real-time Roseau Cane Scale monitoring.
- Working collaboratively with interdisciplinary research teams.
- Disseminating research findings through research publications and presentations at professional conferences.

Requirements:

- Bachelor's or Master's degree in a relevant field (e.g., computer science, geography, geospatial sciences, biological or agricultural engineering, agricultural sciences or similar). Candidates from STEM groups are particularly encouraged to apply.
- Experience with or willingness to learn collection and analysis of remote sensing data (multispectral and LiDAR) using drone technology.
- Experience with or willingness to learn software packages (such as ArcGIS Pro and QGIS) and programming languages (such as Python and R).
- Strong interest in GIS, remote sensing and machine learning.
- Excellent problem-solving abilities and capacity for independent work.
- Strong written and verbal communication skills in English.
- Field work experience preferred.

What we offer:

- A work environment where mentorship and teamwork are a priority.
- The selected applicant will be appointed as Graduate Research Assistant with a stipend commensurate with experience plus health benefits and tuition remission.

To apply:

Please submit the following documents as a single PDF to Dr. Ivan Grijalva (**ivangrijalvalab@gmail.com**) using the subject line "Roseau Cane Project" by **Sept 17, 2024**:

- 1-page cover letter summarizing your research interest and relevant experience.
- A detailed curriculum vitae (CV).
- Contact information of three references.

For more information, visit https://www.lsuagcenter.com/roseaucane or the IGLab (Precision Pest Management) https://iglab.ghost.io/