

LESA Center Summer URP Remote Research Opportunity

Title: *Advanced LED Driver Design (PCB layout & microcontroller programming)*

Duration: **Summer 2020**

Description / Responsibilities

This is a remote URP position that will require daily electronic contact with the technical supervisor for the position. This URP research opportunity is currently available for pay or for course credit. The terms of this opportunity are subject to any changes in the university's pandemic protocols in response to COVID-19. .

LESA is seeking an undergraduate summer researcher to work with the LESA engineering team to advance the development of the high speed LED driver, and synchronization of TIGER lights, which are multichannel LED lighting modules developed for horticulture applications.

The TIGER modules are implemented systems comprising 24 modules. These advanced units, provide unprecedented intensity and spectral options for the horticultural growth environment. LESA is continuing the development of the LED driver and control hardware for these lights. This includes selection of the driver chip that drives the LEDs, power distribution on the PCB, and a synchronized pulsing architecture for a full system. This URP research opportunity will focus on PCB layouts of the LED module driver PCB and controller PCB.

The overall goal of the project will be collaborate on the design upgrade of the TIGER module to realize high speed light pulsing and synchronized operation. The research tasks for this URP effort include:

- Research and selection of new high speed LED drivers
- Design new circuit boards for the LED module drivers and controller
- Incorporate improvements from existing generation in the new designs
- Review / understand existing microcontroller firmware logic
- Implement design changes in microcontroller firmware

Applicant Requirements

- **Rising junior or senior ECSE student**
- Demonstrable analog and digital circuit design experience
- Demonstrable PCB layout experience – KiCAD or equivalent (beyond coursework preferred)
- Microcontroller firmware programming experience
- Reliable availability (minimum 25 hours/week; maximum 40 hours/week)
- Reliable access to internet, PC with PCB design software

Interested students, send your resume & cover letter to LESA no later than **Friday 5/15**. Please include your preference in working for pay or for credit.

Send to:

Michelle Simkulet simkum@rpi.edu