Database

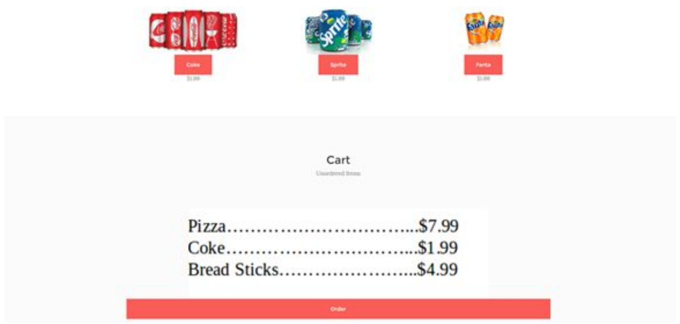
MongoDB is the database that allows ROSE to talk to the web application. Through the ability to group information of a variety of different types and sizes under one collection, mongoDB allows for quick and easy access to any piece of information for both the web application and ROSE to send and receive information from the database. With this database, ROSE is able to read inputs from the web app including:

- direction of translation
- direction of rotation
- Desired speed of motion.

In addition, ROSE is able to send information to the database for the web app to retrieve. The Information describes the conditions of the robot such as:

- current position
- current velocity
- power consumption.

Webapp



Cart

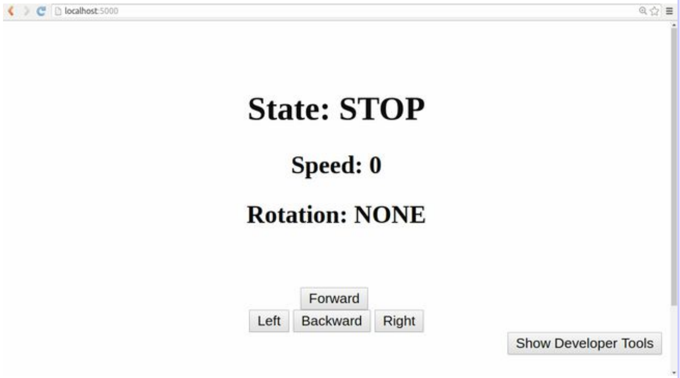
Unordered Items

Pizza.................................$7.99
Coke...................................$1.99
Bread Sticks.........................$4.99

Restaurant customers will be able to view the menu, place their order and checkout through the web application. Above is the aesthetic design of the web application.

Restaurant managers will have their own access to an easy-to-use web application to manually control the robot in case of malfunctions.

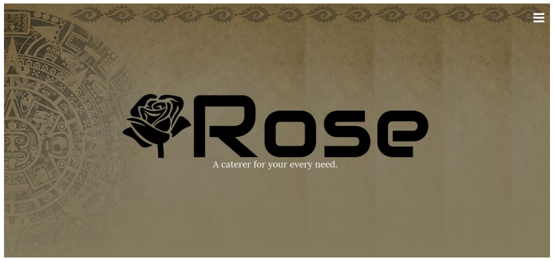
Managers can easily see the robot's actions from the state, speed, and rotation. The image below shows the manager interface for robot controller.

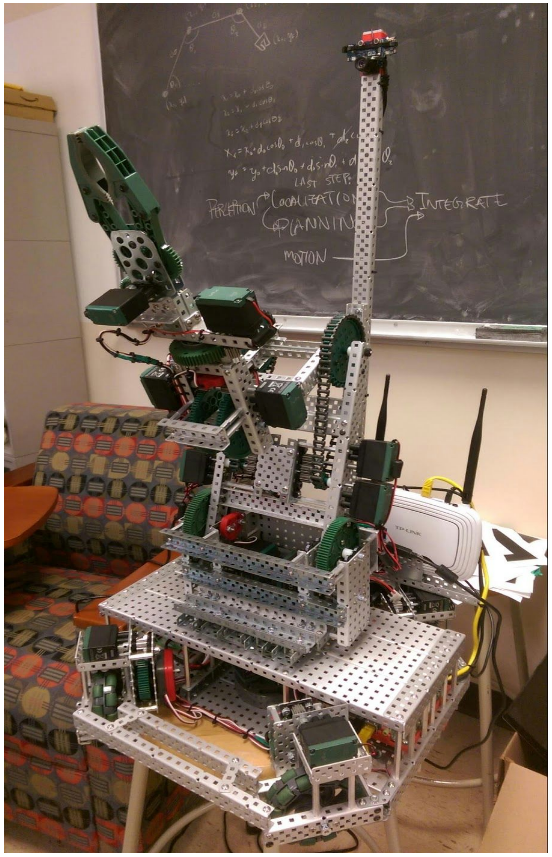


State: STOP

Speed: 0

Rotation: NONE





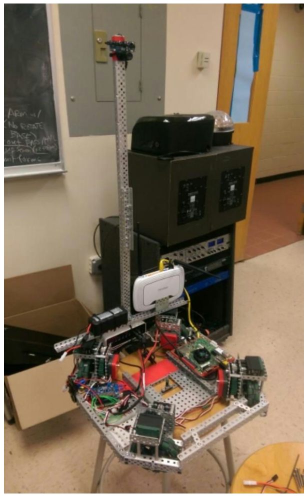
Group #9

By: Ajay Srivastava, Srihari Chekuri, Cedric Blake, Vineet Sepaha, Neil Patel, Brice Howard, Jonathan Cheng

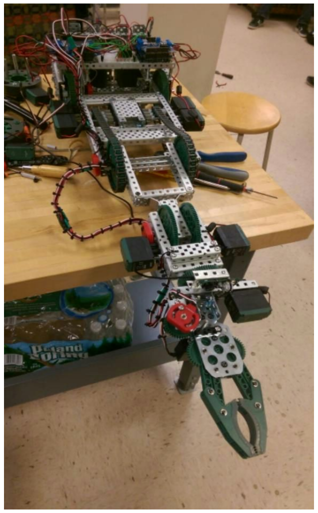
Introduction

Our product performs certain waiter responsibilities for a restaurant. Customers come into and are seated in the restaurant. They order items on our web application, which records the customer's request. In no time, ROSE queue your request and will deliver the requested item or items to the table with the correct order. Our system can reduce wait times for customers, which in turn could increase the satisfaction of customer experience.

Robot

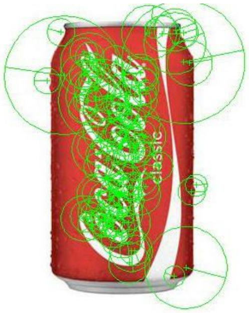


We use a Jetson TK-1 as our processing unit. The base of the robot can move in all directions. It can be controlled by a webapp.

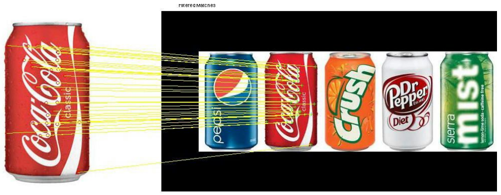


The arm has 6 degrees of freedom so that you can pick up objects from various positions.

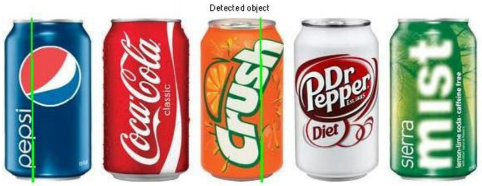
Computer Vision



We use SVM to recognize objects. First we get an image and detect all the critical points/ features (using SURF detector).



Next, we pass in a frame/other image and find all the features in the frame. Then we match the features between the initial object and the features within the frame. Then the outliers (the features that are not important) are removed.



If enough features are matched with an object in the frame/image then we make a bounding box around it.