

Robotics projects in the Autonomous Systems Lab

Kress-Gazit group

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A variety of projects are available for **MAE**, **ECE**, and **CS** students in the Autonomous Systems lab. The lab focuses on all types of robotics, including theory, hardware, software, and networking for a variety of applications in the general area of autonomous/semi-autonomous robotic systems. All projects will have a long term goal of being integrated into our research goals, as demonstrated in autonomous/semi-autonomous robotic systems.

Lab wiki: <http://cornell-asl.org/wiki>

Application Instructions: Email the following to the Prof. Kress-Gazit (hadaskg@cornell.edu) :

1. Your CV
2. Your transcript (unofficial is fine)
3. A short paragraph detailing which project you are interested in, why you are interested in it and a few words on your relevant experience
4. Level of effort (number of credits you are looking for). Note that we require all students to sign up for credit hours.

Projects:

1) Navigation and path planning for the Anybots QB Avatar

The goal of this project is to develop autonomous capabilities for the Anybot telepresence robot. The project will include developing a mapping and path planning solution.

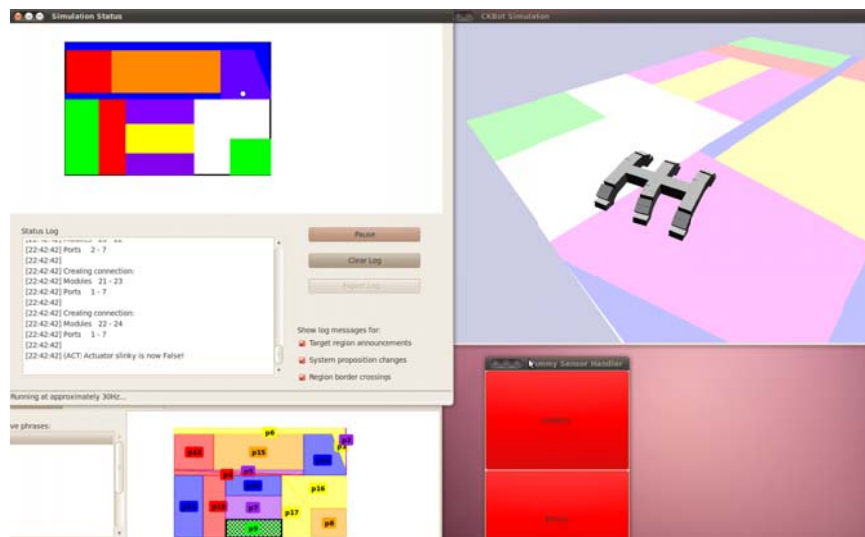


[<https://www.anybots.com/drive/>]

2) Web-based simulator

The goal of this project is to have a simulator for the Linear Temporal Logic Mission Planner toolbox (LTLMoP, available at ltmop.github.io) that runs in a browser and allows a user to:

1. Control a simulated robot using English
2. Add objects dynamically to the simulated environment by clicking areas in the map
3. Receive feedback when added objects violate expected behavior



3) Integrating a Kuka Youbot with the Lineat Temporal Logic MissiOn Planner toolbox (LTLMoP)

The goal of this project is to demonstrate high-level control of a youbot robot using LTLMoP. This project will require the student to create an interface between the robot's sensing and control software and LTLMoP.



[<http://www.youbot-store.com/youbot-store/youbots/youbots/kuka-youbot-omni-directional-mobile-platform-with-arm>]

4) Integrating a Sphero Robot ball with the Lineat Temporal Logic MissiOn Planner toolbox (LTLMoP)

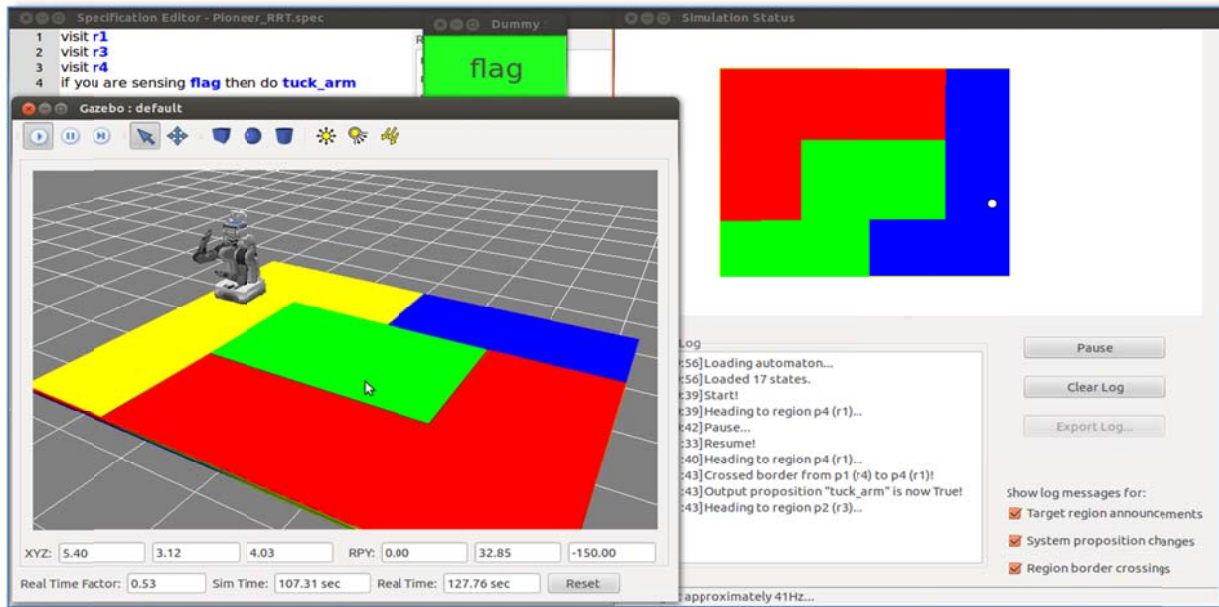
The goal of this project is to demonstrate high-level control of a Sphero robot using LTLMoP. This project will require the student to create an interface between the robot's sensing and control software and LTLMoP.



Credit: Christopher Harting

5) Graphical representation of robot experiments

The goal of this project is to create a framework for visualizing robot experiments. It will include logging experimental and simulated data, designing a graphical interface for displaying the data and exporting the corresponding image and video files.



6) Autonomous forklift (in collaboration with The Raymond Corporation)

The goal of this project is to automatically generate code for an autonomous forklift. The project will include visits to the company's test facilities and testing with real hardware.



[<http://www.raymondcorp.com/lift-truck>]