

Cleaning and Mapping Robotics Project

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Introduction

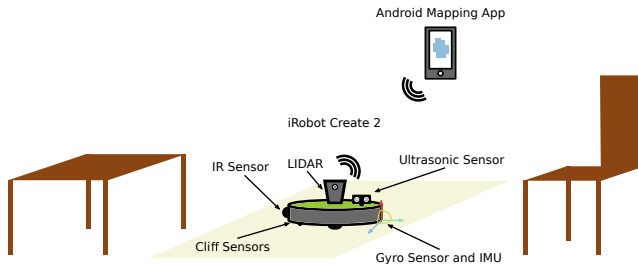


Figure: Diagram representing the working principle of the cleaning and mapping robot

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

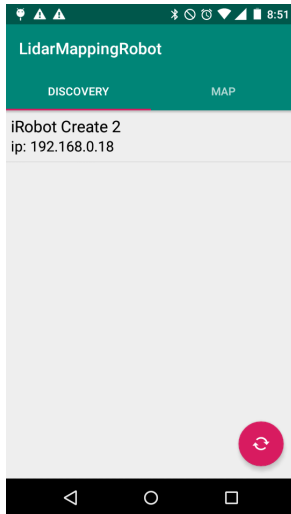


Figure: Screenshot of app with Discovery and Map tabs

Progress

```
Select pi@raspberrypi: ~/PyMulti
C:\Users\lauer>ssh pi@192.168.0.18
pi@192.168.0.18's password:
Linux raspberrypi 4.19.118-v7+ #1311 SMP Mon Apr 27 14:21:24 BST 2020 armv7l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Wed Jun 24 16:51:53 2020
pi@raspberrypi:~ $ cd P
-bash: cd: P: No such file or directory
pi@raspberrypi:~ $ cd PyMulti/
pi@raspberrypi:~/PyMulti $ ls
receiver.py  sender.py
pi@raspberrypi:~/PyMulti $ python3 receiver.py
data: b'Hello'
address: ('192.168.0.19', 42234)
data: b'Hello'
address: ('192.168.0.19', 35683)
data: b'Hello'
address: ('192.168.0.19', 38314)
data: b'Hello'
address: ('192.168.0.19', 55172)
data: b'Hello'
address: ('192.168.0.19', 60146)
data: b'Hello'
address: ('192.168.0.19', 49428)
```

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



Python Module of the Week

<https://pymotw.com/2/socket/multicast.html>

Any Questions?