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Draft of Project Initiation Document

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Summary

This project aims to ease users frustration when parking their car by providing real time update to car parking spots.

Purpose

Identification and discussion for the scope of the project

Aims + Objectives/ Goals

Identification and justification of project aims and objectives that are related to the project

Identification of activities and sources required to satisfy initial investigation relating to related works and literature review.

Identification and reasoning of initial list of requirements from initial project investigation.

Project Deliverables

Supporting Project Plan indicating and detailing activities, timescales and deliverables.

Risks

Identification and discussion of the project problem

Ethics

Form

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Agile, Git

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

# Project Initiation Document

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**Overview**

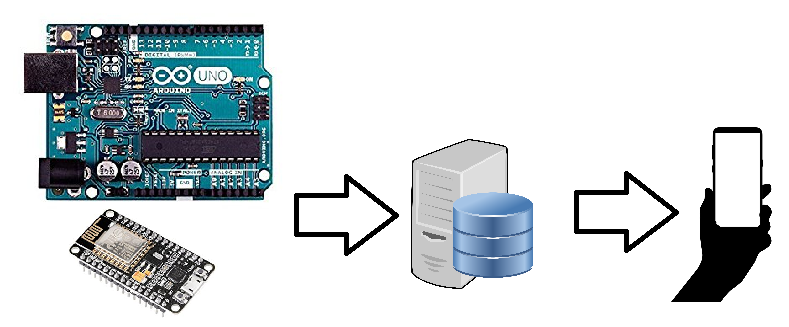
Finding a car parking spot can be very frustrating to drivers. As a result of this frustration, drivers tend to park illegally and end up having to pay a penalty/fine. Local councils are generating massive amounts of revenue by handing out parking fines. The following statistics paint a picture on how significant the car parking industry is:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Surplus in £(millions) made in parking fines per local council [[1]](#footnote-1) | | | | | |
| Local authority | **2010/11** | **2011/12** | **2012/13** | **2013/14** | **2014/15** |
| Westminster | 38.2 | 41.6 | 39.7 | 51 | 46.4 |
| Kensington & Chelsea | 21.1 | 28.1 | 30.4 | 33.5 | 33 |
| Camden | 21.1 | 25 | 23.5 | 24.9 | 24.5 |
| Hammersmith & Fulham | 16.6 | 19.5 | 19.4 | 23 | 23.8 |
| Wandsworth | 14.4 | 16.1 | 15.9 | 19.7 | 20.4 |
| Brighton & Hove UA | 12.7 | 14.4 | 16.3 | 18.1 | 18.6 |
| Haringey | 3.3 | 5.3 | 5.2 | 5.7 | 16.1 |
| Islington | 5.6 | 10.9 | 8.2 | 10.4 | 13.7 |
| Nottingham City UA | 3.7 | 3.3 | 11.8 | 12.1 | 13.3 |
| Hackney | 4.7 | 5.9 | 7.8 | 8.2 | 10.8 |
| Brent | 3.9 | 2.7 | 2.7 | 8.3 | 10.5 |
| Tower Hamlets | 6 | 5.8 | 7 | 8.3 | 10 |
| Birmingham | 5.1 | 5.5 | 6.9 | 7.8 | 9.7 |
| Lambeth | 7 | 5.8 | 12 | 7.2 | 9.7 |
| Milton Keynes UA | 6 | 6.6 | 6.7 | 8.2 | 9 |
| Cornwall UA | 8.2 | 7.9 | 8.1 | 8 | 8.7 |
| Manchester | 1.9 | 6.3 | 8.8 | 8 | 7.9 |
| Hounslow | 6 | 7.3 | 6.4 | 7.8 | 7.7 |
| Newham | 3.9 | 7.3 | 8.2 | 7.2 | 7.3 |
| Merton | 4.4 | 5.7 | 6.9 | 7 | 7.2 |

**Purpose of this project**

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 that will record the data from an ultrasonic sensor 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, neural network. 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.).

Upon preliminary research, it shows that this type of concept does exist but is still in its infancy. An example of this is Google Maps. In their latest update to the app (August 2017), they are using historic data with machine learning to predict the availability of car parking bays[[2]](#footnote-2). Whilst this is a step in the right direction to solving the problem described, it’s not as accurate as having a physical sensor embedded to the parking bays. As the world progresses further in technology, more and more devices are being connected to the internet, the concept of IoT (internet of things) will be greatly beneficial here and will outperform the use of machine learning.



1. RAC Foundation, December 2015, Council parking 'profits' up again in England, Available at: http://www.racfoundation.org/media-centre/council-parking-profits-up-again-in-england-2014-15 [↑](#footnote-ref-1)
2. Google Blogs, August 2017, Put it in park with new features in Google Maps, Available at:https://www.blog.google/products/maps/put-it-park-new-features-google-maps/

   [↑](#footnote-ref-2)