

Progress Report

Progress report for Alternative Parking Indicator

ENSC305W/440W: Capstone Engineering Science Project



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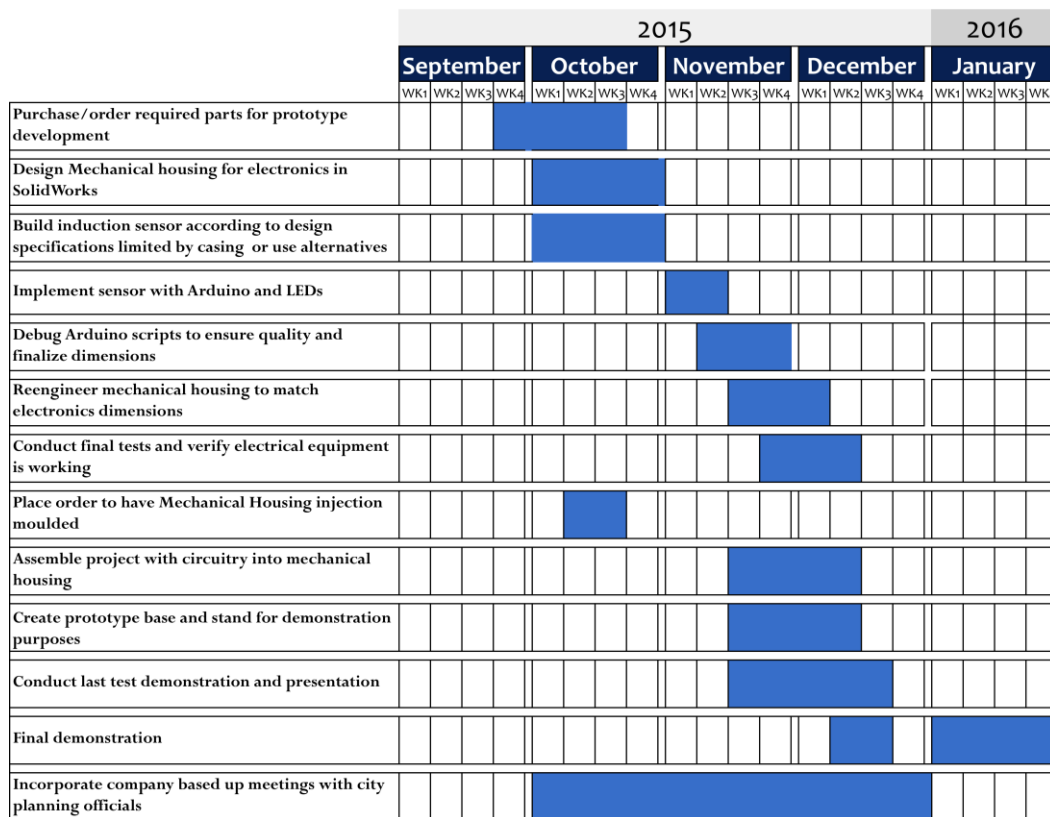
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1] Introduction

At ParkoLite Ltd., our engineering team is working on *Alternative Parking Indicator (API)* project. API will consist of a mechanically designed pole which will be placed on top or along with the curb. The motive behind coming up with this idea was to help the drivers to understand complex bylaws and to also provide assistance to the parking officials to nab the violators.

Drivers will simply look at the colour of the pole to check the availability of a parking spot. Green colour means parking is available and blue means parking is taken. Similarly parking officials can also use this advancement in technology and see if colour of pole has changed to yellow or red, where yellow is a 15 minute warning on a standard 2H free parking and red means car has been parked over 2 hours. Officials are simply looking at colour of a pole instead of checking every individual car round after round, hence, saving a lot of time and chances of human error.

2] Schedule



Gantt Chart

As outlined by Gantt chart in ParkoLite Ltd's proposal document, it can be seen that we are 10-13 days ahead of schedule. Our product demo date is on December 2nd. Continuous testing is being carried out as we approach our presentation date. Also, ParkoLite has decided to implement a basic Android app as was briefly discussed in the design specification document. Since we are about 8 days ahead of the original

schedule we have started working on the app. However due to time constraints, we have not committed to the app being a part of the final deliverable. On demo day, our demonstration will mainly be of the alternative parking indicator and its proof of concept. If the app is completed we may include that as a part of the demonstration. For now, it is strictly time dependant. It should be noted that the app was not something that was a part of the original scope of work. This was an idea that came about organically closer to the end of the semester.

3] Financial

ParkoLite Ltd received funding from the ESSEF. The details are summarized in the following tables.

Amount proposed for funding	\$1200
Amount received for project	\$585
Total amount spent on project	\$492.96
Future expenditures	\$30
Amount left from funding	\$62.04

Percentage Used	84.27%
Percentage used for electronics	57.11%
Percentage used for mechanical	27.16%

General financial tracking

4] Progress

ParkoLite team was formed before the start of fall semester and members got to know each other via skype meetings initially. First few weeks of September were spent on research where we did research on the types of sensors that can be used for our project. We were also actively discussing design ideas of our model at same time and curb model was adapted initially along with inductive coil sensors. However, after some more research and discussing with experts, our model was modified from curb to pole design. Pole design is less prone to damages by car and also has visibility advantage over curb model during extreme weather conditions like snow or hail. We also switched from inductive coil to AMR sensors on advice of Dr. Andrew Rawics since the later is more cost effective compared to first method and also has hardware readily available to implement it compared to inductive coil sensors.

ParkoLite’s main goal for ENSC 440 was to replace the free bylaws with a simple pole designed *Alternative Parking Indicator*. The initial stages of the development solely focused on the functionality of the electrical, software and mechanical parts of the project. After finalizing the main functionality of API, the development stage focused on integrating electrical and software aspects of the project, for instance integrating digital potentiometer code with bylaws and LEDs code both of which were implemented using Arduino. By the end of the third week of November, sensor’s triggering was successfully tested and entire model was designed on PCB, which was successfully installed in mechanical pole design along with LEDs by

last week of November. Our team carried out a few tests during the integration phase to ensure the proper functionality of the parts.

Due to the fact that we were ahead of schedule ParkoLite will try to implement an Android app which will notify drivers on the parking status of the cars. As of now, we are 40% done with this part. We have to integrate the Wi-Fi module with the app, which Parkolite Ltd hopes to achieve within next 2 days. However, for the purpose of ENSC 440/305 we have not committed to it being a deliverable as it was also mention in the design specs and functional specs.

5] Concluding Remarks

ParkoLite Ltd has very closely followed the original schedule as proposed in the proposal document and was ahead of schedule by 10-13 days. Currently our team is carrying out tests continuously and is trying to integrate the app with Wi-Fi module. Our team has successfully designed and tested the pole designed parking indicator, which is the primary part of our project and the sole objective for this project. We are currently working on the addition to the project which is the android app, in which we hope to finish before our presentation date. Once again this is not a guaranteed deliverable. The only guaranteed deliverable is the API itself, since 95% of the time spent in the last 5 months was allocated to developing the API exclusively.