BRADLEY University

Meeting Minutes

BEMOSS and Its Enhanced Applications

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Beginning April 2019

Contents

Friday, April 26, 2019

Dr. Miah will write a research grant proposal under BEMOSS and is due May 3.

All documentation will be maintained in a github repository for this project. I need to create a Github account and send my username to Dr. Miah. A Google Drive with the same name as the Github repository will be created name DocsBEMOSS.

I need to talk to Mr. Mattus about getting a laptop for research. It must be installed with Ubuntu administrative privileges.

Send him an email:

Hello Mr. Mattus, I will be working on a project with Dr. Miah. For that we would like to request a laptop available in the department if possible so that we can install Ubuntu operating system.

Try to go see him in the afternoon.

I need to learn the following Github Bash terminal commands:

```
Git add
Git commit -m "message"
Git remote add origin 'url'
```

To get a better undestanding of what is going on I need to go through Github tutorials.

Thursday, May 02, 2019

I met with Reece Bachman, Jordan Ingram, and Robert O'Malley in the lab with the intention of filming a video of the BEMOSS installation from start to finish. However, I misinterpreted Dr. Miah's email and thought we were going to install on the current laptop they have in the lab. Instead, I was expected to have received one from Mr. Mattus with Ubuntu installed. Robert showed me the motor setup with the Zigbee module, L298N dual H bridge module, and buck-boost converter. Later, Jordan demonstrated his work with the HVAC controller.

Friday, May 03, 2019

I still am in need of a laptop, so I must email Mr. Mattus once again on Monday, May 6.

Dr. Miah showed me some of the Github commands to upload tex and pdf files to the Github repo. We added the meeting minutes files `meeting.tex` and `meeting.pdf`.

Friday, May 10, 2019

Today, I met with Bob and Jordan to film the installation of BEMOSS on my borrowed laptop. After Bob attempted to install BEMOSS twice, he came to the conclusion that I installed the wrong version of Ubuntu on my machine. BEMOSS requires 16.04.5 not 16.04.6 that I had installed before the first installation. After another attempt at installing the software on Ubuntu 16.04.5, the same issue persisted involving three python modules not installing.

Wednesday, May 22, 2019

In this meeting with Dr. Miah, he gave me a flash drive with videos of the demonstration of the previous group's setup. Since I and the former students did not end up meeting in the lab to film the video on my borrowed laptop, they used their laptop instead. After unzipping the .tar.gz files, I was unable to view the videos due to some corruption issues. Dr. Miah said he had issues as well.

We discussed when I should work in the lab. He recommended 9 am to 5 pm Monday through Friday which I decided as my work time; however, the hours can be flexible. Likely, I will need to put in some hours outside of this time frame to get fully up to speed on the software.

Tuesday, May 28, 2019

I made some mistakes committing my changes to both the meeting and lab notebooks. My commits were not visible after push them to the repository. I will have to research this further but for now I must use the commands:

```
git add .
git commit -m "insert message here"
git pull origin master
git push --force origin master
```

Look at bemoss presentation (Google BEMOSS slides first link). When I make presentation, no paragraphs on slides. No formal dress is required.

For BEMOSS applications, I need to read the paper [cite here Pipattanasomporn2015.pdf]. These applications are listed in the document.

Friday, May 31, 2019

We (RAM group) need to setup a common time to be in the lab. Also, after giving my presentation I found that I need to increase my knowledge of BEMOSS greatly and my presentation skills.

Tuesday, June 4, 2019

Add references to images. Next Presentation: how to install bemoss. Follow steps in bemoss wiki. Add own thoughts to slides not just copy from wiki. `201931-ProgressPres.tex`. Next presentation will be 21st of June.

Move all materials from lab into Job 340.

BEMOSS work to be done:

1. Create functional icon for dc motor in BEMOSS UI to allow toggling on and off
2. Implement simple speed control algorithm within BEMOSS
3. Interface BLDC motor with BEMOSS
4. Researching agent based architecture with BEMOSS
5. Implementing basic machine learning algorithm within BEMOSS

Put personal contributions into list later.

A conference paper will be written in two months with DC motor interface icon in BEMOSS.

Write questions in notebook for meetings. Need to document everything well.

Need to be very confident in BEMOSS. May be presenting papers in conferences.

Improve speaking skills (i.e. talk louder, better eye contact, use figures on slides/poster to better point out what is going on).

Look at Markdown cheat sheet and write more in README in BEMOSS documentation.

Thursday, June 13, 2019

Questions for the meeting:

- What days should I be in the lab?
- Can I get a deadline for each project? I need to know what I am doing everyday to be productive and not waste anytime.
- Could I spend some time today building a schedule (at least 2 hours)?
- Will I have a proper setup for the motor on the third floor?

Send an email to Afrash cc'ed to Dr. Miah that I was able to fix the issue with BEMOSS installation after get it working in the lab. We will have Skype meeting with Ashraf discussing further things to add to BEMOSS along with updating BEMOSS with the latest version of Ubuntu.

I will need to update Reece's motor setup. Need to create interface to list all devices available on the network. Need to get previous group's motor setup working. Will be given a new RPi and motor to work on the setup from scratch.

Install Skype and send username to Dr. Miah.

Need to start writing conference paper, Dr. Miah will share template.

May be able to get paid by working with DC motor thus I need to start writing down my hours. May need to setup Bradley account to get paid.

Help Dr. Miah at 4:00 pm with packing items in office.

Do need to by in the lab everyday of the week.

Need to have first part (DC motor integration and GUI built) completed by June 28.

Under implementation folder, have alternativeInstallation files directory with apache-cassandra database.

Remove files from progressPresentation directory from Github repo and add tex files to parent directory and pdf files to progressPresentation directory.

Make sure not to download malware when downloading skype (i.e. don't click on ads).

Friday, June 21, 2019

Caleb's presentation:

- Beaglebone Blue - Singleboard computer
- What is RSS?
- Recieved Signal Strength needed to track robot's position

Might need to create IPE diagram to understand database.
Amr's Presentation:

- What is MATLAB used for? Controls the robot itself.
- What version of Ubuntu are you using on your laptop? Dual boot windows, Ubuntu
- It is not possible to install ROS in windows. Must use Unix

For next presentation, I need to reference my previous presentation and understand the Cassandra database.

Members of RAM group will meet every Friday from 4-6 pm. On Tuesday, need to talk to Miss Polen. I need to start recording hours and get 10 to 15 time sheets to start recording hours.

Monday, July 1, 2019

From the meeting with Dr. Miah: This is what needs to happen before scheduling the meeting with Ashraf:

1. Copy and paste the python script implementing the plugload api and control the WeMo switch
2. Document the current tkinter GUI used to control the motor

In the meeting with Ashraf:

1. Previously mentioned items
2. Discuss ways to improve the current agent based system in BEMOSS

Wednesday, July 3, 2019

In a completely separate file, remove all the device api python scripts and try to implement the wemo plug in a new directory. Comment out all functions as needed. Also, the next meeting may be delayed until friday if Eric is not available as well as Caleb.

Friday, July 5, 2019

Deadline for DC motor integration has been changed to July 31; however, I would like to have everything done in a week.

- Caleb's presentation:
  LaTeXis good for mathematics and presenting with page numbers
- Amr's presentation:
  Had problems modeling joint
  What is URDF file?

Friday, July 19, 2019

For next pres:
Add slide for VOLTTRON (need to thouroughly understand it).
IPE figure for remote GPIO next to text.

Questions
Caleb's pres:
Is that a voltage regulator on Issues/Pictures slide?
It is a 7805 regulator.
Does the Beaglebone have GPIO?
Yes
What is the API mode?
Can easily configure modules.

Amr's pres:
Can you explain what URDF is?
XML file which contains physical representation of the robot.

Tuesday, July 30, 2019

In today's short meeting with Dr. Miah:

- Send Ashraf an email with the screenshot of the logging error in BEMOSS, see how he can resolve the problem
  - We must submit work without any errors in the software
- Work on the issue tonight
- I should know the INs and OUTs of BEMOSS by now; however, I have failed to complete this task
  - Without any hesitation, I should know where to implement pieces of software and not have to guess.
- Dr. Miah will send me email with resources on software design
- Deadlines are absolutely crucial and they cannot be missed
- I need to learn object-oriented programming thoroughly

Friday, August 2, 2019

From my pres:
Email Ashraf about issues. Stick with current version of BEMOSS.
Caleb's pres:
How does pc use powershell to communicate with Zigbee boards?

Monday, August 12, 2019

Questions for meeting with Ashraf:

- How to add a new device type?
- What other devices might be useful in adding?

In pgadminIII, Look into
Supported Device list table
Not looking adding other types of devices

Monday, August 19, 2019

Questions for meeting with Dr. Miah:

- When should I have the paper done by?
- Should I draw a block diagram for the motor controller circuit in the lab?
- Must the new device be a different type of device or be from a new category?

Friday, August 30, 2019

Questions for Dr. Miah in meeting with

Friday, September 13, 2019

One possible idea is to implement in BEMOSS is default 'OFF' state. In the group meeting, Eric suggested adding a way to set the default state of a device to the 'ON' state. This could be useful as some loads require initialization in the 'ON' state.

Tuesday, September 17, 2019

Questions for Dr. Miah in the 11:00 meeting:

- What is the difference between a building energy management system and a building automation system? Building energy management is utilizing policies and algorithms to help both meet energy demand in facilities and lower energy demand. On the other hand, building automation system is the centralized control of different building systems such as HVAC and lighting systems. Devices may be scheduled to turn on at certain times of the day or week. Data may be collected over time for analysis.
- Should I be researching other open source/proprietary building automation systems or building energy management systems? Right now, the platforms that were mentioned in the paper are fine. However, I do need to do a background study on some different platforms. They need to be briefly discussed in the problem description.

  In the future, we are looking to build a mobile application rather than a web application for the purpose of building energy management.

Tuesday, October 8, 2019

Today, Dr. Miah shared the news that the university cancelled funding for all internal grant award programs, so the proposal will not be submitted to the university for funding. Instead, now the focus will be brought back to working on adding the Kill A Watt meter to BEMOSS and implementing the DC motor speed control algorithm. By November 15, research for the Kill A Watt meter needs to be completed (i.e. need to determine what parts to purchase so that Mr. Mattus can purchase the materials). The speed control algorithm will be started on Dec 1 and continue through February 2020. The gantt charts for 2019 and 2020 detailing the work are shown below.

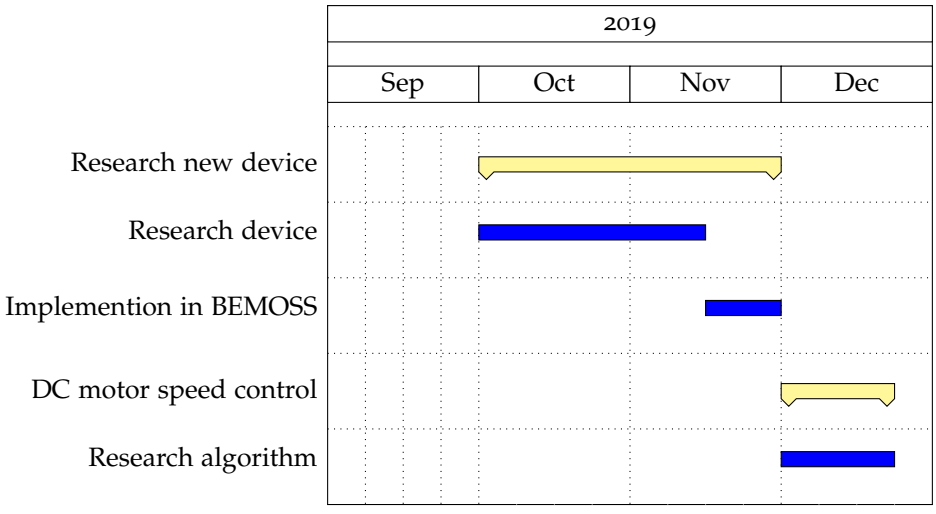

Figure 1: *Gantt chart for Fall 2019*

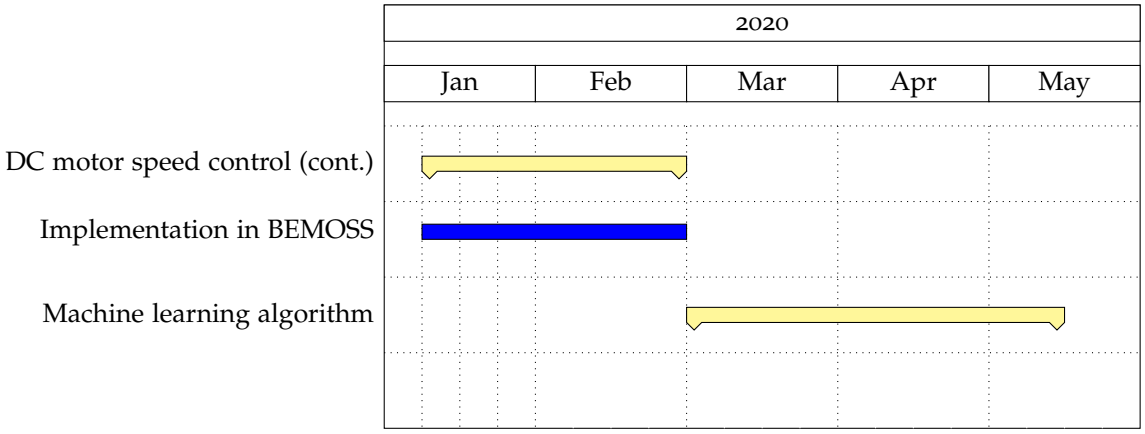

Figure 2: *Gantt chart for Spring 2020*

After a second meeting with Dr. Miah where I presented to him the information I found about the Kill A Watt meter(s), we decided against implementing the Kill A Watt meter as the whole motivation for adding it to BEMOSS is to wirelessly measure the electricity demand (W or kW) of electrical/electronic loads. I did not mention to him the fact that the WeMo Insight switch can already wirelessely measure this quantity and is fully supported by BEMOSS. Thus the the Kill A Watt would be unecessary. Instead, the plan is to use the existing switch to measure power consumption of a new IoT device that is not currently supported by BEMOSS. The charts above have been updated with this information.

Tuesday, April 3, 2020

In the biweekly meeting, Dr. Miah suggested that I move away from using the ESP8266 board to use the Beaglebone Blue for controlling the DC motor instead. Now the focus will be directed towards solely working on software development rather than interfacing with hardware while the engineering building is closed due to the coronavirus outbreak.

Monday, June 1, 2020

Some of the points from the meeting were:

- Implement auto discovery feature
- Add in page for controlling the device (ON, OFF buttons)
- Microgrid functionality may be postponed for the minute