





Multi Robot Localization Update

An update on what progress has been made and what is planned
By Caleb Lu



Outline

- Summary of project/task
- Current Progress
- Current Issues
- Planned Work
- Questions



Summary

Summary

The Goal of the assignment is to use:

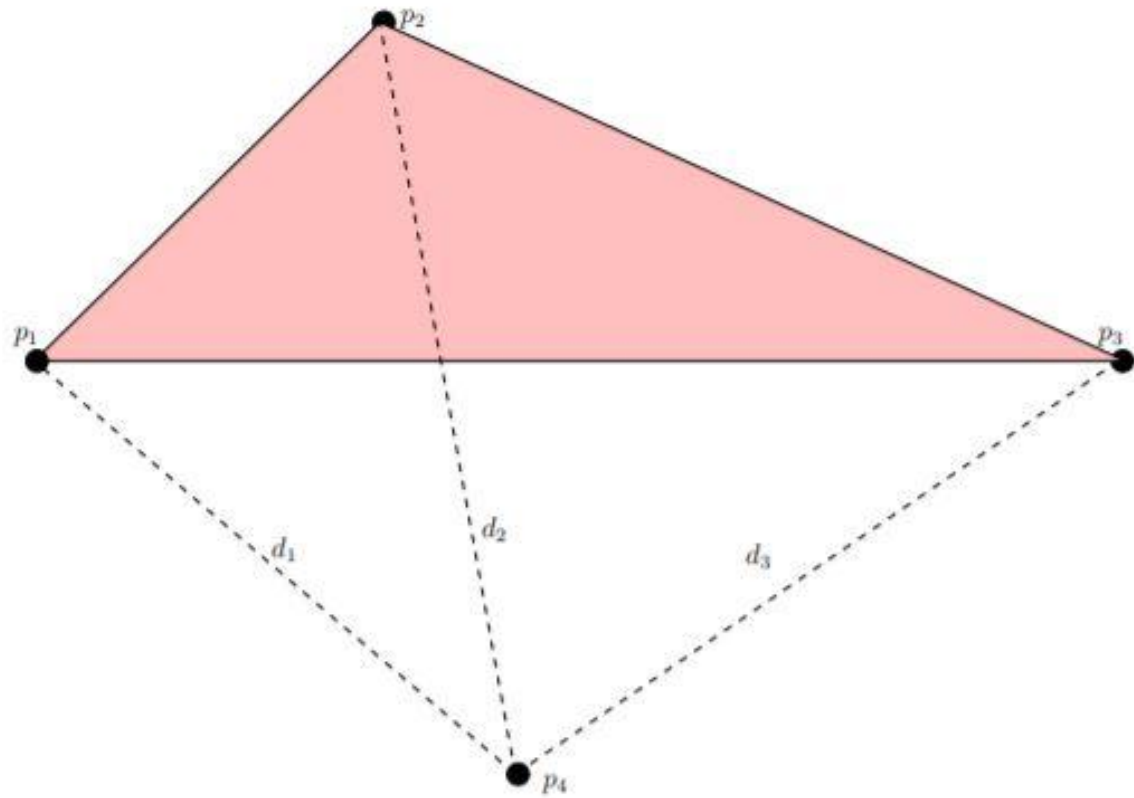
- BeagleBone Blue Board (BBB)
- (Currently) **3** XS2C Xbee/Zigbee Boards

To simulate indoor localization using trilateration

Zigbee/XBee Setup

- The Xbee boards are going to be set up into two configurations.
 - Coordinator
 - Endpoint
- The Robot/BBB will be connected to the XBee module that is set up as the **Coordinator**
- The beacons will be set up as endpoints.

This configuration will allow for Indoor trilateration.





Current Progress

Current Progress

- Current progress is that 1 of the board is setup to be the coordinator. This is the one setup to be on the robot/BBB.
- Tested/other 2 XBee boards are having issuing interfacing with the XCTU interface program
 - Currently doing some troubleshooting
- Started looking into resources to begin programming a file to connect read the XBee board from the BBB.
 - Have not decided on what language to use. Currently looking into C++ or Python based on the resources found
- Connected with the BBB over PuTTY to ensure communication is working



Current Issues

Broken Components

Issue Tier List: Yellow = Light | Orange = Medium | Red = Severe

- BeagleBone Blue has damage/two encoder inputs are coming off
- XBee/Zigbee S2C Boards - $\frac{2}{3}$ of them do not connect to the XCTU Program. Meaning I can only interact and format one of the boards

Additional Components needed

Issue Tier List: Yellow = Light | Orange = Medium | Red = Severe

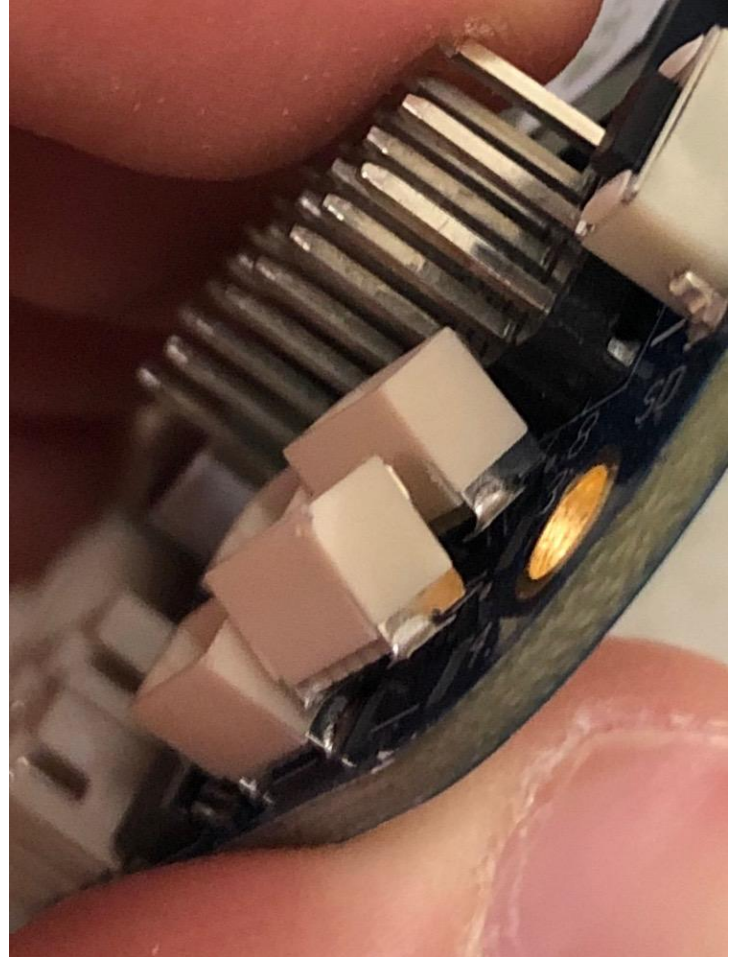
- XBee interface Board
- XBee/Zigbee S2C Boards - 1

Both are needed for a bare minimum test for communication. This is urgent but needs to be solved in a week to a week and a half.

BBB Damage

Damage found on the BBB

- The 2 of the Encoder Inputs are damaged
 - Unsure where this happened but reporting the damage just in case there is a future issue.
- Has little to no impact to me and what I'm doing so severity level is low.



Communication Issues

Discovering radio modules...

Search finished. 1 device(s) found



1 device(s) found

✕ Stop

Devices discovered:



Port: COM8 - 9600/8/N/1/N - AT

Name: COORDINATOR

MAC Address: 0013A20040DDE2C7

Found XBee Module

Discovering radio modules...

Search finished. No devices found.



0 device(s) found

✕ Stop

Devices discovered:

XBee Module Difference



Non-Working on the Left,
Working one on the Right



Planned Work

Plan for the coming week - Documentation

1. Update Lab Notebook/Documentation
2. Transfer to Latex Presentation

Plan for the coming week - Technical

1. Test XBee boards - ensure broken
2. Write program for reading XBee from BBB
3. Test if program connects/receives data from XBee board connected to BBB

Progress Walls

- Need extra XBee interface board
- Need extra XBee Module/radio and cable

Overall work that needs to be done

Short term time frame:

- XBee Configurations
- BBB Configurations
- BBB to XBee program

Long term time frame:

- 4 XBee Modules/radios
- 4 micro-USB cables
- RSS and RFID Reading
- Trilateration algorithm



Questions?

References

Images:

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Sites:

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