BRADLEY University

Project Notebook

Area Coverage Optimization

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Contents

Wednesday, May 08, 2019

Dr. Miah gave me an introduction to the project and what's has been done so far. he walked me through the senior project presentation and documentation.

Thursday, May 09, 2019

We had a short meeting with Dakota and Eric and we discussed the prerequisites for the area coverage project and we agreed to meet again to go over the simulation and the implementation of the project.

I have to setup the following on my laptop:

- Ubuntu
- ROS Kinetic
- Putty
- Winscp
- VRep
- Matlab robotics toolbox (on the lab's pc)

Friday, May 10, 2019

I met Eric and Dakota in the robotics lab to transfer the project work.

They walked me through the basics of the project and a quick hadwaving on the simulation and physical implementation.

Dr. Miah wanted me to run at least on Demo on my laptop. However we figured out in order to do that i will need two machines one with ROS and other with matlab toolbox on it.

Wed, May 22, 2019

I met Dr. Miah Regarding the computer lab access and he sent to following email to Mr. Mattus the lab director:

Dear Chris,
Amr Elhussein is an ME graduate student and is currently working on a robotics project under my direction. He needs access to a computer in the robotics lab (JOB 254). I'd appreciate if you could please give him access to one of the computers in JOBST 254 as soon as possible. He needs to run some simulations immediately.
I know it's moving time but he will be out of the lab before moving starts.
Thanks,

The project documentation will be using Latex, and we also set the github account to put all the project material on.

We also set up a weekly presentation session to update the Robotics and mechatronics research group on the progress of the project.

The first two presentations will be :

- an introduction to ROS.
- Matlab Robotics toolbox.

Tue, May 28, 2019

We had a Skype meeting to discuss the content of my presentation. Dr. Miah reviewed the presentation and he ponted out some remarks which i edited immediatley.

Fri, May 7, 2019

We had our first RAM group meeting, Caleb and Dylan gave a presentation on Mobile Robot Localization using Trilateration, Brian gave a presentation on BEMOSS and its enhanced applications and i gave the presentation on ROS.

Tuesday, June 6, 2019

We had a skype meeting on which we decided to install trial version of matlab on my laptop and use one of the other laptops available in the lab to run v-rep on.

Dr. Miah also wanted me to create a list of available programable quadcopters that we can purchase for our project.

Currently the official ROS website contains the following quadcopters:

- AscTec Pelican and Hummingbird quadrotors: cuurently unavailable.
- Berkeley's STARMAC: unavailable commercially developed by Berkeley.
- Bitcraze Crazyflie: costs around 205.00
  https://www.amazon.com/Seeed-Studio-Crazyflie-V2-1-Quadcopters/dp/B07QLVRXN9/ref=asc_df_B07QLVRXN9/?tag=hyprod-20&linkCode=df0&hvadid=343224652930&hvpos=1o1&hvnetw=g&hvrand=13584647834092143486&hvpone=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=1016766&hvtargid=pla-757568426634&psc=1&tag=&ref=&adgrpid=71764766791&hvpone=&hvptwo=&hvadid=343224652930&hvpos=1o1&hvnetw=g&hvrand=13584647834092143486&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=1016766&hvtargid=pla-757568426634
- DJI Matrice 100 Onboard SDK ROS support: mainly for developers but it's very expensive around 3K.
  https://www.dji.com/matrice100
- Erle-copter: didn't find a commercial one for purchasing.
  http://docs.erlerobotics.com/erle_robots/erle_copter
- ETH sFly: commercially unavailable, developeed by ETH zurich Autonomus sytems labs.
- Lily CameraQuadrotor : currently unavailable, the project was shut down.
- Parrot AR.Drone Costs around 174.00
  https://www.amazon.com/Parrot-AR-Drone-Quadricopter-Power/dp/B00D8UP6I0/ref=asc_df_B00D8UP6I0/?tag=hyprod-20&linkCode=df0&hvadid=343187928718&hvpos=1o1&hvnetw=g&hvrand=22991436406516486 65&hvpone=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=1016766&hvtargid=pla-523888688318&psc=1&

tag=&ref=&adgrpid=71716366209&hvpone=&hvptwo=&hvadid=343187928718&hvpos=1o1&hvnetw=g&hvrand=2299143640651648665&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=1016766&hvtargid=pla-523888688318

- Parrot Bebop: costs around 169.99
  https://www.amazon.com/dp/B00OOR9060/ref=dp_cr_wdg_tit_nw_mr
- Penn's AscTec Hummingbird Quadrotors

For DJI drones the only ones that are supported by ROS are quite expensive. so we either have to choose from the list or build our own drone.