ROOMBA ROBOT MANUAL

Rhea Katari, Anastasia Reed, Riley Raasch, Caleb Tietz
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GETTING STARTED

Project background and description

A web GUI hosted on the Raspberry Pi that controls a Roomba robot remotely via manual inputs and autonomously based on location.

Requirements

1. *Remotely control the robot with web GUI with controller and WASD*
2. *Automation feature using Opti Track location data*
3. *Camera Feed displayed on web GUI*

WEBSERVER STARTUP AND CONTROLS

1. Connect to SDCAR Network on your computer
2. Turn on the Roomba (the switch is on the bottom)
3. SSH into the Raspberry Pi with command: ssh will@192.168.X.X
   (check WiFiMan for IP)
4. Change Directory
   cd Roomba-Robot/hardware/raspberry_pi
5. Start up the webserver
   ./main.py
6. Control the Robot
   a. *Keyboard:*
      WASD to move the robot forward, left, backward, and right respectively.
      Arrow keys to move the camera direction
   b. *Onscreen Joysticks:*
      blue joystick moves the robot, and red joystick moves the camera
   c. *Game Controller:*
      Left joystick moves the robot, and the right joystick moves the camera
   d. OptiTrack Coordinates:
7. Stop webserver in the terminal with Ctrl +C

COMMON PROBLEMS

1. **Raspberry Pi Wi-Fi gets turned off**
    a. Find an ethernet cable and connect from the Raspberry Pi to your computer
    b. Turn to Wi-Fi back on with command: sudo ifconfig wlan0 up

2. **Robot won't stop moving even though you are not pressing anything**
    a. Click into the terminal that is running local_main.py and enter Ctrl +C

3. **Camera has a weird coloration**
    a. This is normal and is a result of the camera not having an infrared filter. This is on purpose so that a filter won't interfere with OptiTrack sensor signals.

4. **Latency**
    a. Check the network connection quality on your computer
    b. Stop robot and start it again (Ctrl +C then ./local_main.py)