Plant view – an augmented reality android application

Matthew Frost – L1426439

# Introduction

## Abstract

An augmented reality Android application that displays information relevant to the user depending on their location. The application was originally developed for a client that operated on an industrial site, so the data collected would be relevant to their use case, such as the temperature of a pipe. However, the app is generalised enough that it can work with any numerical data set, for example the energy usage of buildings at the university. The data is displayed on a graph to show how it changes over time and analytics are applied to highlight any anomalies.

To find the location of the user, the Android device’s GPS is utilised to allow the acquisition of the device’s latitude and longitude to find the position and the bearing to find which direction it is facing.

A separate Google Maps web application has been developed to allow the mapping of locations against data in an SQL database. Both the Android app and web app communicate with the data sources using Node JS web services. The web services are used to store and retrieve location points as well as pull the data for each location wherever it is stored.

## Rationale

The project proposal was initially provided by a local company, Sabisu, who develop reporting tools for customers within the oil and gas industry. They were looking for an augmented reality Android application that would allow a user on an industrial site to walk around with a tablet and view information on what was around them.

Furthermore, this project allows for a range of technologies to be used including Android, Node JS and SQL. This would help with employability as both web applications and mobile applications are what the current market is moving towards.

## Ethical, Legal and Social Issues

Since this project involves a real client it is important that the British Computer Society code of conduct (British Computing Society, 2017)is adhered to. The section that would apply specifically would be “professional competence and integrity” meaning that work should only be undertaken that I think I am competent of and I should be willing to accept criticisms and alternative viewpoints.

As my application is intended to be used within the chemical industry it could be reporting some critical information to the user. However, as the application is only reading the information from a data source that has been inputted by another system the application does not have any ethical issues in this regard.

# Design

## Requirements

The initial proposal provided contained a number of requirements, some were necessary and some were just “nice to haves”. After analysing the requirements provided, it was clear that it would not be possible to complete them all in time and some of them would not be possible to work on outside of the Sabisu offices. Therefore, it was necessary to remove any requirements that would not be feasible as well as anything that would not be implemented in time and would not affect the end product too much.

For example, one of the requirements was to have it connect with the Sabisu platform to integrate with some of their APIs. However, this would require having a VPN for their network during development and it is not a feature that is necessary for the application to work.

### Minimum Requirements

* The web application should allow the user to create, edit and delete locations
* The web application should display all created locations on the Google map interface
* The web service should return all created locations that have not been deleted
* The web service should be able to return all locations within one-hundred meters of a given latitude and longitude
* The web service should allow locations to be created, edited and deleted in the database
* The web service should be able to return all data associated with a given location