EF 230 Robotics Project

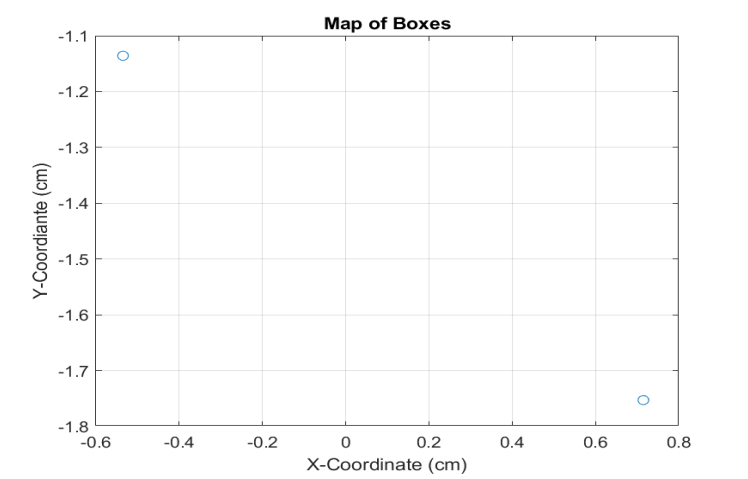
Brenna Ellis, Melissa Calvillo, Cooper Grace

Download MATLAB Function File

SUMMARY

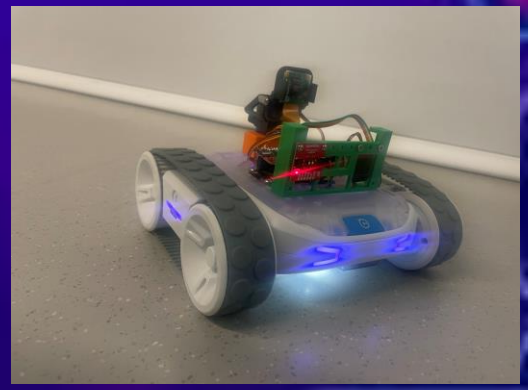
HIGH POINTS

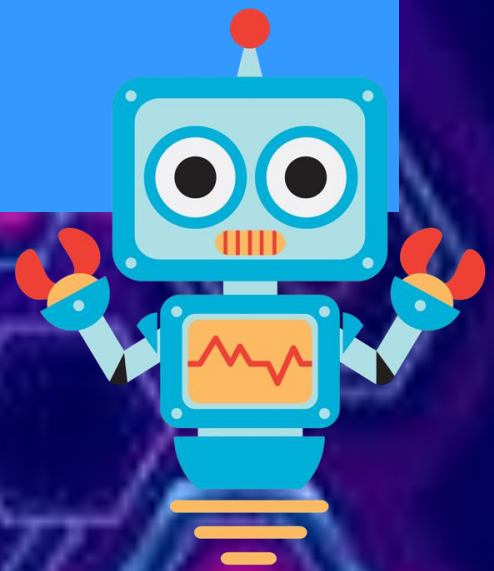
- Robot stops once it detects a nearby box
- Robot checks every box and detects those with the correct text on them.
- Stores X-Y locations and positions of the box(es) containing text and sends an email and displays message on OLED screen the location/positions of boxes
- Plots locations of boxes as a map overlay



AREAS OF EXPERTISE

- Using built in distance sensor
- Using object recognition to detect object in the robot's path
- Uses robot's camera to take a picture of objects in its path
- Use of robot's text recognition
- Plot datatypes
- Email Messaging
- RVR OLED Display

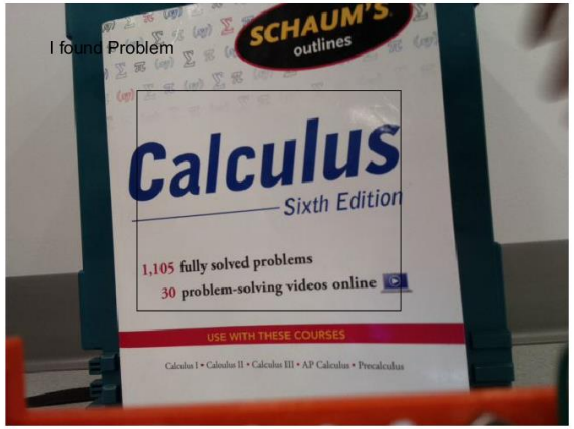


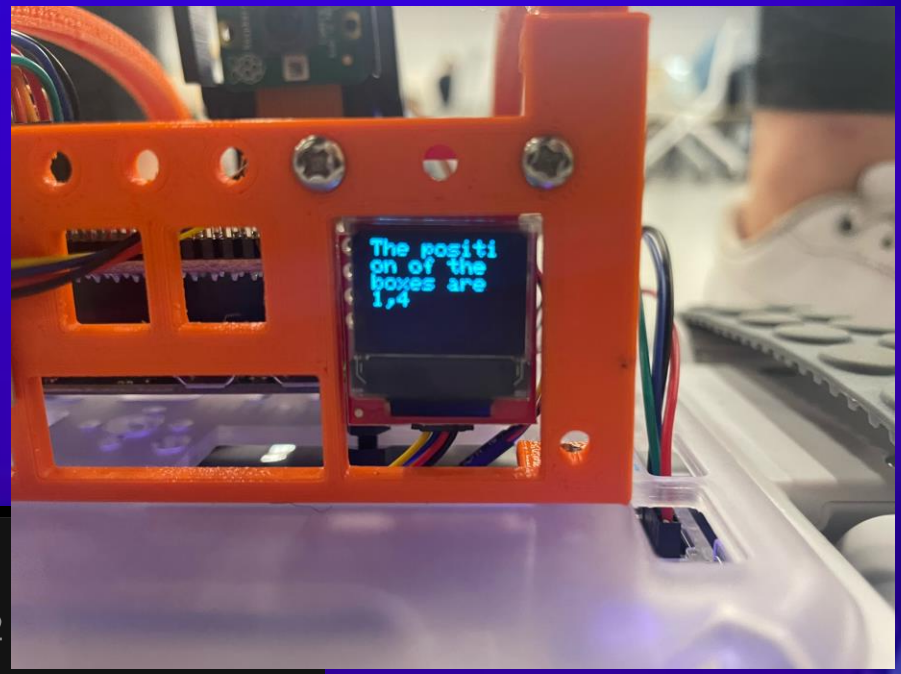


FLOW CHART


Start function
Robot moves at set rvr speed
Uses object detection to detect box
Box in robots path?
no
Keeps moving
yes
Robot stops
Check for text on box
text?
no
Goes to next box
yes
Displays found text
Saves position and location
Takes a picture of box
Is it the last box?
no
yes
Displays message of box locations
Displays message on OLED screen
Plots xy coordinates of boxes
Sends email with box locations

DEMO VIDEO





J

You

To Ellis, Brenna Kathryn, +2

[You don't often get email from jcgrace2001@outlook.com. Learn why this is important at http://aka.ms/LearnAboutSenderIdentification.]

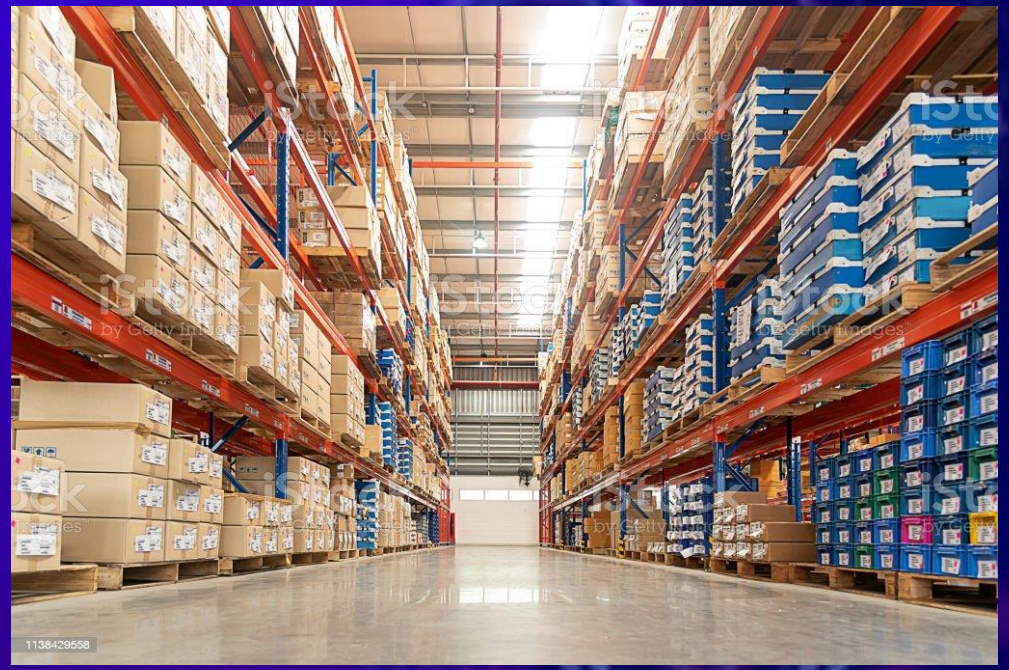
The position of the boxes are 1,4

LINK TO VIDEO

REAL WORLD APPLICATION

WAREHOUSE DRONE

- RVR is used in a warehouse/storage environment to seek out boxes with certain labels
- It uses the text detection to go through and check a user-defined number of boxes to check for the user-defined word
- After the RVR has gone through all those boxes, it will report back the location of the boxes through a vector containing the position of the box in a row (i.e. the 4th box out of 18) and the X-Y coordinate location of the boxes. All the box coordinates can be mapped out on a graph and overlayed on a floor plan to tell the user where the box is.



IMPROVMENTS

- We could have implemented a more concise code in some sections of our .mfile.
- To this extent, more integrated function could have been implemented to make the master file more concise
- Adding recognition to multiple different media types rather than just one could have enhanced the complexity of our project (ex. Recognizing color, shape, face, etc).
- The implementation of Thingspeak top our code would have a great addition
- Finally, after completion of our current code, we could continue with the addition of a plot of the location of the boxes with text on them relative to other boxes