

Autonomous Systems Lab (ASL) Undergraduate Project Openings for Spring 2015

The Autonomous Systems Lab seeks a small group of students across different departments to work with our PhD students on robotics applications and research. Details on the project descriptions, application process, and additional notes are given below.



Segway RMP50/50XL outdoor robot fleet, equipped with Septentrio GPS, 180 deg FOV SICK and 270 deg FOV Hokuyo Lidar, Mimo touchscreen interfaces, 3x Firefly Cameras, onboard IMU, mobile WiFi, custom electronics and mounting hardware.

Notes:

-Undergraduate students are expected to sign up for 3-4 credits of (...ECE/MAE/CS Independent study courses) during the semester, and thus commit at least 9-12 hours per week in the ASL. A commitment of two semesters or a summer and a semester is desired. We are also willing to consider employment, especially for those who have work study credit.

How to apply:

1. Go to cornell-asl.org and download an application form from the front page
2. Scan and e-mail your **completed application and your resume/CV** with the subject line : "[Spring 2015 ASL application] <Your Name>, Project <Project Number> ,"
where <Your Name> is your name and <Project Number> is the number of the project listed below. Please send your application and resume/CV to one of the following people:
Professor Mark Campbell, mc288@cornell.edu
Alex Ivanov, aii4@cornell.edu

Specific Projects:

1. **Segway Case Design Fabrication: 2 MAE students:** Machine shop certification required.

Description: This project requires a careful design of an internal enclosure for the Segway components. This enclosure will be required to be water resistant, easy to service, and designed for mid-scale replication (9 of these cases must be manufactured). Students will be working closely with the wiring project lead.

Who should apply: Junior or Senior students are encouraged to apply. This project is for senior design level work. Those wishing to participate in a design process which requires great attention to detail as well as meeting strict system requirements should apply. This case will be used on our robotic platforms for years to come.

2. **Segway Wiring and Power System Design: 1 MAE/ECE student:** Prior experience with circuits required.

Description: This project is a redesign of the internal sensor network and power system wiring for our Segway robots. Students must design a power system based on off the shelf components which is: expandable, compatible with current power needs, easy to service, robust to mechanical wear.

Who should apply: MAE or ECE students with experience in circuit design especially power electronics should apply. This project is meant to be robust and easy to replicate (9 instances of this system will be created). Expandability is a design parameter for this project which should enable plug and play capability for new sensors and computing hardware. In addition, this project will work closely with the case redesign lead to ensure that the new power system meets the physical requirements of the new Segway case.