## Aims

The overall aim of this project is to develop a smart phone application to control a garage door opener that is backwards compatible with a larger number of opening mechanisms than is currently available. We also aim to integrate other convenient features into this application.

### 1. Acquire Raspberry Pi to open the garage door and program it using Python

The proposed basis for the garage door opener is a Raspberry Pi for a number of reasons. Firstly, they are relatively affordable, highly customisable and sufficiently powerful enough to run the code to open and close the door, take inputs from a safety mechanism and from externally when connected to a wired or wireless network. The second reason is that a Raspberry Pi was chosen is that a proof of concept already exists, as a number of enthusiasts have already used one for a similar purpose on an individual scale. Programming will be done in Python as this is the one of the default languages available on a Pi, and is the recommended language to use for beginner programmers (which we all are).

### 2. Design or find a suitable safety mechanism

A safety mechanism that will stop the door from closing on people, pets, cars or other objects is a must considering that we hope to open and close the door remotely, and that inherently means that the person operating it will not have line-of-sight to the door to know that the path is clear. Finding, or designing, a mechanism that works with a Raspberry Pi will therefore be quite important in the viability any end product, and therefore the project.

### 3. Design an application to control the Raspberry Pi

Remotely controlling the Raspberry Pi from a distance further than the short-range radio transmitters that come with garage door openers is inherent to the product idea. A smart phone application is preferred to a website as ease of use and convenience are imperative to the conceptive of the Internet of Things, and an application that immediately opens to the screen related to your door is more convenient than a website that you need to navigate and then log in to before you can use the product.

### 4. Integrate weather data using the API from BOM

The Bureau of Meteorology now makes their data available to use through an API. Having weather information available in the application is desired as we believe that this would greatly increase the convenience of the application if a user could see what the weather for the day is expected to be when they open or close their garage door. As an example, imagine that it is a sunny morning when you wake up and you haven’t seen the weather forecast recently, but you notice as you open your garage door on the way to your car to go to work that the weather information in our application says that it is expected to rain in the afternoon – this would allow you to prepare for the inclement weather by grabbing a coat and an umbrella that you may not otherwise done. We also believe this will provide a further point of difference to any other available solution.

### 5. Potentially integrate other data from APIs

As with integration of weather data into the application, we believe that integrating other sources of data would benefit the application. One set of data to particularly consider integrating would be that of fuel prices. Websites and applications specifically for the purpose of monitoring fuel prices have become increasingly popular in Australia, and an easier way to see this data in our application may be beneficial.