

WatechPark: SMART Parking Capstone Project

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INTRODUCTION

Proposal:

Many busy parking lots are often plagued with congestion, with drivers competing to find a spot by cruising around and locating the right parking space. This is inefficient, time consuming where productivity is lost for consumers and businesses. The system we will be developing will address payment for parking, capacity management and location finding following an IoT approach using hardware and software. This project is focused on solving these issues by connecting consumers to parking lot owners and providing parking services by using a more convenient, simpler method to retrieve parking lot data seamlessly.

The main objective of this undertaking is to provide a more efficient and reliable platform to aid with parking scenarios. In particular, for the purpose of the consumer demographic who's in the market for an alternative parking lot management system. Our focus was to develop a platform, that would be the gateway to support consumers with finding the best parking space during any time, any place or anywhere in the world.

Idea:

Through the development of this product, we wanted to reach as many demographics and be able to provide an inexpensive and reliable platform where parking lot information can be retrieved at a glance. The idea of this project came up when the group realized that we can develop an easier way to find parking spots, by connecting all the spots to a SMART parking application. We offer users with the ability to use a SMART parking mobile application to be able to add/manage cars, view parking lot data, make on-the go reservations for parking passes, accessible via an online database to send/receive information in real-time, all built-in with a simple and effective interface.

Background:

In the industry today, there have many occurrences where parking in general has become a hassle for city residents and parking lot owners. This includes, situations where drivers are struggling to find the best spot to park their vehicles. This can lead to dis-satisfying scenarios, where drivers are unaware of their surroundings, before even entering into the space. Due to this reason, it can lead to congestion in major traffic centric cities, with drivers competing to find a spot. This can be time-consuming, inefficient where productivity is lost for consumers and businesses. This project is focused on helping reduce the impact of this cause, by developing a system that will address payment for parking by taking an advanced and modern approach towards capacity management, and real-time information gathering to keep consumers up to date with their daily occurrences.

AIM

Bill Of Materials:

(WORK IN PROGRESS)

Required Resources/Tools:

The tools used to complete the project ranged from the initial design, development, testing and presentation phase of the overall end product.

Parts(Sensors/Effectors):

- VCNL4010 Proximity Sensor
- IR Break-Beam Sensor
- PCA9685 Servo Controller
-

PCB (Printed Circuit Board) : (WORK IN PROGRESS)

- Wire cutters, soldering iron, solder material, helping hand, pin headers,

Facilities:

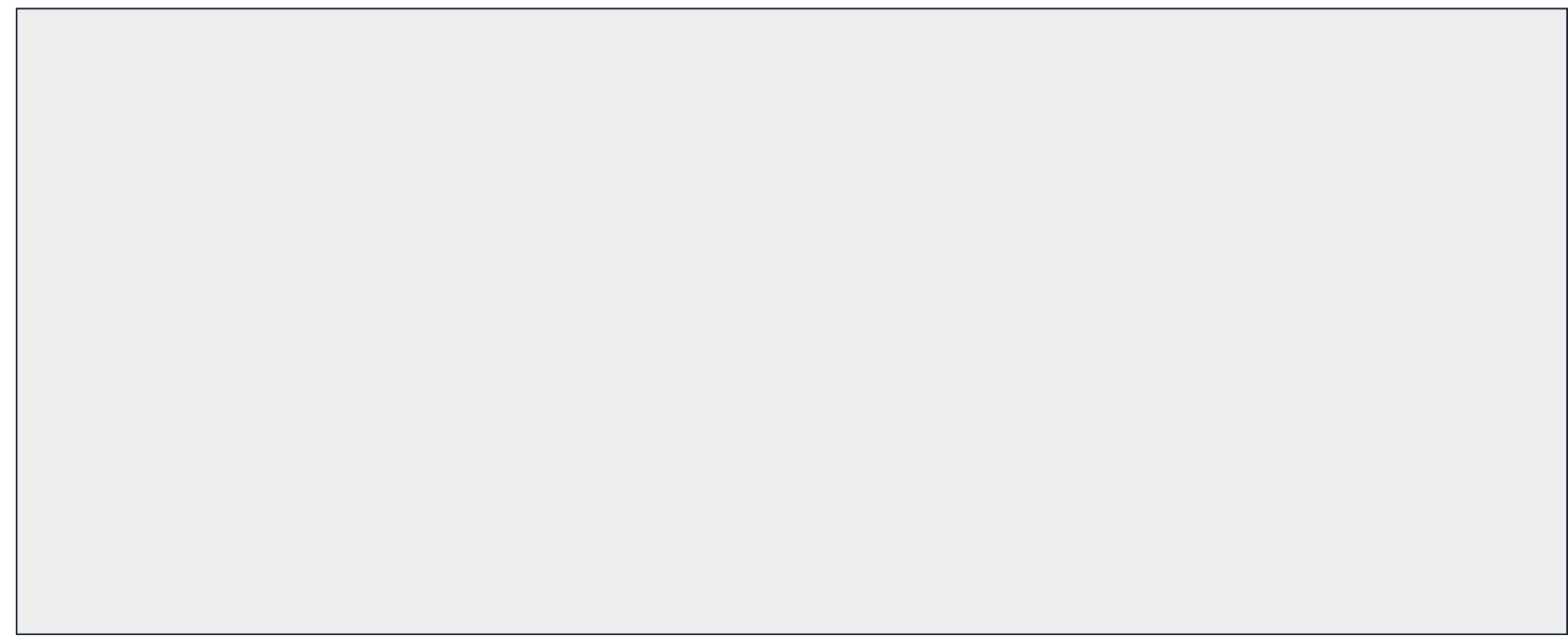
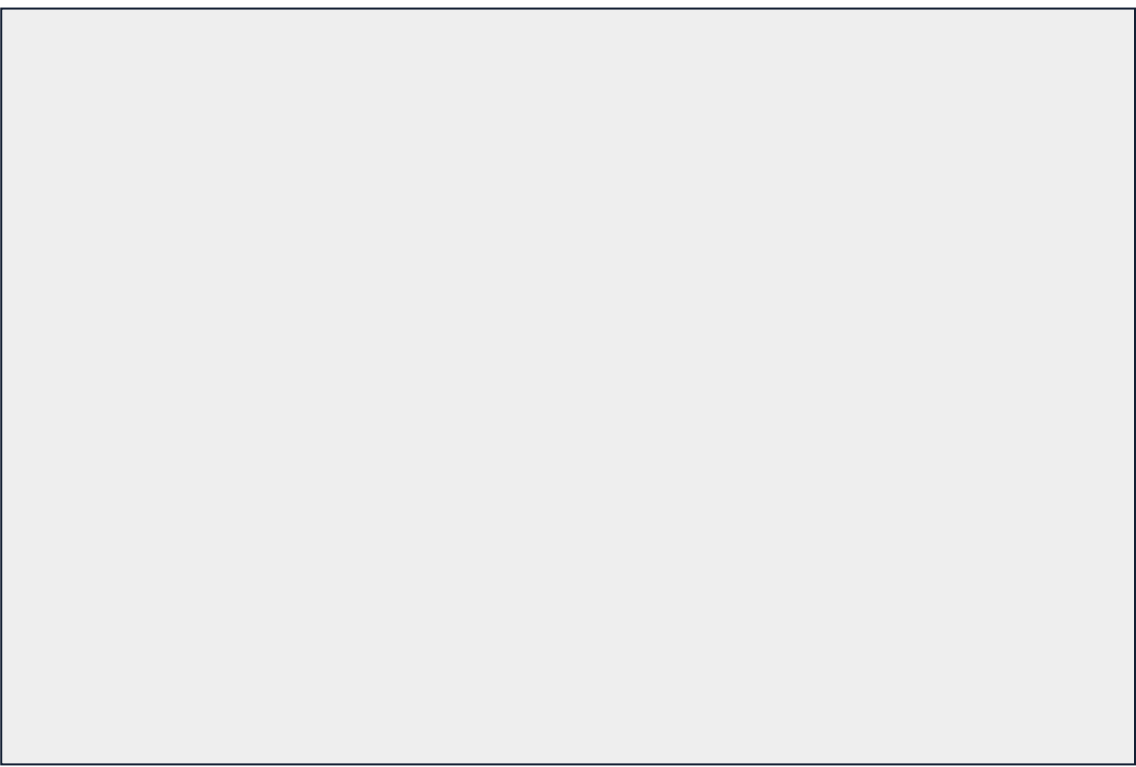
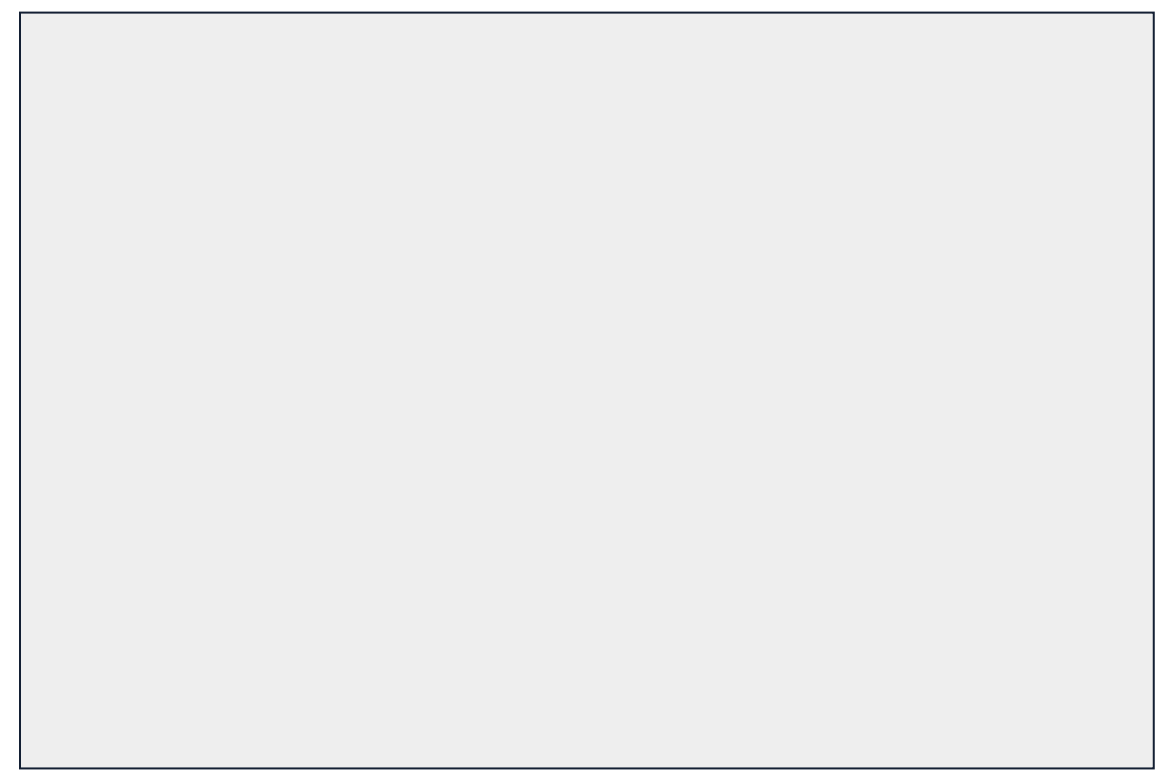
The facilities used in the project, included the prototype lab in Humber College. This facility is the main source of providing the services to etch the PCB board during its final stages of production, as well as provide the laser-cutting services for the final enclosure design. This facility was used to solder the components, sensors together on the PCB and test the final design.

The facility provided us with more viable options, recommendations and the best way to overcome any issue we were experiencing. This included, designing the PCB board, using the Fritzing software. Adjustments were made depending on the different scenarios, and based on the advice of Vlad and Kelly whom were present to help.

METHOD

Electronics/PCB:

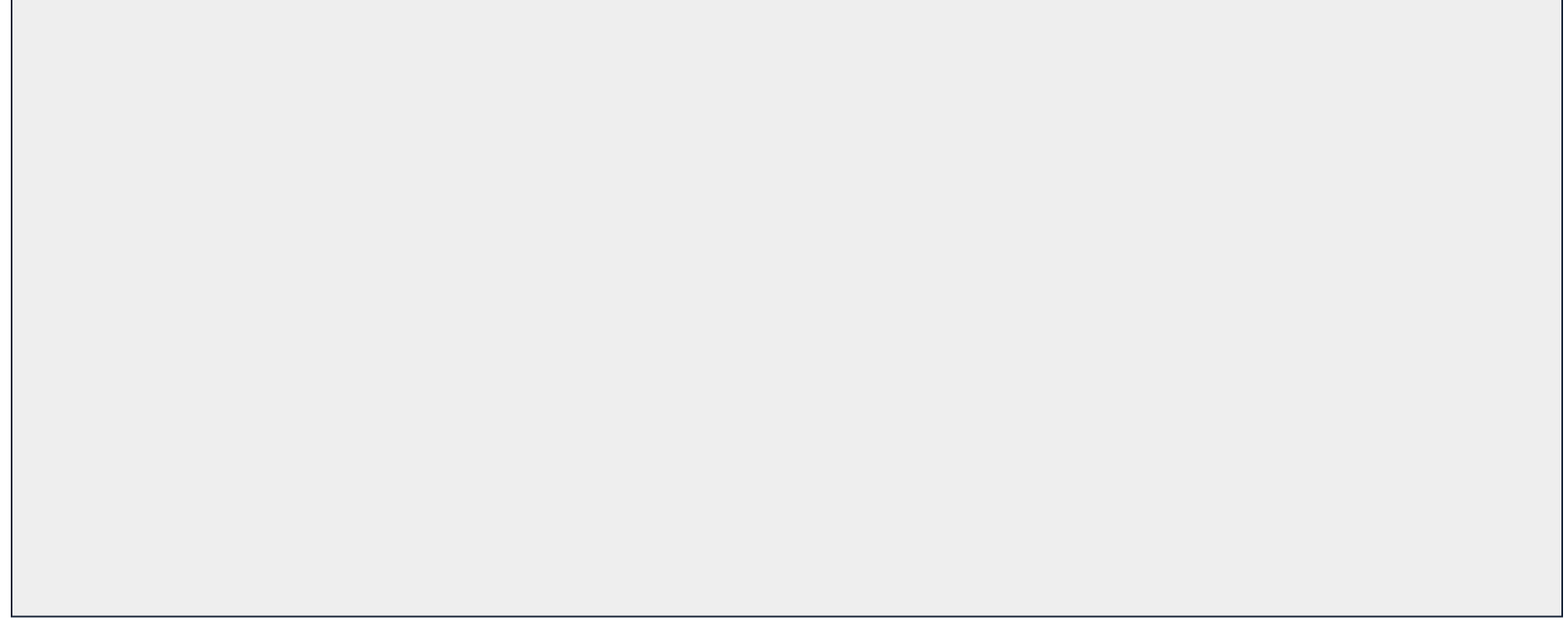
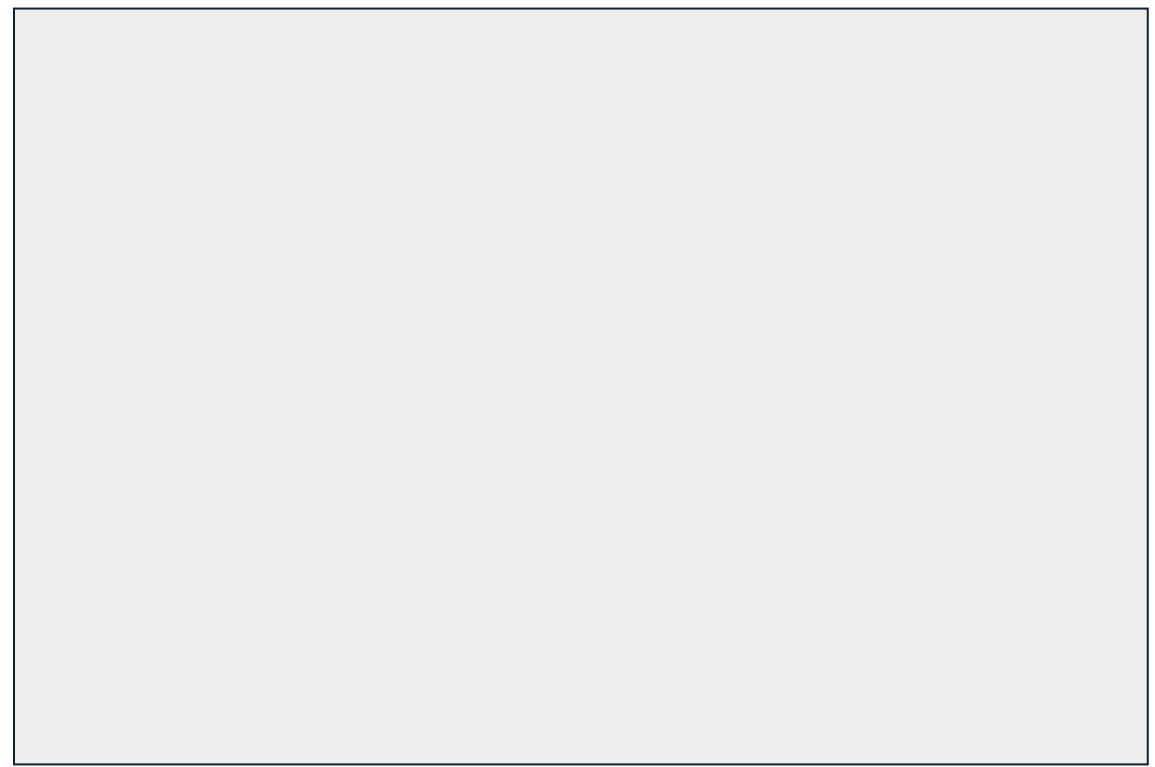
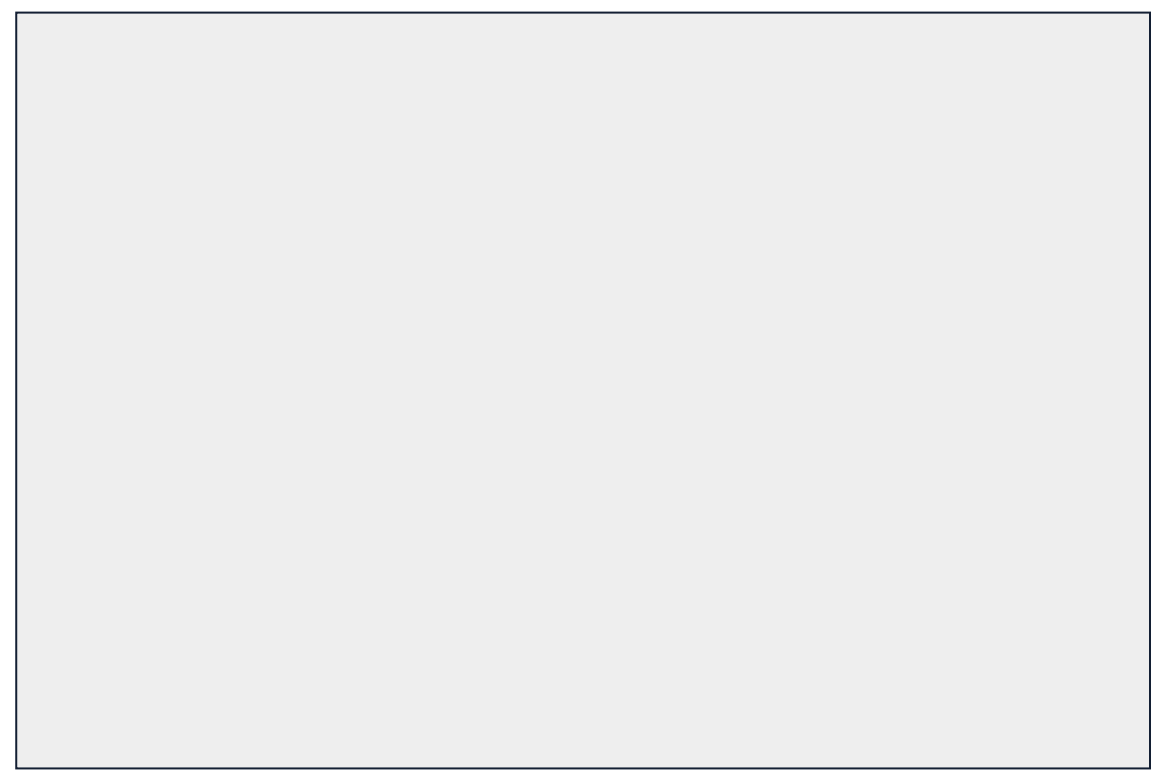
Firmware:



RESULTS

Mobile Application:

Database:



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PRINTING

Enclosure:

Unit Testing:

Production Testing:

CONCLUSIONS

Next Steps:

ACKNOWLEDGEMENTS

References: