**Information Review**

## Chosen Technology

### Arduino

<http://arduino.cc>

I have chosen to use an Arduino as the base of my demonstration because it is the most widely available, supported option in microprocessors at the moment. The community around the Arduino ranges from students to scientists at CERN and hardware gurus at Pebble.

### C++

<https://www.arduino.cc/en/Hacking/LibraryTutorial>

I have chosen to write the basic libraries in C++ due to how well it plays with the Arduino and the low memory consumption. C++ and C are considered to be the best two library languages and I chose to use C++ due to gaining previous experience in it throughout my degree.

There are also downsides to using C++. It is quite a hard language to write and it is quite time consuming due to the large setup.

### Python 2.7

[www.python.org](http://www.python.org)

I have decided that any programming I do away from the Arduino will be done in python, this is due to the fact that I have a good understanding of the language and have written quite a lot of small programs in it. Python is a quick language to write and also has a high performance in mathematic areas that I will be needing.

I have chosen to use Python 2.7 over Python 3.4 as it is more stable, there are more resources available and it comes preinstalled on all linux based systems.

### Parallella

<https://www.parallella.org/>

<https://www.parallella.org/2014/07/25/cooling-and-monitoring-the-temperature/>

Instead of needing to have any prototypes I develop to be attached to my laptop, I will use a headless install of Ubuntu on a Parallella single-board computer. I chose the Parallella over its competitors due to the fact that it has 18 cores and it is open-source, which I believe to be a must in hardware.

The main drawbacks of the Parallella is that it gets quite hot, quite fast, meaning I will need to find a way to cool it, a small fan seems to work but I will need to make sure I monitor this.

### Arturo

<https://github.com/scottdarch/Arturo>

Made as a fork of the ino command line toolkit (<http://inotool.org/)>, Arturo is a way to get my code onto the board without needing to use the Arduino IDE or having to have a restricted setup.

### Vim

Currently my text editor of choice, vim with a couple of Arduino plugins give me a really nice environment for easy development.

## Link Dump

Here is a link dump that contains useful talks, blog posts and books that I have found during my research. This will be the main place I will come looking for references.

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| Title | Type | Link | Information |
| Massimo Banzi – How Arduino is open sourcing imagination | TED Talk | https://goo.gl/2xqBEh | Contains good information on current Arduino projects as well as history and future of Arduino. |
| Sebastian Thrun – Google’s driverless car | TED Talk | http://goo.gl/mTBTYN | Contains information on what the latest google driverless car does and the challenges that the company have faced while making it. |
| Mark Lutz – Programming Python | Book | http://goo.gl/Zxd7FK | Contains great information on advantages and disadvantages of programming in python. |
| Patrick Winston (MIT) - Architectures: GPS, SOAR, Subsumption, Society of Mind | MIT Lecture Video | https://goo.gl/vlmxxq | Gives a good overview of AI architectures and why to use each one. |
| Paul D. Reiners (IBM) - Robots, Mazes and Subsumption Architecture | IMB Blog Post | http://goo.gl/oC9Jik | A blog post that explains use of subsumption architecture on a project |
| Rodney Brooks – Elephants don’t play chess (NEED TO FINISH READING from chapter 4) | Published Article | http://goo.gl/bZ2P6Z  (Download Link) | A famous paper written to introduce subsumption architecture. |
| Rodney Brooks on artificial intelligence [ Short video]. | Video | https://goo.gl/U6EjJ7 | Brookes talks about modern day robots doing tasks instead of just motions and what makes them clever is the fact they can interact with the world. |

## Tesla

<http://qz.com/538436/tesla-model-s-autopilot/>

http://www.greencarreports.com/news/1100574\_autopilot-drives-tesla-model-s-electric-car-coast-to-coast-more-or-less