Using IoT to simulate a parking bay and provide real time updates via an app based on external factors

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# Introduction

(Talk about the rise of cars and AI, how it’ll impact road and road users, congestion etc)

This section of the report will cover the general scope of the project and what problem the project aims to tackle.

As car manufacturers continuously unveil new cars to the public every year and as the world’s population continues to grow, a trend can be seen with these two factors. There are more cars appearing on the road every year due to growing population[[1]](#footnote-1). This trend can have negative effects in terms of environmental and financial aspects (e.g. more money being spent on petrol, insurance claims increasing, pollution, hazardous chemicals entering the atmosphere). However there are positive effects to this trend such as new technology emerging through innovative solutions and moving towards a society revolving around self-driving cars.[[2]](#footnote-2) Due to the trend outlined, finding parking bays to park in will be a challenge hence this project proposes a solution to combat this problem.

Tackling the problem:

In this project, I have t

The aim of this report is to solve an on-going problem most drivers face daily; parking. This report will delve into one of the many solutions available to combat this problem yet in an efficient and innovative manner.

The aim of this project is to help solve an on-going problem most car drivers face daily; finding an available bay to park in. This project will aid and help car drivers find a car parking bay that they’ll be able to park in without driving further than necessary, searching for an available space to park in.

This will be achieved by creating a sensor (using an Arduino Uno) that will record the data from an ultrasonic sensor, GPS module and thermistor module. Once the modules acknowledge a drastic change in these two external factors, the results will be shown to the user via an app hence indicating whether or not the bay is vacant or occupied. As well as that, the app will learn how the data correlates to the bay being vacant or occupied, essentially machine learning. This will be achieved by implementing the concept of neural network and using the logistic algorithm. The reason for using the logistic algorithm is because it is typically used to answer ‘Yes/No` questions and this fits my situation as there are only 2 answers in my context; the parking bay is either occupied or vacant. By implementing this feature, the app will be able to predict whether or not the bay is being used and will come in handy if for some reason the sensor cannot fulfil its purpose (e.g. if there are networking issues, wiring issues, external factors such as rain etc.).

1. http://www.bbc.co.uk/news/uk-england-35312562 [↑](#footnote-ref-1)
2. https://www.forbes.com/sites/oliviergarret/2017/03/03/10-million-self-driving-cars-will-hit-the-road-by-2020-heres-how-to-profit/#3c617ee37e50 [↑](#footnote-ref-2)