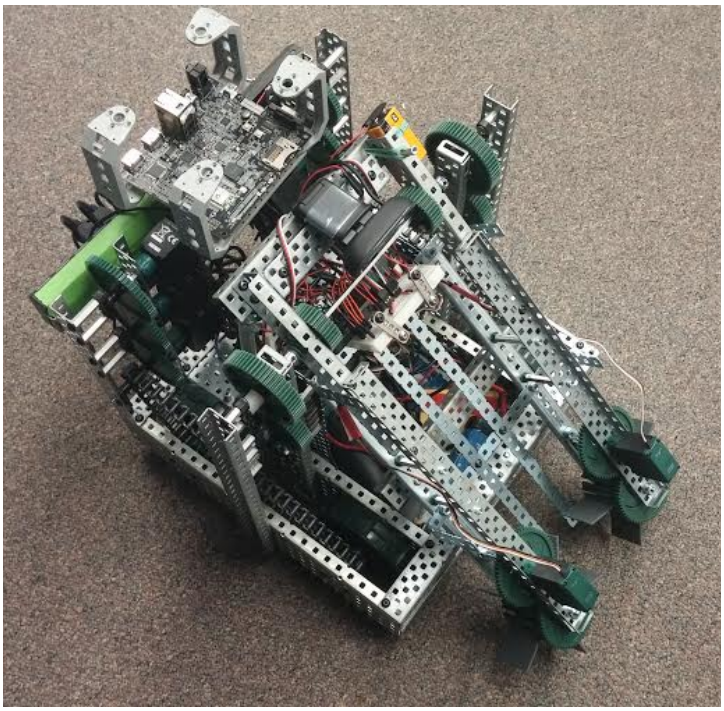
User Documentation

Voice Activated Tennis Ball Robot



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Web Application

Dependencies

- Python 2.7
- Google App Engine (https://cloud.google.com/appengine/docs)

To run the local web server, download the Google App Engine (it should download to a directory named google_app_engine). Then, through bash, change directories to google_app_engine and run

python dev_appserver.py ~/Downloads/1_code/SEVABTR-appspot

If you have 1_code/SEVABTR-appspot in a different directory, change your command accordingly.

Once the development server is running, you should be able to see the website by navigating to **http://localhost:8080** in your browser

Computer Vision

Dependencies

Our computer vision has the following dependencies:

- Python 2.7
- SimpleCV (http://simplecv.org/download.html)
- OpenCV (http://opencv.org)
- A webcam

Running Tennis Ball Detection

To run the continuous ball detection, through bash, change directories to SEVABTR/visual and run:

python tennis_ball_runner.py

This will continuously read video input from your connected webcam and display it. If it detects a tennis ball *in the middle of the screen* then it will outline it with a green circle.

Running Tennis Ball Detection Tests

To run the unit tests for Tennis Ball detection change directories to SEVABTR/visual and run:

python tennis_ball_test.py

Running Basket Detection

To run the continuous basket detection, through bash, change directories to visual and run:
python basket_runner.py

Text to Speech

Dependencies

- Festival
- Speakers

Running Text to Speech

To be able to hear a text command converted to speech run the file specified below which can be found in SEVATBR/speech/text-to-speech/ directory. You will be prompted to enter a command which then will be played through your speakers.
./text-to-speech.sh

Robot Movement

Dependencies

- Robot
- Robot Controller (Xbox controller)
- USB keyboard/mouse
- HDMI Lilliput screen

Running Robot Movement

In order to run robot manual control connect all the dependencies listed. Make sure that all the motors are connected and batteries are fully loaded. Once ready navigate to SEVATBR/core/ directory and compile necessary files using ‘make’ command. Once compiled successfully run the command below and control the robot via controler. The joystick can be used for left/right/forward/backwards movement while L1/R1 can be used to scoop/release ball and L2/R2 can be used to move the robot arm up/down.
sudo ./core