Cleaning and Mapping Robotics Project

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Outline

Introduction

Android Mapping App

iRobot Create 2

IR Sensor   LIDAR   Ultrasonic Sensor
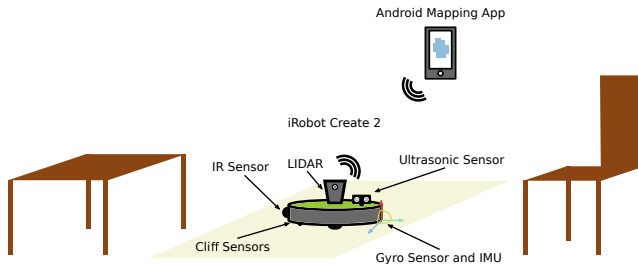
Cliff Sensors

Gyro Sensor and IMU

Figure: Diagram representing the working principle of the cleaning and mapping robot

Progress

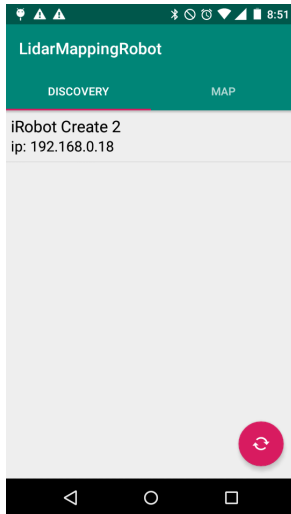- Implemented SBC discovery feature in the Android App using UDP multicasting

Progress

Figure: Screenshot of app with Discovery and Map tabs

Progress

Figure: Screenshot of the multicast receiver program running

Progress
Further app details

- Multicast group: (224.3.29.71, 10000)
- Raspberry Pi sends message ("iRobot Create 2") to app
- Upon pressing the refresh button the app will send out another message to the multicast group
- `ListView` does not clear when refreshed and detects the same device multiple times

Plans

- Continue adding to the python receiver program to send data from lidar, add separate receiving thread for clients
- Create database using SQLite in app for storing SBC information
- Update refresh button to prevent connecting to redundant remote hosts
- Possibly add spinner animation to refresh button

References I

Python Module of the Week
https://pymotw.com/2/socket/multicast.html

Any Questions?