# Final Reflection Report

**I. General Information**

Project Title:

Submitted by (insert names of team members):

Submitted to (supervisor name):

Date submitted:

**UNEDITED FROM MATHEW**

**II. Discuss your accomplishments and experience in the project. You should comment on the following areas. (Please use additional pages, as needed.)**

1. Describe your most important accomplishments in this project. What milestones have been achieved. What remains to be done. *(200 – 300 words)*.

Our most import accomplishments in this project were creating all the backend for this project. We have created a working database with an API that can be used to create, read, update, and delete data. The most important accomplishment would have been creating a working neural network. We have tried many different methods and models but none of them have been able to output an accurate result. We are still trying to figure out how to get a working neural network. We hit milestones such as developing scripts for the raspberry pi that would connect to a battery managment system and upload data to the MQTT server. Another milestone that was hit was creating the backend for our project such as creating a database with an API. We still are trying to figure out how to get a working neural network and hopefully we will be able to get one working by the end of the semester. This hopefully can be achieved by creating a convolutional neural network and modifying the data input a bit to see if we can get a working model. We are going to try masking some data to simulate the battery being in use. This should let us predict the k paramaters based on the cached set we have.

1. Reflect on the work breakdown structure and timeline given in your project description. Did your project progress according to what was indicated? Discuss any deviations from the WBS that was projected. *(100 – 200 words)*.

The work breakdown structure and timeline tried to be followed. However, as we did get a working database with an API that reads information uploaded to the MQTT server, the neural network was not able to goes as planned. The initial plan was to have the nureal network created by February and be able to collect data by March. However, due to the lack of time and the complexity of the neural network, we were not able to create a working neural network. We have tried many approches to models as well as different methods of aranging the data to output an accuract result but most tend to fail. This has set us back a lot and we are still trying to figure out how to get a working neural network.

1. Discuss your experience working on the project. What went right? What went wrong? Any other comments. *(100 – 200 words)*.

Our experince working on this project was very interesting. We have learned a lot about how to create an effeciant database and how to use an API to read and write data. We have also learned how to use MQTT to send data from one device to a server. Building this entire backend went rather smoothly without many errors. We have also built a software on a raspberry pi that would connect to a battery managment system and upload data to the MQTT server. This was also a very interesting experience as We have never worked with a raspberry pi before. The only problem we are facing with out project is building the nueral network. We have tried many different methods and models but none of them have been able to output an accurate result. We are still trying to figure out how to get a working neural network.

1. Discuss your key takeaways from this experience. What is the most important thing your learned? If you could go back, would you change anything? Explain. *(200 – 300 words)*.

The key takeaways from this experience was learing to create a backend effecently and affectivly. We have learned a lot about craeting databases with SQL and how to query them using python to read and write data. We have also learned a lot about Amazon Web Services and how to use it to host a server in the cloud. We have also learned how to use MQTT to send data from one device to a server. If We could go back, We would change the way we are trying to build the neural network. We have tried many different methods and models but none of them have been able to output an accurate result. We are still trying to figure out how to get a working neural network. If We could go back, We would change the way we are trying to build the neural network. We have tried many solutions such as using a convolutional nueral network or a recurrent neural network but none of them have been able to output an accurate result. We are still trying to figure out how to get a working neural network. We plan on continuing trying to use a convolutional nueral network but modifiying the data input a bit to see if we can get a working model. Each battery has an state of charge curve. Our idea is to generate curves based of normal charging and discharging on those k paramaters at random times intervals with noise added to the curve. The lower and upper state of charge will be masked off to simulate the battery being in use. This should let us predict the k paramaters based on the cached set we have.