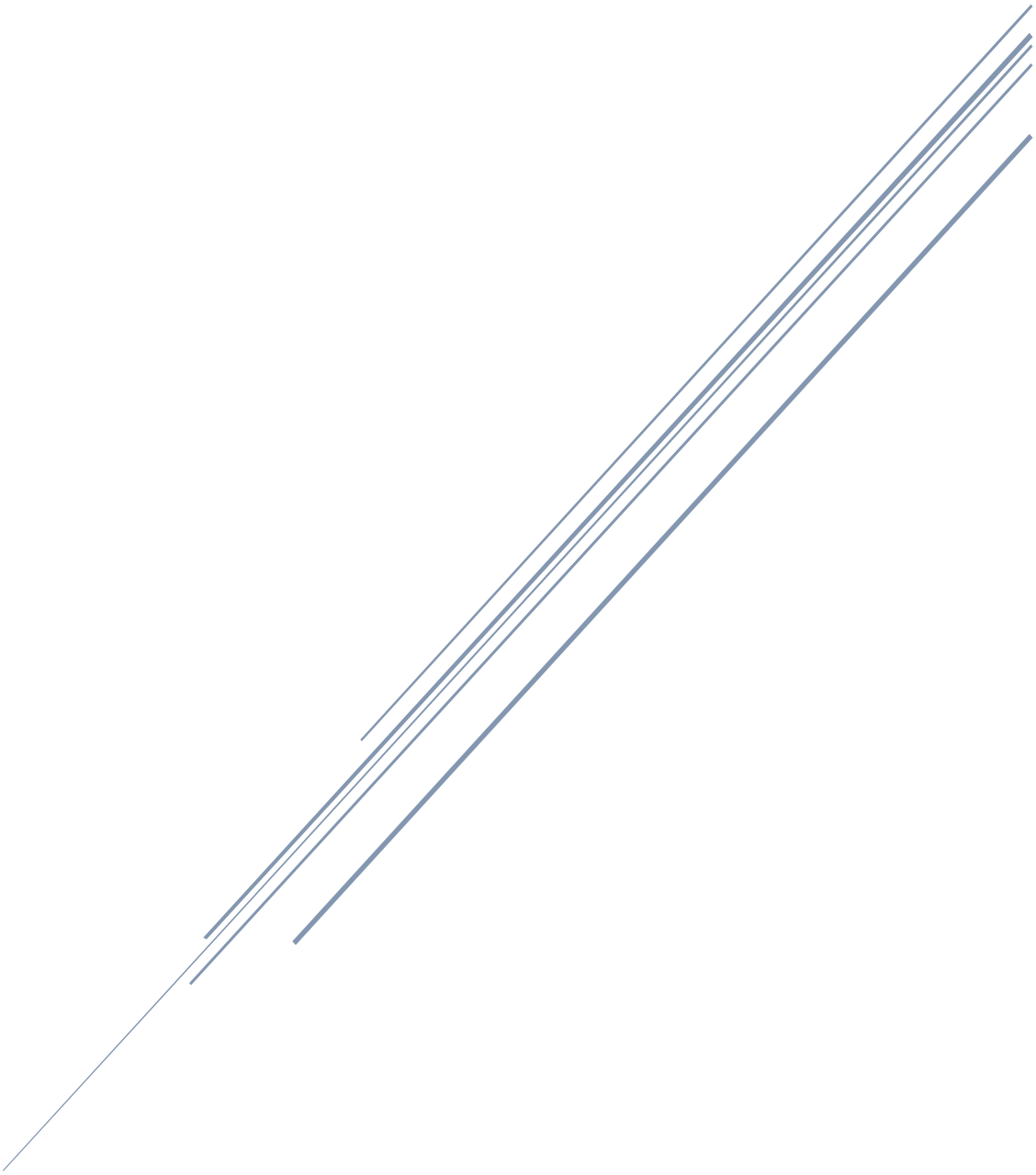
COSC2196 INTRODUCTION TO INFORMATION TECHNOLOGY

Assessment 1: My Profile

Github Pages URL: https://s3884660.github.io/introtoit1/

Github Repository URL: https://github.com/s3884660/introtoit1



Alasdair Cameron
s3884660

PERSONAL INFORMATION:

- Name: Alasdair Cameron
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- Email: s3884660@student.rmit.edu.au

Hi, I'm Al, born in Perth and raised in a WA country town called Capel. I'm now back to living in Perth, with my fiancée and two cats. I work in an administrative role for a certain major Australian Telco, which combined with study means I don't have a lot of free time. However when I do have it, what I enjoy doing is gaming, primarily video games; I'm a former World of Warcraft player and I like RTS games. One might say I have a particular set of skills, which allow me to… play no better than the average player. I play for fun, and I've never been great at ranked play.

(Taken, 2008)

I have just begun studying a Bachelor of Information Technology at RMIT University, and I am returning to study after a break of about 14 years. As I live in Perth, and RMIT is located in Melbourne, this naturally means that I am studying online. This appeals to me as it gives me the means to study flexibly, on my own schedule. I am also fortunate with my current role at work that allows some flexibility with hours, which combined with the 3 hour time difference allows me to attend the majority of live lectures and tutorials.

INTEREST IN IT:

I've had an interest in IT since I was in high school, taking a robotics class in year 8. This class involved making models out of Lego, that had motors and switches and lights. We were able to program the behaviour of these parts using a program that graphically represented logic gates. We worked in pairs, and while my partner made incredible Lego creations, I would program its behaviour. One example is we made a rocket ship with a button on top and on the bottom; it was designed such that when the rocket hit the top of its enclosure, the top switch would activate and reverse the direction of the motor inside, and again at the bottom. I kept this interest in programming through to upper secondary, where I would program relatively complex games or methods for solving maths and physics problems on my graphics calculator. This is where my experience in programming ends, however, so while I know well if/while/else loops, everything else I study will be new to me.

How I came to be at RMIT:

A few months ago, I went out for some delicious ramen with my fiancée Felicia, her sister Claire and Claire's fiancé Mosese. While we were out, Mosese spoke of how he was studying a History degree through a university he found through Open Universities Australia (OUA). This got me to thinking of how I'd been considering a change in career for a while, but lacked the qualifications to progress. I thought about how I've always had an interest in IT, programming in particular, and researched how I might be able to get there through online study. I researched and compared the different courses available through OUA, and RMIT's Bachelor of Information Technology seemed like the best fit for me, with multiple programming units. The number of IT electives mean that I will be able to focus my direction down what interests me the most, and I will discover more about exactly what that is as I study my degree. I also researched reviews of the university, and of the course, which were favourable. With the opportunity to study at a respected university on a customisable course that would enable me to develop and explore my interests, my path was set. I enrolled, and Felicia bought me an Irn-Bru (one of the world's finest beverages) to celebrate.

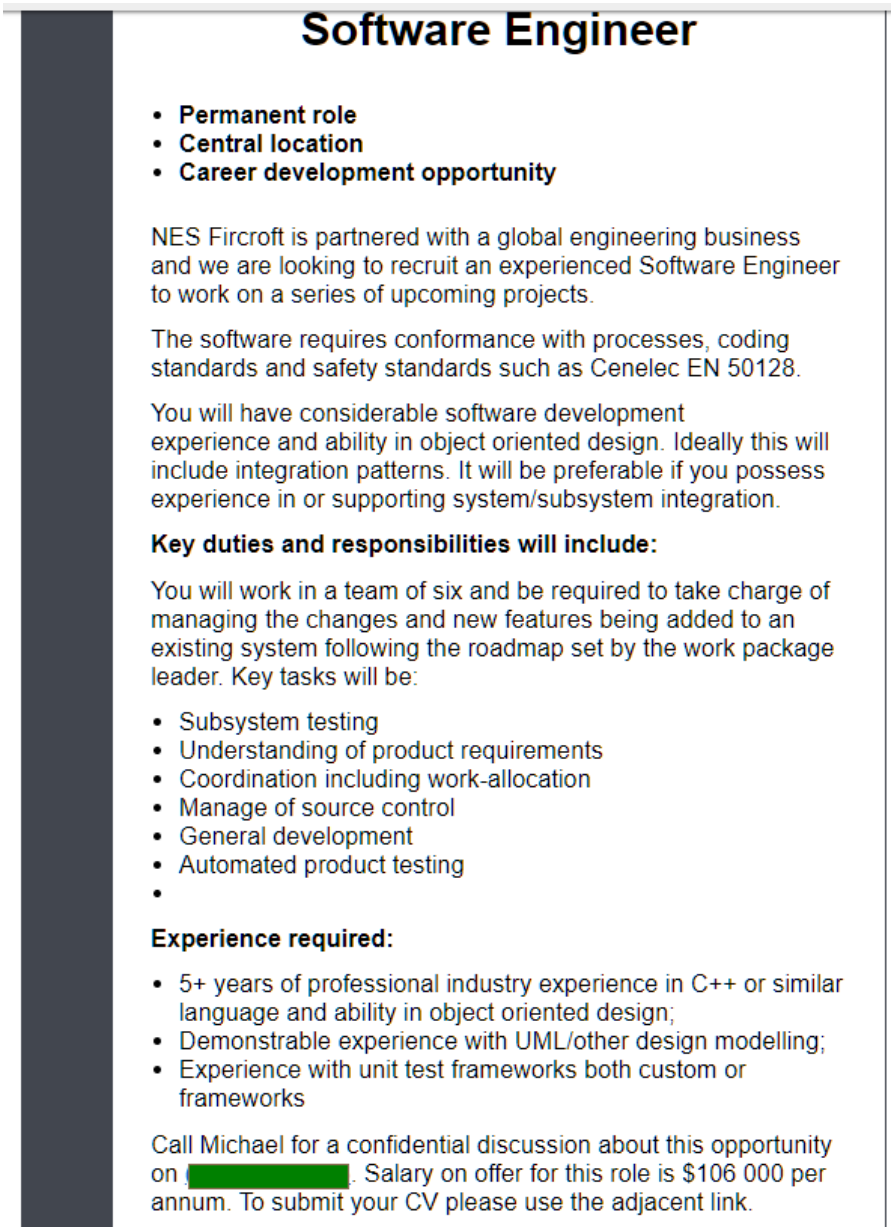
What I expect to learn from my studies:

From my studies I expect to learn exactly what part of the IT industry is most suited to me, and the skills required to get me there. Entering the course, I know that I have an interest in fixing problems, and in programming, but I don't know yet exactly what job is going to be ideally suited and where exactly my skills lie. Through completing the units in the Bachelor of IT course to the best of my ability, I hope to find this out.

IDEAL JOB:

My ideal job would be something in the software engineering space. I would like to problem solve to find new ways of doing things, or making existing processes more efficient. I want to build my experience so I can come up with new solutions.

An example is at https://www.seek.com.au/job/51160872.



Software Engineer

- **Permanent role**
- **Central location**
- **Career development opportunity**

NES Fircroft is partnered with a global engineering business and we are looking to recruit an experienced Software Engineer to work on a series of upcoming projects.

The software requires conformance with processes, coding standards and safety standards such as Cenelec EN 50128.

You will have considerable software development experience and ability in object oriented design. Ideally this will include integration patterns. It will be preferable if you possess experience in or supporting system/subsystem integration.

Key duties and responsibilities will include:

You will work in a team of six and be required to take charge of managing the changes and new features being added to an existing system following the roadmap set by the work package leader. Key tasks will be:

- Subsystem testing
- Understanding of product requirements
- Coordination including work-allocation
- Manage of source control
- General development
- Automated product testing
-

Experience required:

- 5+ years of professional industry experience in C++ or similar language and ability in object oriented design;
- Demonstrable experience with UML/other design modelling;
- Experience with unit test frameworks both custom or frameworks

Call Michael for a confidential discussion about this opportunity on [redacted]. Salary on offer for this role is $106 000 per annum. To submit your CV please use the adjacent link.

What is this job?

I read the job as working in a team to improve on an existing piece of software, both in itself and the way that it integrates with other software. Also, it includes quality control such as testing individual parts of the system, and the system as a whole; this would appeal to my problem solving nature, as it is both coming up with improvements and fixing issues. The role also would be good for career development as it would give tangible results that could be used for both the same and future employers.

What does this job require?

This software engineering role naturally requires an ability to program. In terms of practical experience, it requires 5 or more years of experience in a language such as C++ or C#, or another object oriented language. It also requires experience in something called UML, Unified Modelling Language. At this point in time I have no familiarity with what this is, so it is something I would need to explore. Finally, it requires experience with testing, being able to follow certain guides for testing.

What skills/experience do I have?

Currently, I possess about 3 weeks' worth of learning in an object oriented language, Java. This does unfortunately leave me slightly short of the requirements mentioned in the advertisement.

How will I get the skills I need?

Industry experience will require two things: time, and a job in the industry. To get a job in the industry, I am at this moment performing the action required – obtaining a relevant qualification. I aim to complete my Bachelor of Information Technology, and achieve high enough marks to make me a strong candidate for graduate level jobs.

For experience in UML, I would need to take up the Further Programming subject (Open Universities Australia 2020) which is an elective subject in the Bachelor of Information Technology degree. This would at least get me started with a familiarity which I could then put to use within the industry.

Testing is something that a programmer does constantly, however using specified frameworks is something I have yet to experience. Relevant to the ad, there are frameworks such as Parasoft C/C++test (Parasoft 2020) which I would need to expose myself to, to gain an understanding.

PERSONALITY PROFILE:

Myers-Briggs test (16 Personalities, n.d.)

INTP-T

What does it mean?

My result on the Myers-Briggs test has grouped me in the "Logician" character type. 'Logicians are known for their brilliant theories and unrelenting logic – in fact, they are considered the most logically precise of all the personality types' (16 Personalities n.d., para. 3). This means that in comparison to the rest of the population, 16 Personalities considers those who answered similarly to me as people more driven primarily by logic, who work on their own terms for their own ends, and who usually struggle with emotional connections and being overwhelmed by external stimuli. I can personally echo some of this, in that I do generally prefer to work at my own pace on whatever task I deem most important at the time. However, the overall results lack nuance, as would be expected by attempting to group every personality in the world into one of just 16 types (plus subtypes). It is interesting to gain some insights into how my brain appears to tick based on my answers to some questions, and also how that relates with others.

How does it influence my working in a team?

16 Personalities indicates that while Logicians prefer to work alone, they do their best work when part of a team. This is because having other team members can allow the Logicians to bounce their ideas off of others, and more importantly make sure that nothing is missed due to focus in another area. I find that working with others allows me to contribute in areas in specialise in, including digesting and refining ideas and justifying different approaches; while helping with my weaknesses such as presenting in a format suitable for a wider audience.

So what's it mean when forming a team?

I believe as does Hunt (2006, para. 3) that the 'definition of a team is one in which the whole is greater than the sum of the parts'. I believe in gathering people different people with varying strengths and weaknesses is far more effective than gathering similar individuals with similar characteristics. This means that the strengths of each team member can really shine, and the weaknesses of each can be mitigated through the contributions of others. What this suggests for someone of the Logician personality type is that I should attempt to find team members who are perhaps more extroverted, or perhaps use emotion more when making decisions.

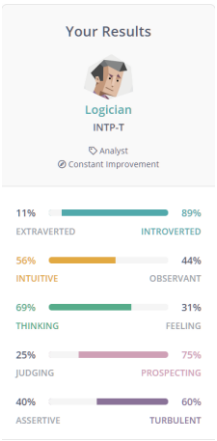


Figure 1 by 16 Personalities

Learning style test (EducationPlanner.org, 2020)

Auditory: 20%
Visual: 60%
Tactile: 20%

What does it mean?

This learning test from EducationPlanner.org shows that I am quite strongly a visual learner, with a definite predilection for retaining information that I see. This goes well with online learning, as much of the content is delivered visually in either text or images. I agree with the results of this test as I've always found it easier to retain information that I see, and can sometimes struggle to retain information that I've heard. I've also found that writing something down is a great way to remember it – even if I never refer to those notes again. Keeping this in mind as I continue my studies will help set me up for success.

How does it influence my working in a team?

While this can not be wholly attributed to my being a visual learner, I find written communication the most effective method for me to both contribute and receive information. This means that I prefer to collaborate via email or messaging, as opposed to voice calls or video conferences. While it would be helpful for me to communicate exclusively in this way, I will need to be flexible and understanding of others' learning styles when working in a group.

So what's it mean when forming a team?

When forming a team, I should be on the lookout for those sharing my learning style, as it will make organising and working together an easier experience. I don't believe that this should be the main priority, however, as this is something that can be worked around.

The Big 5 Test (Rubynor, 2020)

Openness: 80 (high)
Neuroticism: 86 (high)
Extraversion: 56 (low)
Conscientiousness: 62 (low)
Agreeableness: 59 (low)

What does it mean?

My results on the Big 5 test can suggest a number of things, as interpreted by Coach Tony (2016). My high openness score suggests that I am open to new experiences and prefer that over a fixed routine. My high neuroticism score suggests that I am prone to stress. My low extraversion score suggests that I tend to be solitary and reserved. My low conscientiousness score suggests that I am easy-going, and sometimes careless. My low agreeableness score suggests I am more analytic and detached. I believe that all of this combined translated into my own experience means that I like to try new things, but can stress about the result, so I try to be easy-going and take it as it comes. I also prefer to go my own way, and carefully analyse a situation before jumping in.

How does it influence my working in a team?

At first glance, the relatively high neuroticism trait with low extraversion combines to give an impression that I would be a very passive team member, with little to offer but stress and criticism. In fact, this couldn't be further from the truth. I enjoy encouraging others to input their ideas, and while I will often have feedback, it's usually constructive. I know that when in a team we are working together for mutual gains, and so it pays to be proactive and work together. I likely make a more deliberate effort to do this because of my natural tendency to stay in the background – I know from experience that that will not lead to the best result.

So what's it mean when forming a team?

Similar to my response to the Myers-Briggs test, I believe that finding people with different results will lead to the best outcome when working in a group. Accordingly, this means I should find people more cautious, calm, friendly, outgoing and organised, as Coach Tony (2016) lists these as traits of those who scored opposite to me in the Big 5 test.

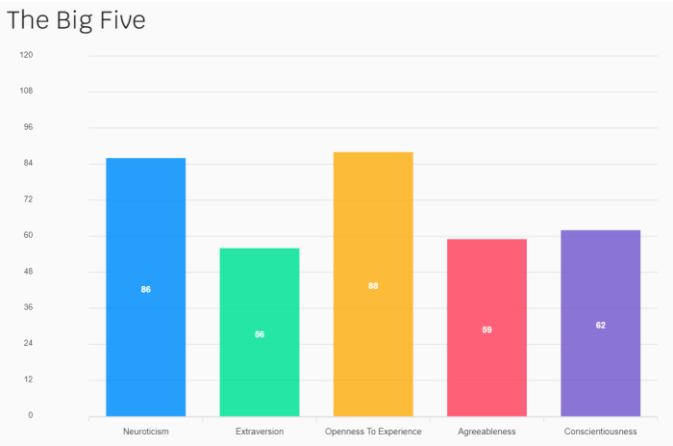


Figure 2 by Rubynor 2020

IT PROJECT: RECIPE BY GESTURE

Motivation:

I am not a great chef. I am not the next Gordon Ramsay, Jamie Oliver or Masterchef winner 2021. However, I do like to have a nice dinner, prepared at home. This means that I do cook, but when I do it's almost always following a recipe.

One of my pet peeves when following a recipe is where do I put the cookbook? And how do I turn the page when my hands are covered in raw meat, or grated carrot?

17.8 million cookbooks were sold in the US in 2018 (NBC News 2019) so I'm certainly not the only person following a guide. How to make it easier?

Overview:

There are already digital versions of recipes. Google Nest in particular has a recipe mode built in, with voice commands (Google 2020). However, voice commands can be clunky to use, with delays, misinterpretation, and sometimes a failure to even hear a trigger. My idea is to take the existing recipe functionality a step further, by allowing users to gesture when they want to move to the next page. This would build upon the existing tech and allow users who are unable or otherwise unwilling to use voice commands to be able to navigate a recipe, simply by gesturing.

Never get raw chicken on your page/device, or get misunderstood by voice recognition again while cooking!

Description:

At its heart, the project can be boiled down to a simple programming action: if user hovers finger *here*, then *do this.* There are many layers of complexity that can be added on top, but this is the ultimate idea.

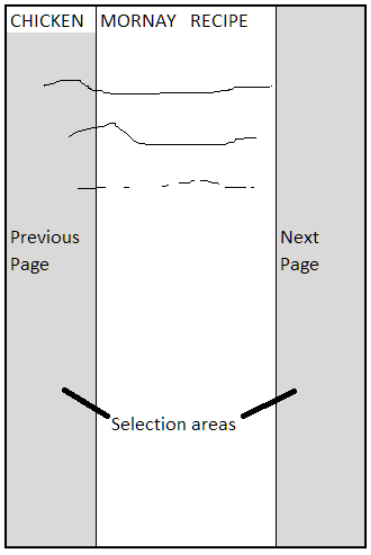


Figure 3

In order to enable this to happen, a camera or other motion sensor needs to be positioned with view of the target area. This would then be set to only accept inputs if it detects motion in designated spaces. To avoid false positives, this could be set to only accept the input if the motion is sensed for at least 2 seconds, or require a confirmation (eg. 2 gestures in the same place). From there, the system would take this input and pass it on to the existing product providing the recipe, which would react appropriately.

This is a rudimentary example of how the interface between the gesture detector and the recipe provider (in this case, a Google Nest) could work.

- User gestures “Next page”
- Sensor detects “Next page” command
- Speaker connected to sensor says “OK Google, next page”
- Google Nest goes to the next page.

Note that this is an inefficient method shown for simplicity, and ease of initial prototype creation.

It would be better to directly use something like an API (Application Programming Interface) to remove the speaker step and requirement, however this example shows how it *could* work with any voice activated device, without any requirements from the creator of that device.

The sensor would need to be something compact that could be easily mounted in the kitchen in combination with the recipe provider. One example is shown below in Figure 4 (adapted from Google 2020), in orange, again using the Google Nest as a guide:

Figure 4 (adapted from Google 2020)

In this case, the sensor is mounted on the Google Nest with a view of the screen. When the user gestures to one side of the screen, the sensor would pick this up as proceed as per the previous example.

There will be challenges in programming the sensor to only be triggered by human gestures, ignore the screen underneath, etc.

There is also an opportunity to scale up. For example, to take it further could be to project the recipe on a wall so it is not taking up any bench space at all. The sensor could then also be oriented at the wall, so in fact if the user wanted to turn the page they may just have to point, or wave.

Tools, tech and skills required:

What's needed to create this project will depend on what is hardware/software is providing the recipe. For the purposes of this first example, we will use the Google Nest.

As the Google Nest features voice input, we will make use of this for a first example. This will allow us to remove some programming steps required to have a direct software level input into the Google Nest. Having the ability to directly access the Nest would greatly enhance the functionality of the project, and should be considered in the future.

A camera or motion sensor(s) would be required to detect input on the target area(s). Using a camera would require the use of software that would then allow the camera to only detect movement in the areas specified. The creation of this software would require further research into what is required. A simpler solution would be to use motion sensors with their fields of view limited to only the areas we want to monitor. For instance, one motion sensor could be use to monitor the 'next page' area, while another monitors 'previous page'.

Once the motion sensor detects input, this then needs to be processed by either a computer or a dedicated circuit board that is build for this purpose. A Raspberry Pi would serve to be able to take this input and turn it into our desired output.

Finally, we would need a simple speaker to be able to play a recording of the action we'd like the Google Nest to perform. A cheap speaker featuring aux input would be all that is required to provide proof of concept. A louder speaker may be needed in noisier kitchens.

Outcome:

If this was successful, it would make life easier for people who like to cook from recipes, but want to do so in a touchless fashion. From an accessibility standpoint, it would give the same functionality to those who find it difficult or impossible to interact with voice control, whether due to disability, accent or ambient noise.

If successful this could then be applied in other areas where gesture control can be used, including something as simple as reading a book or watching a video. While gesture detectors already exist, these are highly specialised and usually are required to be worn on the body. The implementation in this project is designed to be simple and freeing for the user.

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