

## **FACULTY MENTORS**

Ramsin Khoshabeh & Mark Liu

## **PROJECT TITLE**

MPC Racer

## **PROJECT DESCRIPTION**

Description: This project aims to have students implement an MPC algorithm to autonomously drive an RC car similarly to the DonkeyCar platform, but with more robust vehicle dynamics. For more information on MPC, see here: <https://www.youtube.com/watch?v=GiPm2KAiPXI>

Additionally, the students will add electronics/hardware to increase robustness of the control system, such as encoders for closed-loop velocity control and steering angle, building a platform that can support different types of software development and handle the rigors of testing.

This project will be in person.

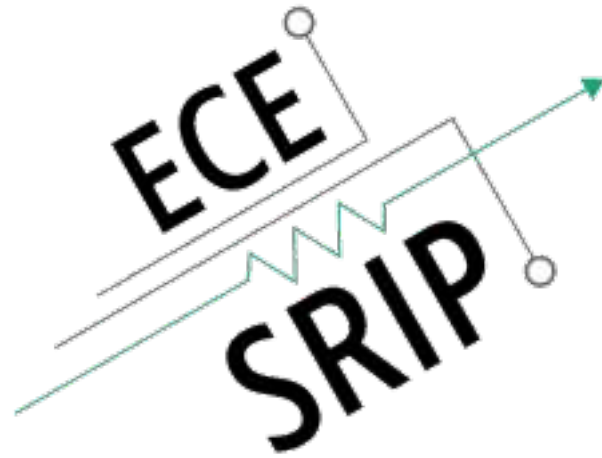
## **INTERNS NEEDED**

3 Students

## **PREREQUISITES**

We need students with skills in some or all of the following:

1. ML
2. Computer vision
3. Python
4. C/C++ experience with a focus on machine learning
5. PCB design and manufacturing



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### **PROJECT TITLE**

Enhanced Access Control System

### **PROJECT DESCRIPTION**

Description: This project will benefit all of the makerspaces on the campus! The objective is to add intelligence to the swipe system that grants students access to the labs. The goal is a bit open-ended, but projects can focus on automatic people detection, ID scanning, usage analytics, or any other reasonable enhancements aligned with student interests.

This project will be in person.

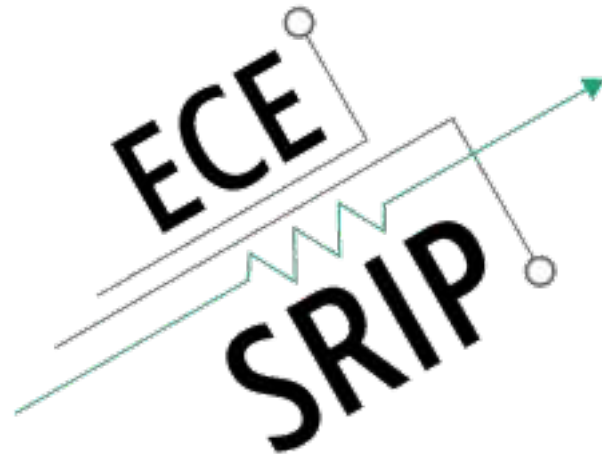
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### **FACULTY MENTORS**

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### **PROJECT TITLE**

Intelligent Low-Cost Consumer-Grade Drone

### **PROJECT DESCRIPTION**

Description: This project will add intelligence to low-cost consumer-grade drone systems (DJI Tello or similar). Topics can include indoor space mapping, object avoidance, object recognition and following, multi-drone IoT communication, and other related topics.

This project will be in person.

### **INTERNS NEEDED**

3 Students

### **PREREQUISITES**

We need students with skills in some or all of the following:

1. Computer vision
2. Python
3. C/C++
4. ML
5. SLAM
6. CNNs