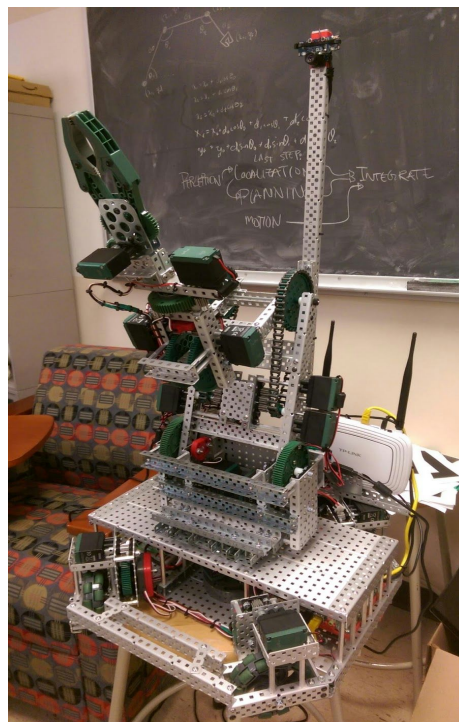


USER DOCUMENTATION



Project Designed by group #9:

- | | |
|------------------|------------------|
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| -Cedric Blake | -Brice Howard |
| -Neil Patel | -Jonathan Cheng |
| -Vineet Sepaha | |

Web Application

Dependencies:

- Python
- Flask
- MongoDB (with PyMongo driver)

How to Run:

Web Application (on a local server)

To run the web application, go to the ROSE/webapp directory via a terminal on a linux-based machine. Type “python app.py” to run a local server on your computer on port 5000, which will allow us to run the webapp interface simply by navigating to localhost:5000 on a web browser. If the robot is active, you can control it through the web page by pressing and holding the arrow keys. Cardinal directions, such as North and South, and intermediate directions, such as Northeast and Southwest, can be used with the corresponding combination of arrow keys. Letting go stops the robot from moving. There’s also rotation with keyboard keys using “A” and “S” to rotate the robot counterclockwise and clockwise, respectively. Lastly, you can increase or decrease the speed by using “page up” or page down”, respectively.

Computer Vision



(Matlab Example)

Dependencies:

- OpenCV
- Armadillo
- Matlab
- Matplotlib
- Numpy
- Python 3
- Webcam

How to Run:

Face/Eye Detection(Python):

To run face detection using python, numpy, matplotlib and haar cascade files, open 1_code/ROSE/Object_Detection and run 'python3 detect.py' in the terminal. This will open the webcam and compare facial features

Object Detection(C++):

To run object detection, go into the directory open 1_code/ROSE/Object_Detection/Object_detection/build and then run 'cmake ..' and 'make'. Then go into the directory 1_code/ROSE/Object_Detection/Object_detection/bin and run './find_object' in terminal or open find_object to run the application. Then drag and drop the monster image in the folder into the left side of the application window. Then hit spacebar to run the application and detect the object place into the window.

Feature Detection(Matlab,C++):

To run feature detection in Matlab go to 1_code/ROSE/Object_Detection/SVM_features and run the features.m file to see how surf features are detected, compared and then filtered out.

To run feature detection in C++ go to 1_code/ROSE/Object_Detection/surf and then run 'make' first and then "./matchingtest". This will compare the surf features between 2 images.

Robot Movement

Dependencies:

The ROSE project requires the following to run:

Linux --> Ubuntu 15.10

Python 2.7 (apt-get -- should already have with ubuntu)

Festival (apt-get)

SDL & SDL2 (apt-get)

SDL_TTF (apt-get)

Armadillo (apt-get)

MongoDB (apt-get)

OpenCV 3.0 (from SOURCE - NOT from apt-get) get it from itseez on github

OpenCV_contrib (from SOURCE - install with opencv) again from itseez

Chilitags (from SOURCE)

Arduino (1.6.7 or later) (from SOURCE - NOT from apt-get)
Adafruit motorshields v2 libraries for arduino
MongoDB C / C++ Driver

How to Run:

After all dependencies are satisfied, the robot application can be run by running the makefile in the robot folder, and then running the executable:

```
make  
./rose
```

The arm test application can be run by going into the robot/arm directory and running the makefile, and then running the executable:

```
make  
./arm
```

TextToSpeech

Dependencies:

- Python3
- pyttsx

How to Run:

To run text_to_speech files, go into the 1_code/ROSE/Text_to_Speech directory and run 'python3 tts.py' to hear the message play. If you want to listen to a different message, open the file and change the message (There is a comment above the line where you input your new message).