

## LESA Center URP Opportunity

Title: *Integrated Sensing System for Occupancy Detection*

Duration: **Spring Semester 2022**

### Description / Responsibilities

LESA is seeking an undergraduate researcher to work with the LESA engineering team to develop a board level integrated sensing system utilizing commercially available time-of-flight, color, and PIR motion sensors.

The use of the multiple sensors will increase the accuracy of the occupant detection and also reduce the power requirement, as the PIR motion sensor can be used as a wake up to the other sensors on-board. Ultimately the goal would be to have a battery powered system, with significantly long lifetime, that utilizes a Rasp Pi Zero (or equivalent) as an onboard controller.

This research effort will focus on two objectives:

- 1) Review and error check prototype circuit board layout (with particular attention to device addressing on the bus).
- 2) Development of control system on microcontroller for reliable sensor operation and communication, including generation of all code for the interface controller and wireless communication.

### Applicant Requirements

- Preferred UG majoring in EE/CSE, CSE, or CS
- Demonstrable experience with microcontrollers - i.e., Raspberry Pi, ESP32 (examples beyond coursework preferred)
- Experience with Python
- Experience with PCB design/layout software, such as DesignSpark
- Familiarity with communication protocols
- Good documentation and communication skills
- Reliable availability (minimum 6-8 hours/week; maximum 12 hours/week allowed) in-person

Interested students, send your resume & cover letter to LESA no later than **Friday, January 14, 2022**

Send to:

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