

## UC Irvine

### SSOE Research Symposium Dean's Awards

**Title**

Garbage Processing Unit (GPU)

**Permalink**

<https://escholarship.org/uc/item/0dn7s8ss>

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Goal statement: The goal of this project is to design, fabricate, and program a fully automated trash collection robot.

Introduction – We aim to create a mobile autonomous robot arm that can help clean up our environment one can at a time. Our arm utilizes cameras to help detect and navigate toward an object of interest (soda can, bottles, etc). Once our arm reaches the object, it will proceed to collect and dispose of the item in question.

Team Members	Major	Responsibilities	Advisors
Steve Cho	Electrical Engineering	Project Manager Researcher (Materials) Robot Arm Mechanics (Arduino)	Dr. GP Li Linyi Xia
Takahiro Ishikawa	Information and Computer Science	Manufacturer (Laser Cutting + 3D Printing) Robot Arm Mechanics (Arduino)	
Michael Wegener	Electrical Engineering	Image Processing (Raspberry Pi) Communication	

Approach - This robot will be fully designed and built at UCI using lab resources available in Calit2. It will be autonomous and run off of battery power. The software will have the ability to scale, allowing for the robot to collect many different types of garbage. The robot arm will be controlled using an Arduino. The image processing will be done using Raspberry Pi and the OpenCV library. Communication between the mechanics (arm + mobility) and the image processing will be done using I2C.

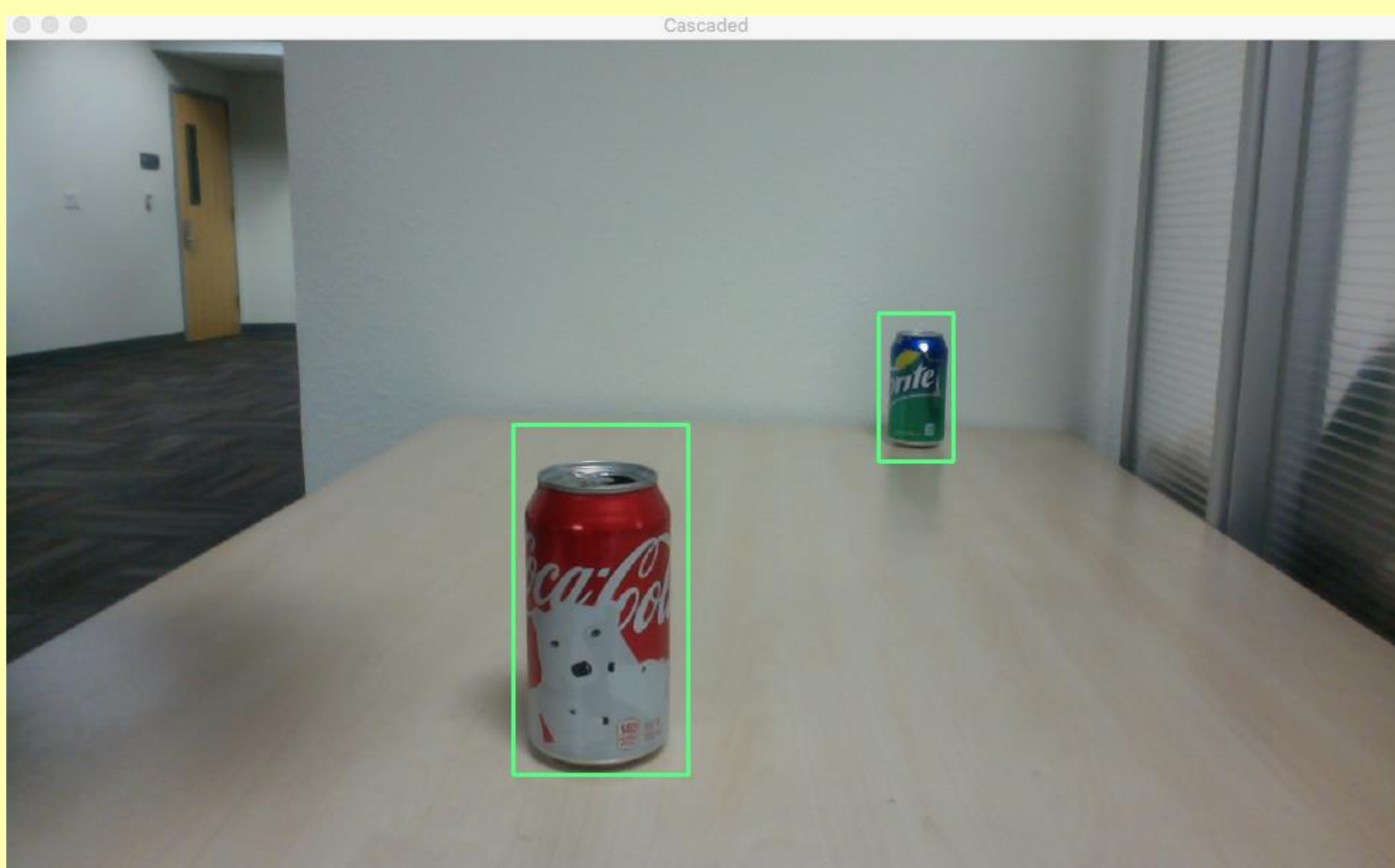
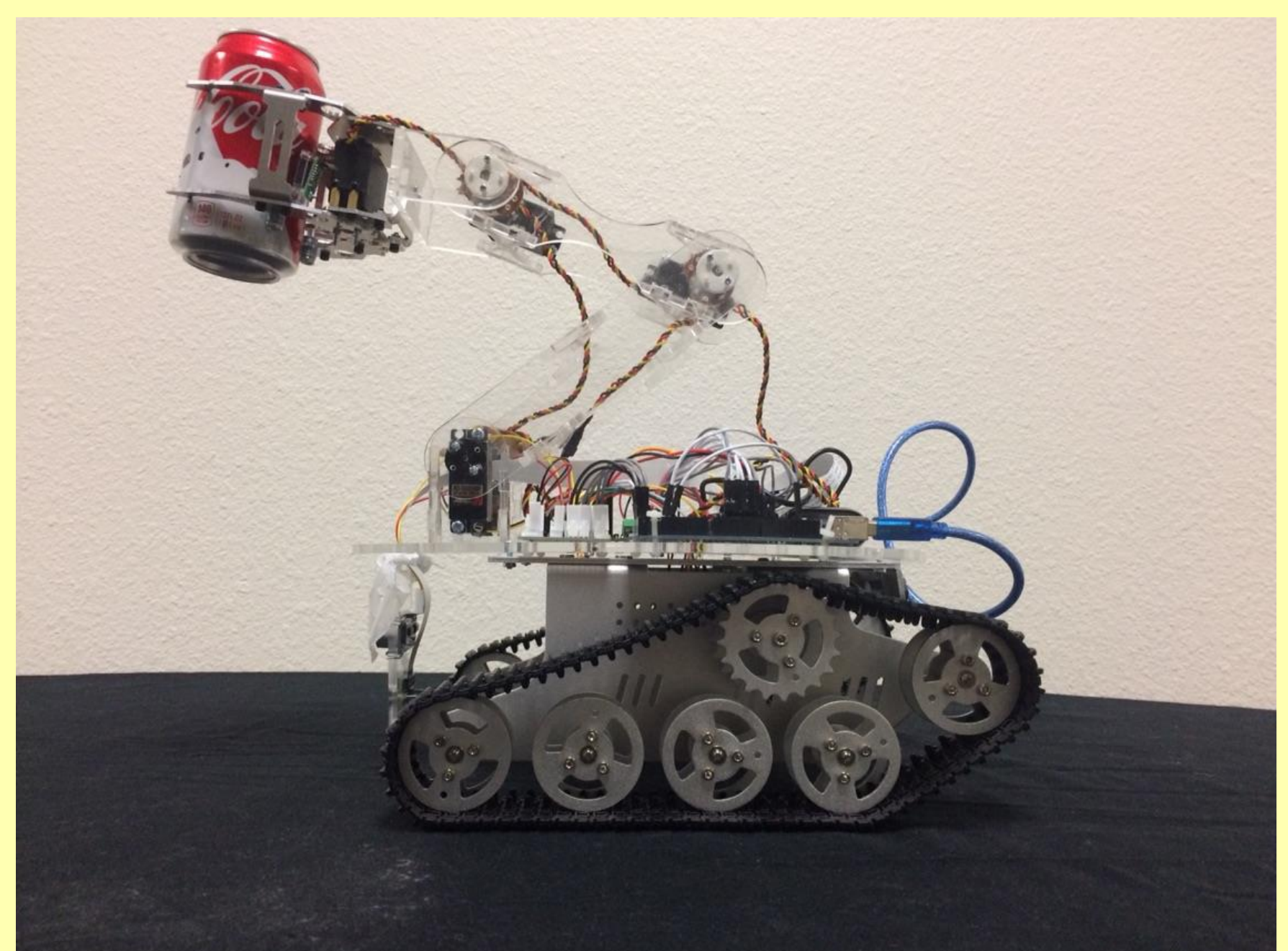


Image processing: Object detection



Garbage Processing Unit