The Prime Optimizers

Assignment 2: Team Project | **Adrian Gordon Leveris| Nathan Jenkins | Ethan Fleming | Jade Gower |Austin Knight | Zachary Vine**

Personal Information

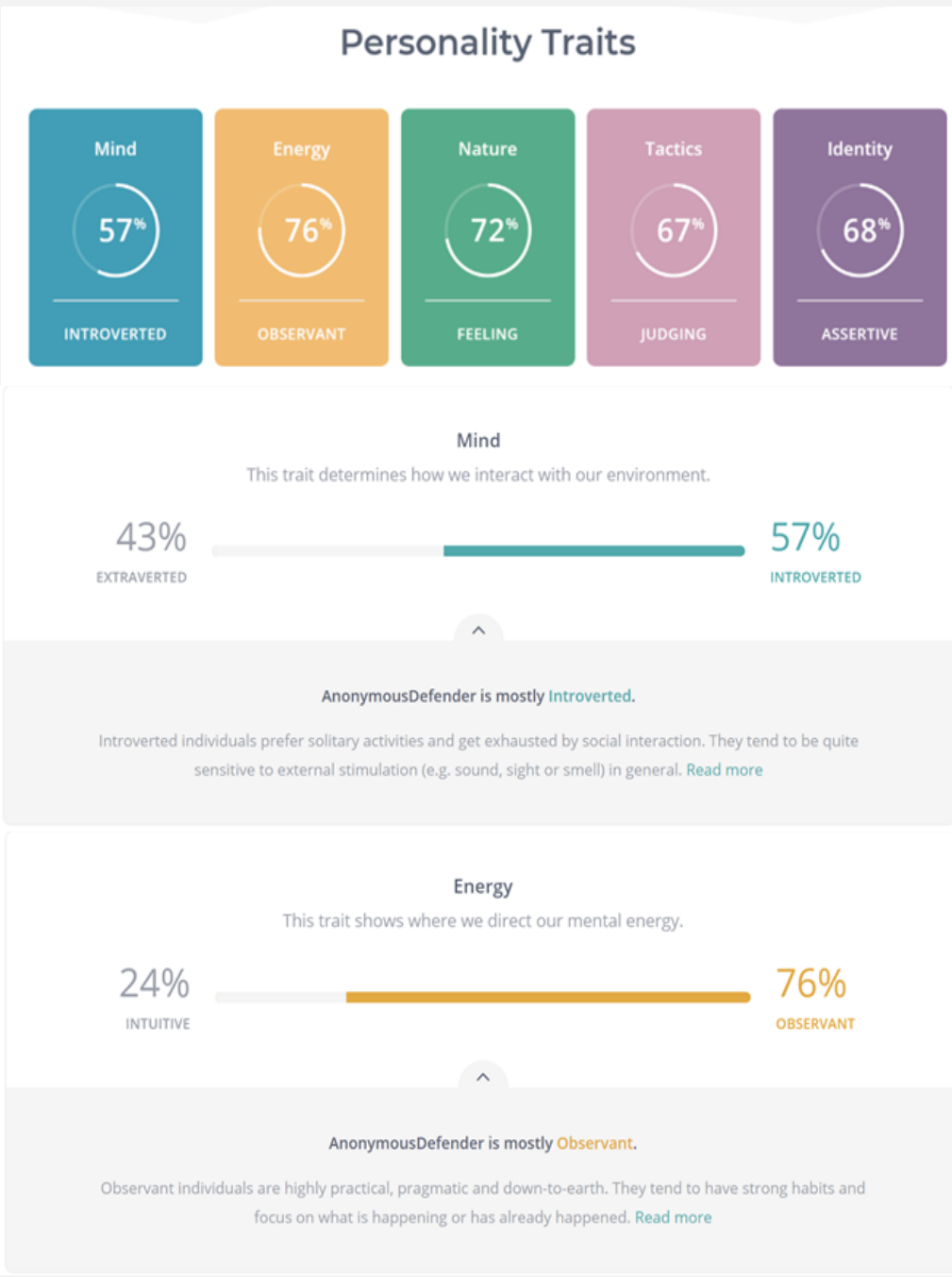
Name: Adrian Gordon Leveris
Student Number: s3457450
Email: s3457450@student.rmit.edu.au
GitHub Pages: https://adriangleveris.github.io/A1-MyProfile/

Background:

My name is Adrian Gordon Leveris and I'm 24 years old. I was born in Greenacre New South Wales, I lived in NSW up until the end of 2012 and then I moved to QLD.
I finished high school at the end of year 10 and received my School Certificate in NSW.
My only current hobby is playing video games which include (World of Warcraft, League of Legends, Call of Duty and The Division 2) outside of working full-time and studying part-time. I do not currently have any IT work experience, but I do have experience with IT related skills ranging from building my own computer, HTML, CSS, C#, Java, ASP.NET, and Python etc. from what I have learnt from studying in my TAFE courses.
My IT interest started at an early age when I was given my first computer by my parents, even since then I have been using computers for most of my life. I am really interested in Programming &/ Cyber Security as I love coding myself and seeing it come together to form a fully functioning application or piece of software makes me happy.

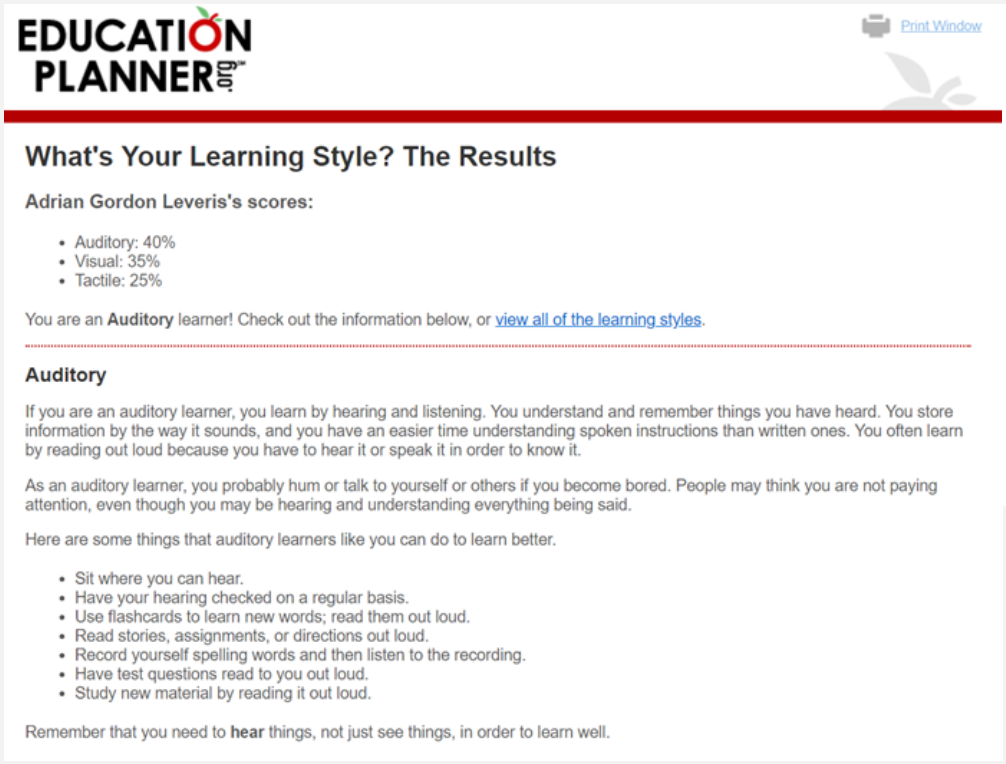
Test Results:

Myers Briggs Test Results(16Personalities)



Learning Style Test

Big Five Personality Test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What's Your Learning Style? The Results

Adrian Gordon Leveris's scores:

- Auditory: 40%
- Visual: 35%
- Tactile: 25%

You are an **Auditory** learner! Check out the information below, or view all of the learning styles.

Auditory

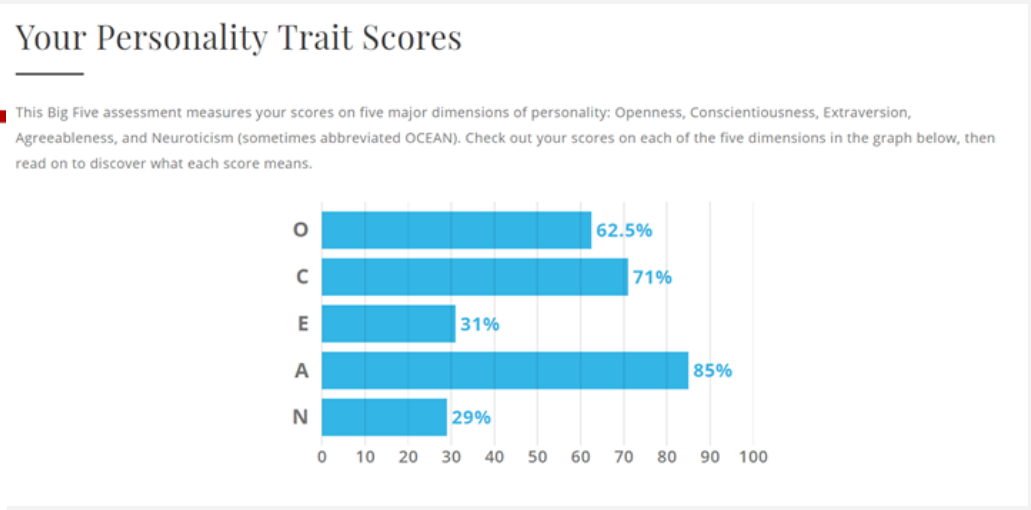
If you are an auditory learner, you learn by hearing and listening. You understand and remember things you have heard. You store information by the way it sounds, and you have an easier time understanding spoken instructions than written ones. You often learn by reading out loud because you have to hear it or speak it in order to know it.

As an auditory learner, you probably hum or talk to yourself or others if you become bored. People may think you are not paying attention, even though you may be hearing and understanding everything being said.

Here are some things that auditory learners like you can do to learn better.

- Sit where you can hear.
- Have your hearing checked on a regular basis.
- Use flashcards to learn new words; read them out loud.
- Read stories, assignments, or directions out loud.
- Record yourself spelling words and then listen to the recording.
- Have test questions read to you out loud.
- Study new material by reading it out loud.

Remember that you need to **hear** things, not just see things, in order to learn well.



Understanding of how this will be helpful to my group:

Based on my test results I feel as though I will be very helpful to this team (The Prime Optimizers) as I am a great listener, so I will be looking to make sure everyone is communicating via voice/text through Discord and Facebook messenger which we have chosen to use to address any issues we have.

I am slightly introverted but that should not affect me too much in my team as I have been slowly getting out of my introverted state by interacting more with other people in my life.

With my ability to be very agreeable, I will be trying to make sure that there are no conflicts of interests and everyone agrees on decisions being made by group members.

As I currently run my own business, I am very organized, self-disciplined, diligent when it comes to planning, completing tasks myself and making sure that each task is completed efficiently by each team member and aim to achieve the best possible outcome as a team.

There is a lot of work to be done in this assignment as a team, because of this I will be considering everyone's needs and making sure they are able to complete their tasks within the given time. I may be shy and self-conscious yet has not affected me when it comes to online communication between other people in the past.

As I am resistant to stress, I will be making sure I help anyone with what I can and be making sure the assignment is systematically structured and neatly presented.

I am not a natural born leader, but I have been looking to take charge in my team with working out what everyone is doing with the help of others in the group in order to make sure every team member knows what they need to complete.

Name: Nathan Jenkins
Student Number: s3806782
Email: Nathan.Jenkins1012@gmail.com
GitHub Pages: https://pixelatednate.github.io

Background:

I'm a 25-year-old Australian citizen, born in Perth, Western Australia. I lived in Perth until I was 4 years old, where I was moved up to the north west due to my family's careers.

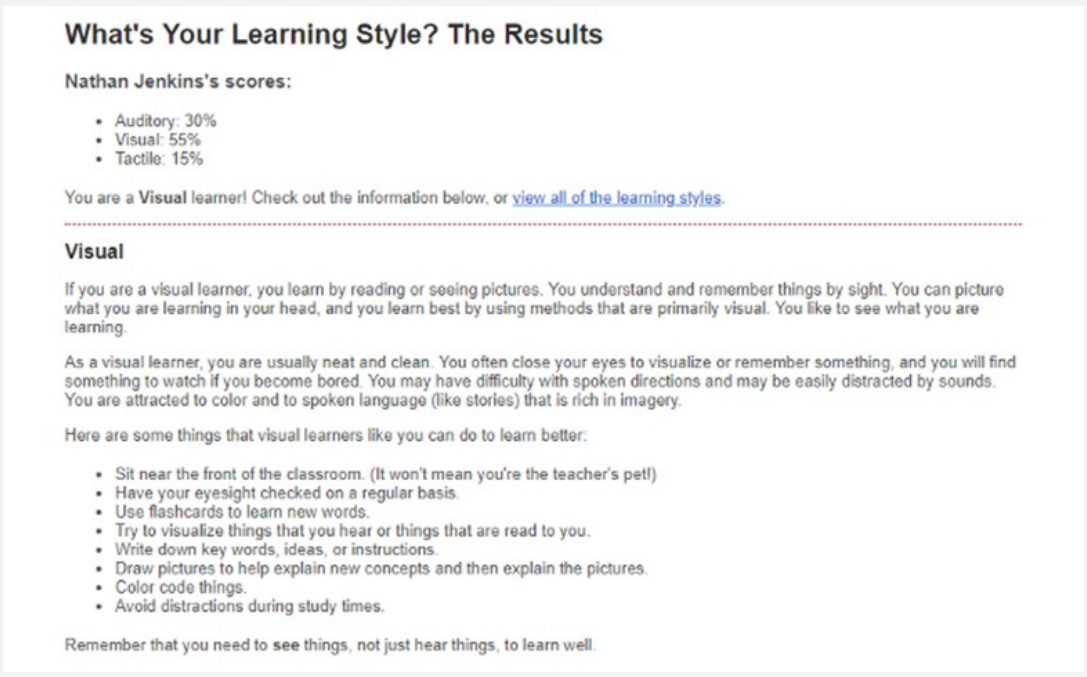
I finished primary school in a small town called Karratha, where I then moved back to Perth to begin my studies at Belmont City College, which I completed in 2011. My current level of education includes a Certificate 1 in IT and Business and currently undertaking a Bachelor of Information Technology at RMIT through OUA.

In my spare time I enjoy graphic design for video game application, as well as playing Dungeons and Dragons with friends. I do not currently have any professional IT experience, though through my hobby, I've acquired knowledge on GitHub and Unity3D, as well as learnt an intermediate level of C# programming skills.

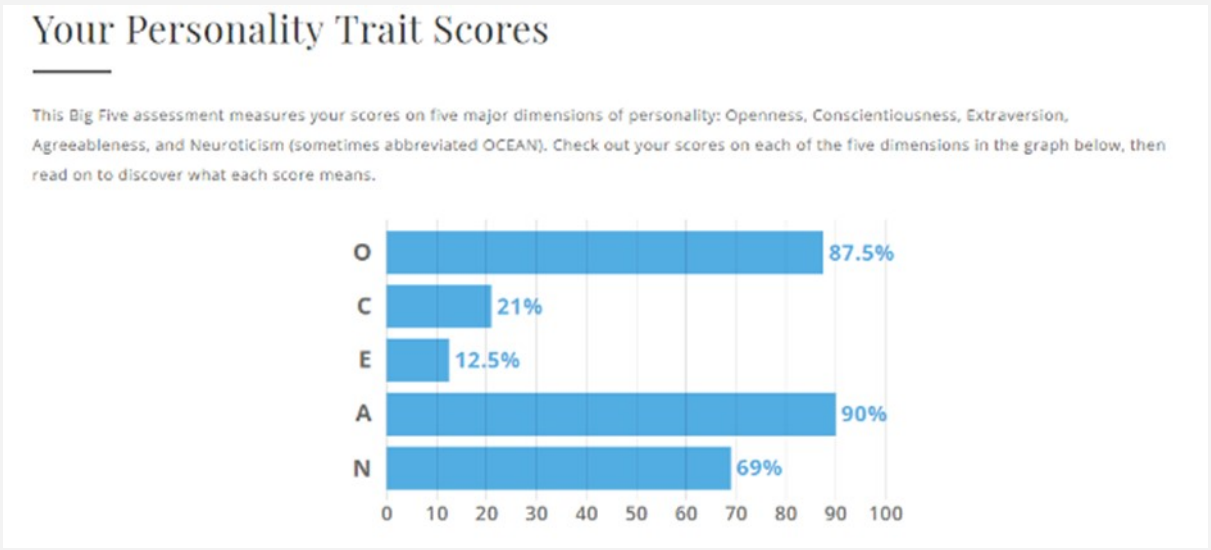
Test Results:

Myers Briggs Test

Learning Style Test



Big Five Personality Test



Understanding of how this will be helpful to my group:

Based on the test results, I believe I'll be helpful to my team (The Prime Optimizers) due to my Openness, and Agreeableness from the Personality Trait results, my Visual learning from the Learning style results and the Feeling aspect from the Myers Briggs results.

The reason I chose these particular points to focus on is I believe that the Openness and Agreeableness are both strong personal skills to have when working with teams, as being open about your work ethic and scheduling can inform your fellow teammates and allow them to make adjustments to assist you or others to suit the project best.

The Visual learning portion, I believe can be helpful for the team, as I pay more attention to visual aspects of the assignments/projects and, whilst contributing my due portion, I also enjoy putting in extra work to make the assignment/project visually appealing.
The Feeling portion of the Myers Briggs test more relates to the social aspect of being in a team, as I will often look for the best way to harmonize those around me into a cohesive team and will reduce arguments between teammates by not being openly critical of their contributions.

All of this taken into account, I believe I can be a great addition to a team through my general personal skills, trying to keep everyone in the team happy whilst working on the project and making the end result look nicer for potentially a better outcome.

Name: Ethan Fleming
Student Number: s3806776
Email: s3806776@student.rmit.edu.au
GitHub Pages: https://eefmayne.github.io/home.html

Background:

My name is Ethan Fleming (S3806776) part of the group (The Prime Optimizers).
I'm 19 years old from Adelaide. My hobbies include gaming (League of Legends, Fortnite, CSGO), cars (Toyota Hilux, Subaru Impreza), and downhill mountain biking (2019 Norco Aurum A 7).

Regarding my interest in IT, it started after going competitive in gaming.

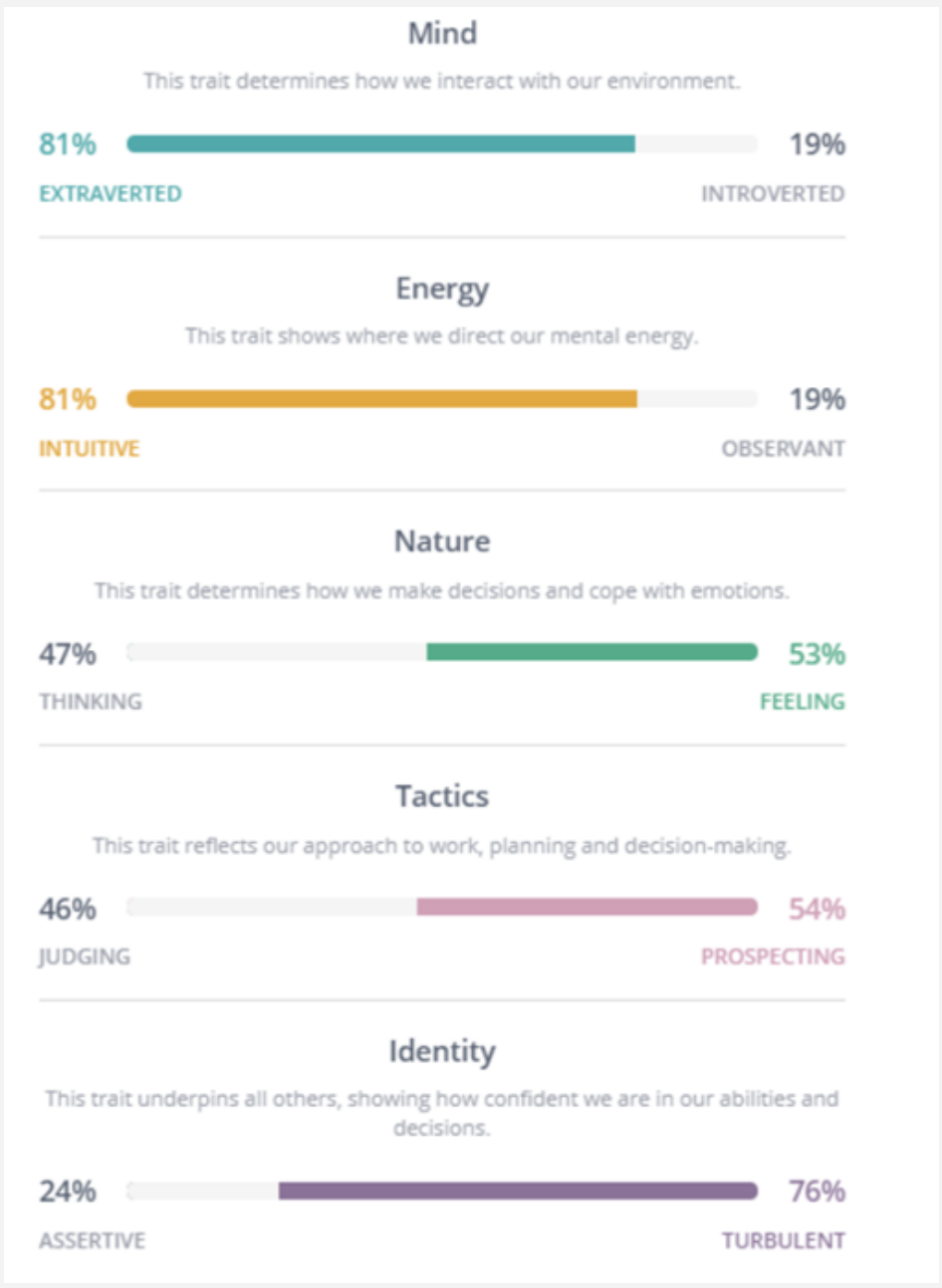
That inspired my interest in computers, and from there I wanted to study Information Technology with a goal of becoming a Certified Ethical Hacker.

The IT experience I have is limited being restricted to my gaming history, computer building, HTML and CSS courses, and learning Python for fun.

I'd love to learn as much as possible in any and all areas to expand my knowledge as much as possible.

Test Results:

Myers Briggs Test



Learning Style Test

38% Visual Learner - 38% Auditory Learner - 23% Kinesthetic Learner

Interpersonal Skills Self-Assessment

"Based on the answers you provided your interpersonal skills are about average – compared to other people. Although you have a basic grasp of the key interpersonal skills, there is still a lot you can do to improve them further. Spend some time practising and developing your interpersonal skills to enhance your relationships with others further."

46% Listening Skills - 60% Emotional Intelligence - 52% Verbal Communication - 73% Communicating in Groups

Understanding of how this will be helpful to my group:

After reading through the results of my 3 different tests. I have conclude that I can work together in a group as a high functioning member. I'm quite organized, which may mean that I will be proactive in organising who does what, and trying to ensure that each person gets a task that they're good at. I'm a natural leader, but also have the capability to listen to people who aren't leaders and take feedback and information onboard. I am also able to support a leader if that person prefers to lead. So I believe that whatever situation arises I will be able to sort out and assist with. I'm highly energetic so I hope that helps people to be pumped about the subject, but I'm also wary of annoying people with constant questions and checking up on how they're doing.

I have a high group communication skill, so hopefully that works in my favour in this situation and allows me and this group to communicate effectively.

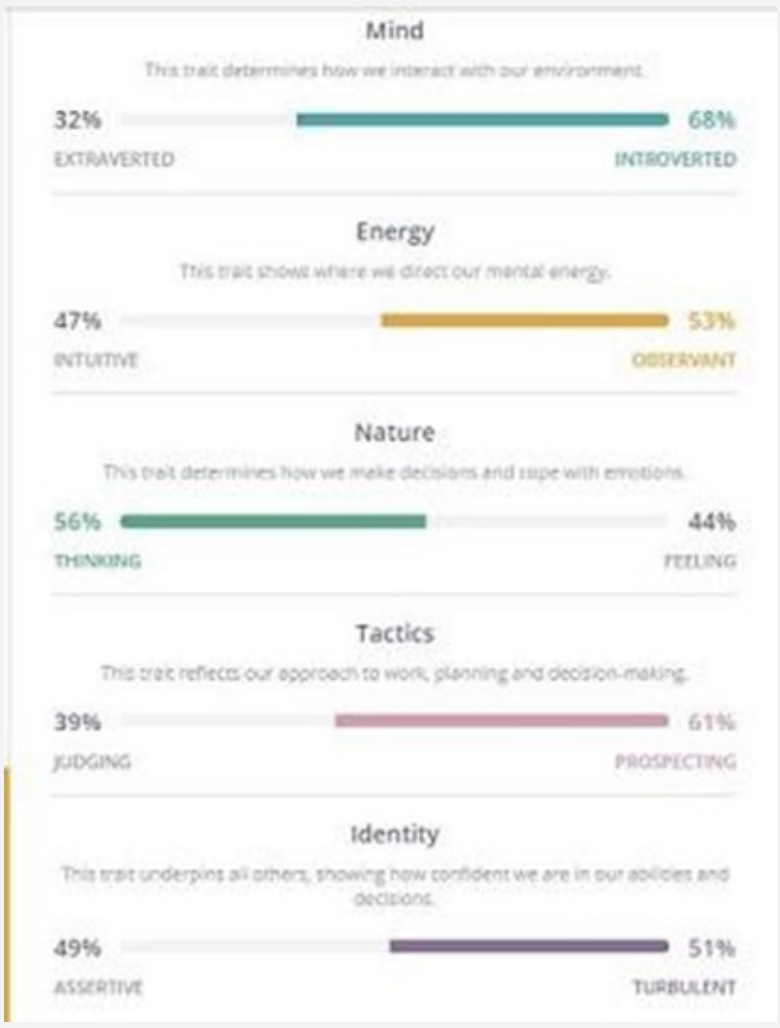
Name: Jade Gower
Student Number: s3789271
Email: s3789271@student.rmit.edu.au
GitHub Pages: https://jg4514.github.io/MyProfile/

Background:

My name is Jade. I am 32, I have 4 children and live in Bathurst, Nsw.
It was in my teens that I developed a love for the internet and all its components.
But it wasn't until I was an adult that I started an interest in the security side of things.
I completed my year 10 school certificate in 2000 and recently completed Cert II in IT at my local TAFE.
I do not have any IT work experience yet, but getting into the IT industry in any way possible is a main target of mine.
I have grown to enjoy baking and decorating cakes as a hobby for my family.
Their requests for birthday cakes have gotten more extravagant as the years pass!

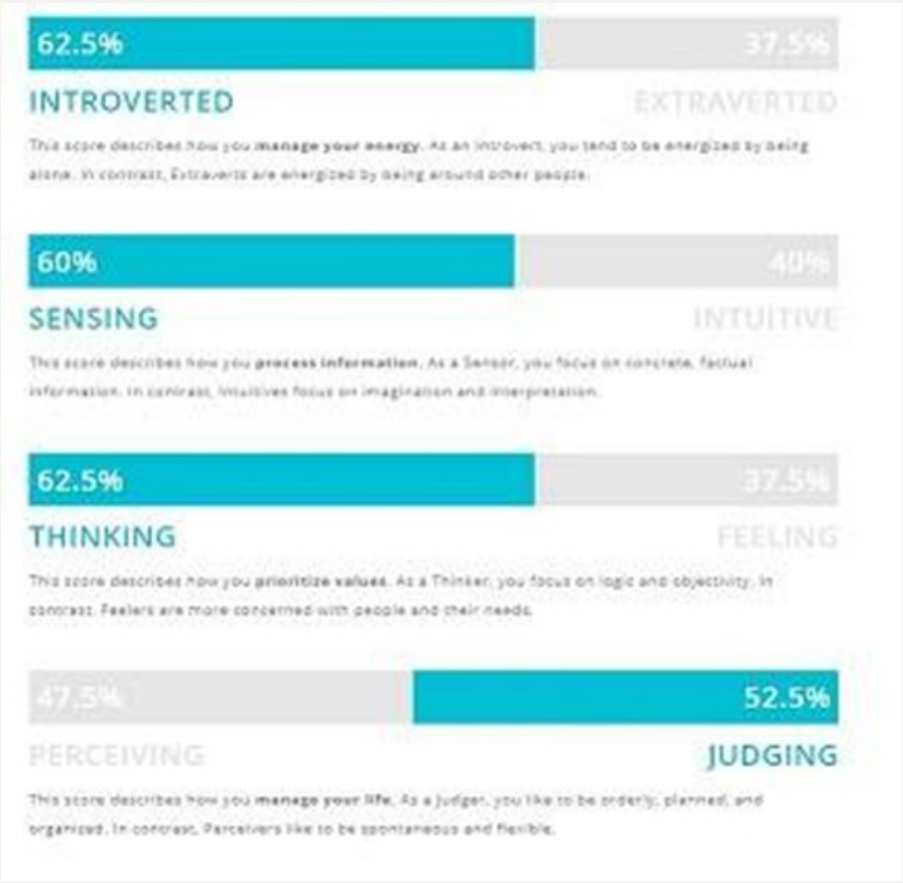
Test Results:

Myers Briggs Test



Big Five Personality Test

16Personalities (Test Unknown)



Understanding of how this will be helpful to my group:

I am an introvert, so I tend to work best under a leader rather than take on a leadership role myself. I use my head over my heart and I think things through instead of letting my emotions get the best of me.

My team members will be able to sit back with the knowledge that once I have a task, I will see it through to the end and won’t be afraid to ask for guidance in order to benefit the group.

Name: Austin Knight

Student Number: s3803080

Email: s3803080@student.rmit.edu.au

GitHub Pages: https://merrysauce.github.io/profilewebpage/index.html

Background:

My name is Austin Knight. I am an Australian born 18-year-old living Brisbane who graduated last year from Carmel College in Thornlands which is located south east of Brisbane near North Stradbroke Island. I only speak English, but I wish to learn Vietnamese as it is my next international destination on my ever growing 'places to visit' list.
Apart from being a full-time student, I work at Victoria Point Cineplex as an usher.

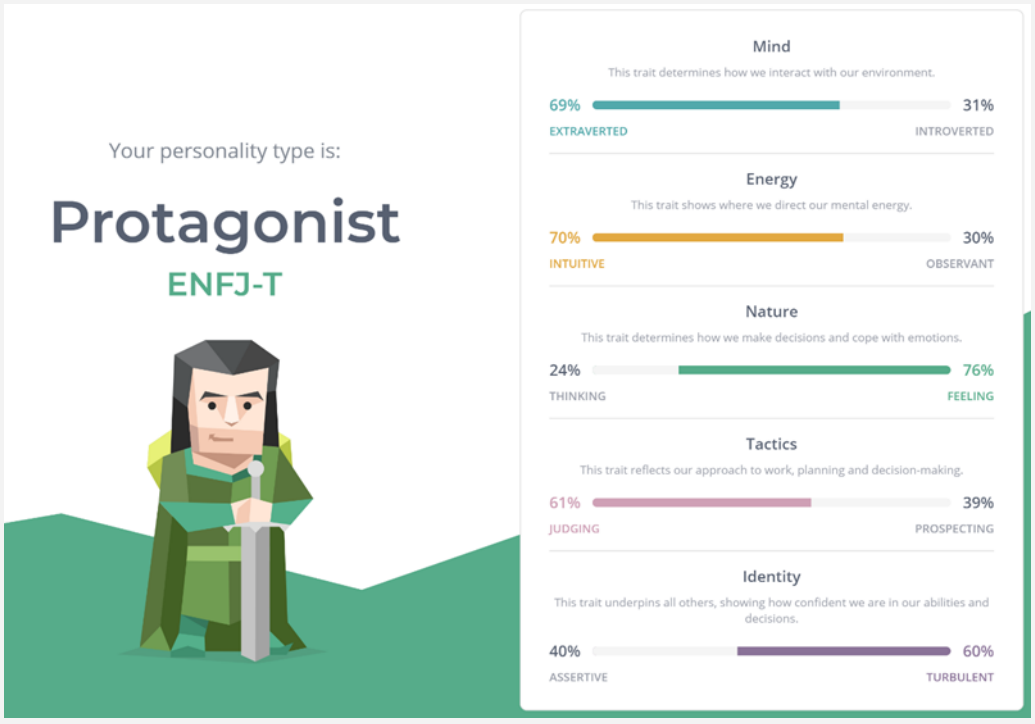
I am a huge AFL fanatic and barrack for the Cats.

My family has a history in Geelong with my great Grandfather being one of the founding members of the Bell Park Footy Club which so happened to produce Jimmy Bartel, my favourite player of all time.

My interest in IT has grown ever since I started using a laptop and could comprehend what it could do back in 2009. I set up our first home network at the age of 11 and that same year taught myself how to create a Minecraft server for my friends to play on. Fast track to the past few years, I have been known among my friends and co-workers as the go to person to fix any IT related problem. During my final high school year last year, I even taught my IT teacher a few things that he has now incorporated into his teachings for his classes this year.

Test Results:

Myers Briggs Test



Learning Style Test

Auditory Learner - learns from communication via voice and audio
Visual Learner - learns from text and writting
Tactile / Kinesthetic Learner - learns from interacting and practicing

My results were Tactile / Kinesthetic.

Institute of Psychometric Coaching - Personality Traits

INSTITUTE OF PSYCHOMETRIC COACHING - PERSONALITY TRAITS

The third test I decided to conduct was a personality test on a website called Institute of Psychometric Coaching. This test was designed for people to gage how they would perform in a real personality and work safety test. The test then produces a personality report based on two traits: Confidence and Achievement Driven. The test gives a score out of ten, ten being the highest.

I scored 8 in both categories. Self-confidence is an extremely important transferable trait employers look for in potential employees. They want the best candidates to be confident in their role and be able to handle demanding workloads. I believe this is a strong reflection of the person I am. The other key trait, Achievement Driven, is vital to team success. Since I also scored so highly in this, it also makes me ideal to place in a team environment as I am results driven.

These two traits combined make me an ideal team member in group situations. I expect myself to deliver on these two traits in the upcoming assessment pieces to give not only myself by my group members the best opportunity to achieve well.

Understanding of how this will be helpful to my group:

Based on the above test results, I feel like I will be a valuable team member in
The Prime Optimizers.
The biggest key trait among the tests is reliability. I hope I am a reliable team member so that we can achieve the best possible result and be better people for it. Since all members of our team come from different walks of life, I need to remain tolerable as we all have different working hours outside of our study endeavours.
As stated in my Myers Briggs Test, Tolerance is one of my strongest traits, which is a huge bonus.
Another trait that is also beneficial to the team's success is being achievement driven.
This ensures everyone that I am putting my 100% into my work and trying to leave nothing undone.
I will also be able to help others with their own work to ensure we all get the best possible learning experience out of this assignment.

Name: Zachary Vine
Student Number: s2168351D
Email: zacharyvine@live.com
GitHub Pages: https://zacvine.github.io/index.html

Background:
I am an Australian born 35-year-old male who left high school at 16 to pursue my dream of becoming a Graphic Designer this was my first exposure to the IT industry but my real passion as it related to IT was, and still is, gaming. I found the PC to be consistently superior to even the latest consoles.

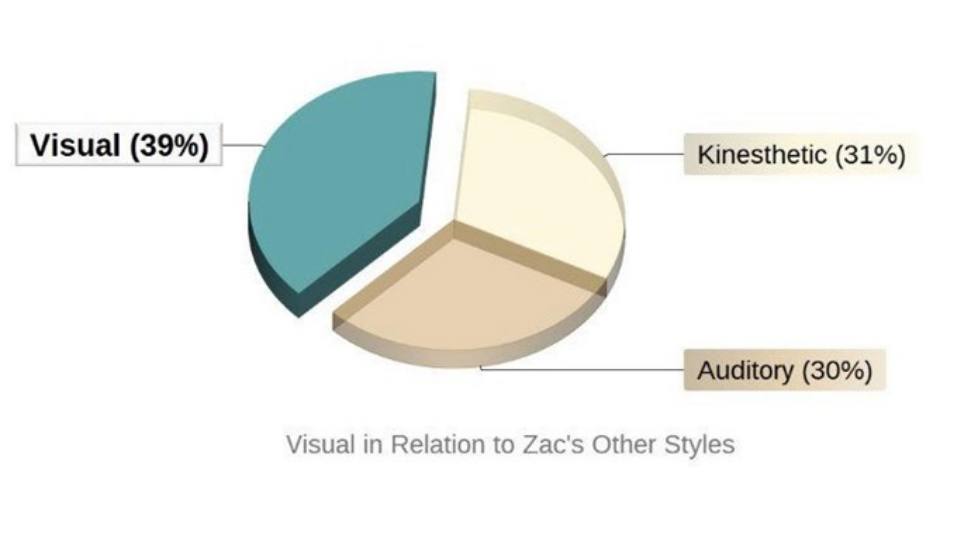
After I found the position somewhat stagnant, I migrated into sales during my search for greener pastures. It was then I moved to Sydney where I i first met Lindsay, who is now my wife of 9 years. Due to Visa issues the two of us moved to Manchester, England, which is where my career really came into its own as I was offered a job in the banking industry. With a better income, I was able to feed my IT related hobbies, building my own gaming rigs and trying to squeeze from them everything I could…overclocking video cards, building water cooling systems to accommodate tweaked processors, custom lighting and cable sleeving to get that sleek gaming look.
I developed such a passion for building PC's that I briefly ran my own business doing so, but unfortunately, I didn't have the means to compete with the larger scale companies in what was, at the time, quite a specialized market.

Now 10 years later, Lindsay and I have moved back to Australia permanently with the addition of a beautiful little girl, Aria, who is now almost 2 years old. I am currently studying for a degree in finance to become a financial planner in Australia

Test Results:

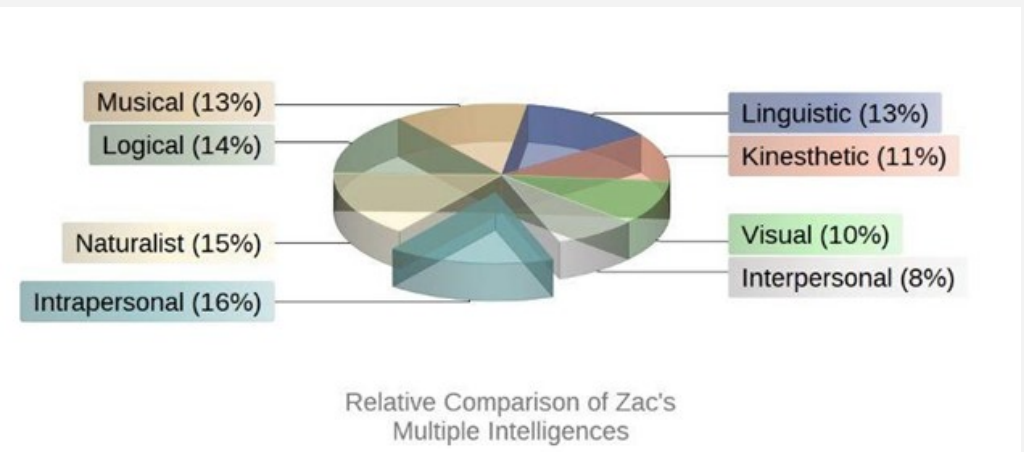
Myers Briggs Test

Learning Style Test



Visual in Relation to Zac's Other Styles

Multiple Intelligences Test



Relative Comparison of Zac's Multiple Intelligences

Understanding of how this will be helpful to my group:

As an introverted individual who feels most comfortable among colleagues and is uninterested in controlling others, I will probably need someone else to take on the leadership role but my similar distaste for being controlled makes it important that the individual playing the leadership role is suited to leading my personality type.
I would much rather immerse myself in a project than just be told what task to do and move on and would much rather hear what I did right and focus on what to do, rather than what not to do. My results suggest I often take challenges and criticisms personally while at the same time avoiding conflict with others as much as possible.
This could potentially lead me to harvest an unnecessary animosity towards team members if my feelings aren't kept in check. However, my personality type will also put a great deal of time and energy into trying to align my principles and the criticisms of others into a middle ground that satisfies everybody. A high level of Intrapersonal Intelligence would suggest a good ability to work well alone. So perhaps being in a group where at least a part of my role is something I can work on independently would be beneficial.

Ideal Jobs

Adrian Gordon Leveris

Common Elements

So, based on everyone's ideal jobs I can say there are some common elements in each role chosen: For instance, Ethan, Jade, Austin and Adrian have similar ideal jobs (cyber security specialist), more closely Austin and Adrian both have a minimum requirement of 5 years working expertise in the cyber security specialist role. Also, both our roles, including Nathan's, and Jade's will require excellent written and verbal skills. All our jobs apart from Zac's are team environment based. There is also another common element which involves Ethan's and Austin's ideal jobs which is the practice of applying a comprehensive and rigorous method that will ensure the security of information using the available security technologies (Enterprise Security Architecture). Austin and Adrian's ideal roles will require expertise in testing a computer system, network or web application in order to find vulnerabilities in security that could be exploited by a hacker. They must also possess the ability to suggest and develop new project ideas and stay up to date with any new technology trends.

Differences between all roles

One major difference is Zac's ideal job which involves managing personal finances of clients is not related to Information Technology. Austin's and Ethan's roles will both require them to have passionate skills for their roles which involves making sure they demonstrate a high level of effort towards their work activities. All roles will require some form of documentation, for instance Nathan's role will require him to document proper use of equipment involving virtual reality, augmented reality, and/or mixed reality. Ethan, Austin, Jade and Adrian are required to have expertise in documenting with documents such as Security Risk Management Plan, Threat and Risk Assessment, and Cyber Security Incident Response Plan. It would help if Adrian, Ethan, Jade and Austin had a certificate in a related cyber security certification or Offensive Security Certified Professional (OSCP) that could be used to help them obtain their ideal job. Zac's role will require him to gather relevant financial information, setting life goals, examining current resources and develop a plan that his clients can work towards given their current situation. It would be beneficial for Jade to have a certificate in CISSP (Certified Information Systems Security Professional), or related certificates, which requires her to have a minimum of five years full-time hands on experience in at least two cyber security domains.

How similar are our career plans?

Regarding our team career plans, Nathan, Ethan, Adrian, and Jade all have similar plans with completing their Bachelor of Information Technology degrees. Also, Adrian and Ethan will be looking to improve their education level by completing a master's degree in IT to improve their education level. There are also similarities with obtaining work in our teams related ideal jobs or fields similar in order to gain the necessary experience or qualifications they need for their ideal jobs.

Nathan Jenkins

What common elements are there, if any?

Some of the common elements I've found is that all of our desired careers have a projected growth over the next few years, aside from Zac's chosen career, we all will eventually require some form of programming skills also. Across all chosen careers, communication skills are highly regarded and Project Management skills are very much sought after in the IT sector, with all of our chosen careers requiring these skills.

The most obvious common element is that we're all, obviously, working with computers and programs that facilitate our job requirements, however, a more niche form of that is that we're all going to require a good understanding of our chosen IT field in order to excel in the competitive market.

Differences between all roles:

The differences between our chosen roles boil down to the style of work that we're applying for.
Those interested in Cyber Security have a more technical role than the others and will require more tactical thinking in order to excel in the area. The Graphical Design field, however, is a more creative role and will require more artistic talent, as well as creative thinking. Financial Planning will require more personal skills than the others and certainly require more personal skills, if working with clients, than the other chosen professions.

How similar are our career plans?

The chosen career plans of each of us seems fairly similar, in that we're all studying a Bachelor of IT in order to get ourselves "in-the-door", so to speak, in the field of IT. After that, is where our chosen profession paths differ, as, for example, those interested in Cyber Security could potentially go on to do an internship or, with some luck, a junior position, whereas I would have to create a portfolio of some kind to show off my ability in VR/AR and use that to apply directly for my chosen job, using my acquired degree as a supporting document for my competence in the role.

Ethan Fleming

It was quite interesting to read through everyone's ideal jobs. Pretty much everyone in our group has the same goal of ending up in a Cyber Security type job eventually. Which I find quite interesting. If this is a pattern amongst other groups, it may mean that not many job opportunities are available at the end of this course. But after looking at the demand for Cyber Security Professionals there is a massive demand.
There are also so many different facets of Cyber Security, so within that job term there are many different specialisations and areas to work within Cyber Security. I think that even though we all have the same interests of being a cyber security specialist, there are so many different branches in that field that it won't create job issues in the future if our groups interests are a trend. It's interesting to see that 4 of our 6 group members (Autin Knight, Adrian Leveris, myself, and Jade Gower) want to end up in a Cyber Security field. Due to that fact there isn't much differentiation between those 4 peoples chosen fields for work. But Nathan Jenkins and Zachary Vine have 2 very different ideal jobs with Nathan wanting to work in the Virtual Reality field, and Zachary focusing on the Financial side of things. I personally think that Cyber Security, Virtual Reality, and Financial Planning are 3 fields that are closely related. And if you worked in one area I dont think it would be too difficult to transfer over to another. They are all very clearly I.T related jobs, and I think it's really cool to see where everyone wants to head in the future career wise. I think some of the main difference is that Nathan's role would rely heavily on programming and designing Virtual Reality programs, which would contain a large amount of visually aided design. While Cyber Security Is more of a heavy problem solving field of work, with a lot of having to make quick decisions and act under pressure. Cyber Security professionals have to be able to make decisions under a lot of pressure, while solving multiple problems and then acting on those solutions to create a safe work environment.

Jade Gower
I don't find it surprising that there are four of our team members with an original common goal of Cyber Security. Cyber Security is a much needed and ever growing industry. Cyber Security is also a very broad term, so the differences in the jobs we seek could be major. I know Adrian has changed his views and is looking towards programming now, but he may look at the security measures in games. Ethan would be working as a consultant for many companies, I might go into local government and work on the smaller scale of things while Austin is looking at software security and cloud application development. I think we're all on a similar path, maybe liking it to high school, we all go there, some of us are just at different stages.

Austin Knight
Everyone in our group has projected growth within their anticipated career pathway except Zac's as his is not stated. We will all ultimately need some programming skills to further ourselves in careers. Communication and Management skills are the most sought-after skills in the in the IT industry. We will all require a strong set of verbal, writing and common computer skills to progress ourselves.

The differences between our chosen career paths are not different in industry (except Zac) but different in position. Those working towards a role in Cyber Security will need to be prepared for rigorous testing work with a strategic mindset, while Nathan in Graphic design will need a creative mindset. Nathan will need to be prepared to develop his artistic skills as he progresses his career. Zac is in a completely different industry and has his sights on the most contrasting job compared to the rest of the team. He will require different interpersonal skills such as listening and negotiation to progress as a Financial Planner.

Our groups career plans are most similar than different, as we are all studying this subject of Introduction of IT. We will all at one stage need to develop a portfolio to show off our IT skills to potential employers. Relating to the Burning Glass data, we all require similar skills not related to computers to help us progress our careers.

Zachary Vine
Excluding myself, whose ideal job is outside of the IT sector as a financial planner, there are a lot of similarities amongst the group. 4 out of 6 of the group have ideal jobs falling under the umbrella of Cyber Security and the 5th has his ideal job as an AR/VR Technical Officer, which although outside the scope of Cyber Security, holds certain similarities in respect to required technical skills such as using various coding languages.
Whilst my ideal job requires no knowledge of such similar skills, my research does suggest that knowledge in SAP and Oracle could prove beneficial whereas these don't rank of any importance to the other members of the group as far as I can see. All 6 jobs have similarities regarding non-technical required skills, such as good communication skills, ability to meet deadlines and a proficiency in problem solving. These similarities will be explored further in the industry data section of the report.

Tools

Team GitHub Pages: https://team-a3.github.io/Assignment-2/
Team GitHub Repository:https://github.com/team-a3/Assignment-2

Summary

When working on this Assignment, we allocated individual jobs and tasks to certain people based on their knowledge and experience both inside and outside of the IT sector.
As such, it is our contention that the Git repository audit trail is a poor representation of our groups work as a whole. This is because team members who were more knowledgeable in Git, HTML and Web design used the repository a significant amount more than those who were tasked with things like writing reports and various research activities.
The use of Messenger and Google drive COMBINED with the Git repository audit trail is a much more accurate representation of both, the way the group worked together as a whole and individual contribution.

Industry Data

Our groups ideal jobs and how they rank in demand from employees

Cyber Security Specialist

(Austin Knight, Adrian Leveris, Ethan Fleming, Jade Gower)

Interestingly enough the burning glass data provided did not seem to encapsulate the role of the Cyber Security Specialist, which is surprising because according to recruiters and career site experts it is the most in demand tech job of 2019 (Rayome, 2019)[1] and according to other resources there will be 3.5 million unfilled cyber security jobs by 2021 (Morgan, 2019)[2]. However, we did manage to secure another report from Burning Glass Technologies which specifically illustrates the demand for the Cyber Security Specialist.
Two key points were:

- The number of cyber security job postings has grown 94% since 2013, compared to only 30% for IT positions overall. That's over three times faster than the overall growth in the IT market (Burning Glass Technologies, 2019)[3].

- Cyber security jobs account for 13% of all information technology jobs. On average, however, cyber security jobs take 20% longer to fill than other IT jobs, and they pay 16% more. This helps to illustrate high demand. (Burning Glass Technologies, 2019)[3].

There are three main reasons that we are using such a broad ideal job title when personal profiles have previously illustrated more specific titles within the sector:

- A quick internet search will instantly reveal just how broad of a term Cyber Security Specialist is, with it taking only a few minutes to find 50+ job titles that fall under the umbrella of this one. However, for the most part, they all require very similar, if not identical, IT specific and general skills. This variance in titles also means that there are titles within the scope of cyber security which could accurately be given multiple titles which would still accurately portray the specific role.

- Due to this aforementioned variance of job titles within the industry resulting in multiple representations for near identical roles, it is our contention that measurement of the demand for these specific roles is a lot harder to measure due to the inconsistencies of collected data not giving an accurate representation of all available positions or possibly including positions which are not suitable.

Another variable which makes measuring demand for such specific roles within the industry is that according to Burning Glass Technologies, for most IT roles, Cyber Security is just one of many responsibilities within the role as opposed to a dedicated responsibility, and over 50% of IT jobs demanding cybersecurity skills are in fact completely different roles where security is only one part of a broader job description.

AR/VR Technical Officer

(Nathan Jenkins)

Another job title which may be to specific to fall into the broader roles illustrated in the burning glass data, the AR/VR (Augmented Reality / Virtual Reality) is another sector where demand is just going to increase. Rogers, points out that a recent report (Rogers, 2019)4 from the International Data Corps, shows worldwide revenues for the AR and VR market are forecast to increase by 100 percent or more over the next four years.

With total spending set to hit some $215 billion by 2021. This growth is reflected by looking at a small American business called EON, which began in 1999 with two workers and grew to 90 by 2015. Today, it has nearly 250 employees and is looking to add 110 more in the next year as demand for VR and AR products increases.

Financial Planner

(Zachary Vine)

As this job falls well outside the scope of the IT sector, it obviously isn't included within supplied data. However, there are some IT skills which are required to be able to perform within the role of financial planner and these will be explored within the section pertaining to our groups required skills. Advisor Logic (2019), states there is an upward trend in demand for financial planners due in part to the fact that disposable income in Australian households is increasing and because we have an ageing population. By 2027 nearly 20% of the Australian population will be over the age of 65a and history dictates these individuals will be more likely to turn to financial planners as they near retirement (Advisor Logic, 2019)5.

Our groups required skill set - I.T specific skills

Several sources cited that knowledge of various programming languages is a must for anyone wanting to make it in Cyber Security, with knowledge of C/C++ and Python being the two most important (Ruddy, 2019)6, followed closely by JavaScript, PHP and SQL (Garbade, 2019)7. Recently, within the cloud ecosystem, other languages have risen to prominence as well such as Perl and Ruby, and PHP, Java, and .NET continue to be popular (Kumar, 2019) 8, so it stands to reason these would be necessary skills for someone focusing on cloud security specifically. For a role such as Chief Information Security Officer (CISO), an individual will require Project Management skills as they must organize and coordinate technical vulnerability assessments (Dice Insights, 2019)9.

When it comes to AR/VR the industry is looking for strong programming skills on one hand and on the flip-side people who know modelling, graphic design and how to render 3D environments (Rogers, 2019). Surprisingly, Rogers further points out that it is one of the few IT industries where employers may focus more on a prospects passion and creativity than their technical skills.

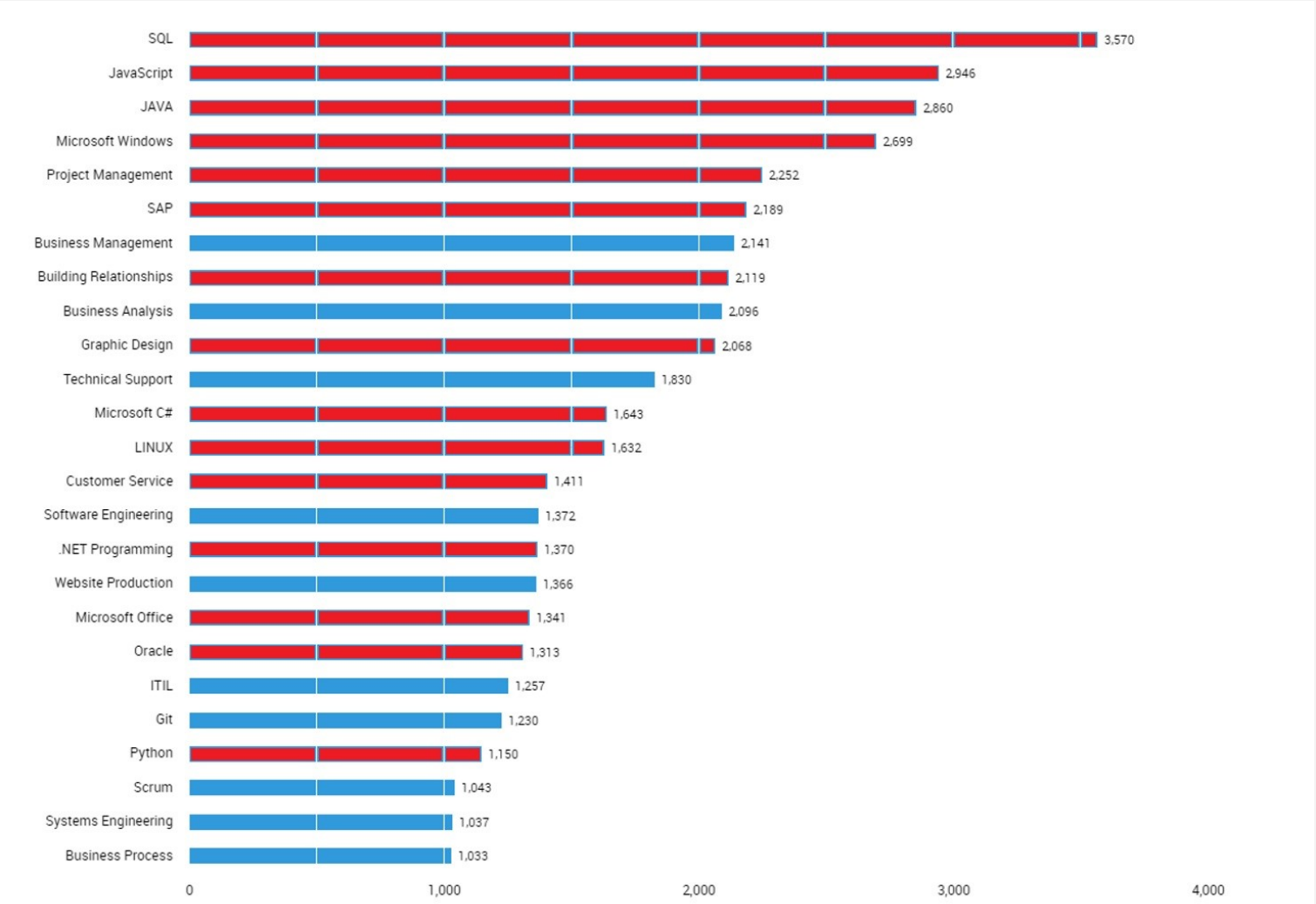
Half (2019)10 states that the increased focus on digitisation and automation has encouraged more hiring managers to look toward financial professionals with the right IT skills to leverage new financial systems.
As such Candidates who can demonstrate knowledge and proficiency in SAP accounting software or Oracle will find themselves in-demand. Obviously, ability to navigate the Windows OS and perform tasks in Microsoft Office are necessary skills for almost every professional.

I.T Specific Skills

- C, C++, Python, Java, Java Script, Perl, Ruby - *Computer languages that programmers use to develop software programs, scripts, or other sets of instructions for computers to execute.*
- SQL - *A standard computer language for relational database management and data manipulation.*
- .Net -*A software framework developed by Microsoft that runs primarily on Microsoft Windows and provides support across several programming languages.*
- Graphic Design – *The creation of visual concepts, by either computers or hand, that communicate ideas to inform and captivate consumers.*
- Networking - *The linking of computers to allow them to operate interactively.*
- Microsoft Windows & Linux - *Operating Systems, the software that runs on a computer to manage the computer's memory and processes, as well as all its software and hardware.*
- Cloud Infrastructure - *Working with the hardware and software components that are needed to support the computing requirements of a cloud computing model.*
- 3D Modelling and Rendering - *Techniques used in computer graphics for producing 3D digital representations of objects.*
- Project Management - *The practice of initiating, planning, executing and controlling, and the work of a team to achieve specific goals.*
- SAP – *A popular Enterprise Resource Planning software system.*
- Oracle -*A database architecture often used by global enterprises to manage and process data across wide and local area networks.*
- Building Relationships - *The process of developing and strengthening social connections.*
- Customer Service - *The act of taking care of customer needs by providing proficient, obliging, high quality service, before, during, and after the customers necessities are met.*
- Microsoft Office – *A suite of various software applications used for creating documents and presentations as well as other activities such as simple database creation and manipulation.*

Below is an edited version of the Burning Glass Data which has been adjusted to illustrate the demand for our groups required IT skill set (skills included within our skill set have been highlighted in red.). It illustrates that not only does our group meet 60% of the illustrated skills, when we consider that most of those skills rank highly within the data, it pushes our demand up to 67% overall. This would suggest that our IT specific skill set is rated very highly by employers.

The three highest ranked IT specific skills which are not in our required IT specific skill set list are Business Management, Business Analysis and Technical Support.



Our groups required skill set - General skills

The groups list of required general skills has been derived with help from the Australian government job outlook website (available at https://joboutlook.gov.au/):

- Communication Skills - *Active listening, talking to others & written communication.*
- Complex Problem Solving - *Noticing a problem and figuring out the best way to solve it.*
- Writing - *Writing things for co-workers or customers.*
- Trouble Shooting (A broad skill term which we believe covers several general skills):
- Systems Evaluation - *Measuring how well a system is working and how to improve it.*
- Operation Monitoring - *Watching gauges, dials, or other indicators to make sure a machine is working properly.*
- Quality Control Analysis - *Doing tests and checking products, services, or processes to make sure they are working properly.*
- Systems Analysis - *Figuring out how a system should work and how changes in conditions, operations, and the environment will affect it.*
- Time Management - *Managing your own and other peoples' time to get work done.*
- Critical Thinking - *Thinking about the pros and cons of different ways to solve a problem.*
- Organisation - *The idea of putting things together in a logical order.*
- Teamwork – *A willingness to work together to achieve a common aim.*
- Reading Comprehension - *Reading work related information.*
- Active Learning - *Being able to use what you have learnt to solve problems now and again in the future.*
- Monitoring - *Keeping track of how well people and/or groups are doing to make improvements.*
- Judgment & Decision Making - *Figuring out the pros and cons of options and choosing the best one.*
- Leadership - *Motivating a group of people to act towards achieving a common goal.*
- Detail Oriented - *Ability to achieve thoroughness and accuracy when accomplishing a task.*
- Planning - *Thinking about the activities required to achieve a desired goal.*
- Instructing - *Teaching people how to do something.*
- Social Perceptiveness - *Understanding why people react the way they do.*
- Creativity - *The act of turning new and imaginative ideas into reality.*
- Management of Personnel Resources - *Motivating, developing, and directing people as they work.*
- Negotiation - *Bringing others together and trying to sort out their differences.*
- Service Orientation - *Looking for ways to help people.*
- Mathematics - *Use maths to solve problems.*
- Persuasion - *Talking people into changing their minds or their behaviour.*
- Meeting Deadlines - *To finish something at the time it is meant to be finished.*
- Presentation - *Deliver effective and engaging presentations to a variety of audiences*
- Analytical -*Collect and analyse information, problem-solve, and make decisions.*

Below is an edited version of the Burning Glass Data which has been adjusted to illustrate the demand for our groups required general skill set (skills included within our skill set have been highlighted in red.). It illustrates that not only does our group meet 68% of the illustrated skills, when we consider that yet again most of those skills rank highly within the data, in this instance it pushes our demand up to a massive 86.6% overall. At a glance this would be in part due to the massive demand illustrated for communication skills, however, with this removed from the equation entirely we still come in at 82.8% overall.

The three highest ranked general skills which are not in our required general skill set list are Research, Mentoring and Team Building.

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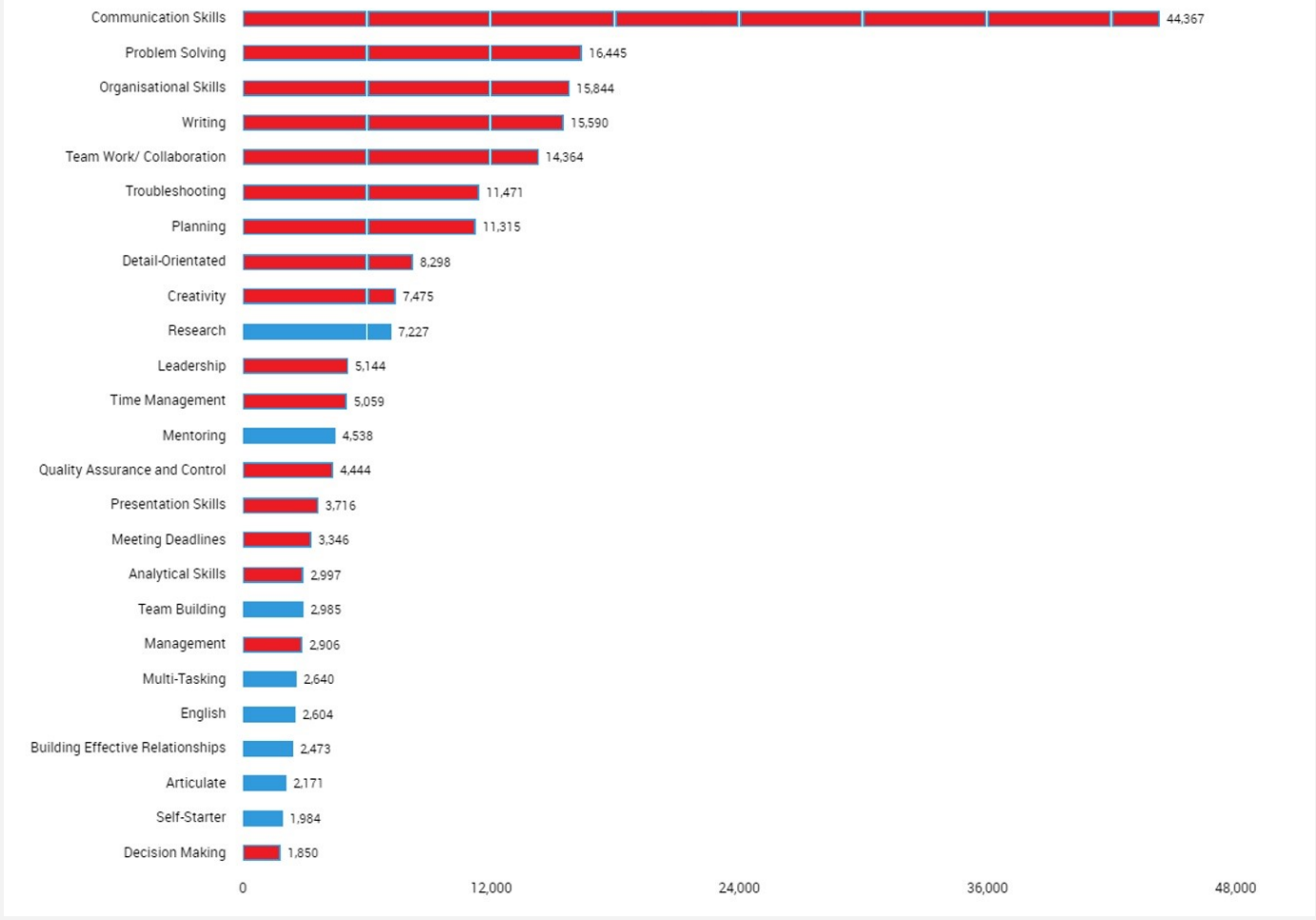

Having looked at the Burning Glass data, has your opinion of your ideal job changed? Why or why not?

Austin Knight *(Cyber Security Specialist)*
My opinion of my ideal job has not changed despite looking at the burning glass data. Currently I endeavour to have a strong career in cyber security as I have always had an interest in the security aspect of technology.

Adrian Leveris *(Cyber Security Specialist)*
After analysing the Burning Glass data, yes my opinion of my ideal has changed after I did some more research on my role as it isn't in high demand at the moment but the role is still very necessary for the future as security needs to evolve as there are always new threats being developed with data and information at risk. I will say being a Developer is a much more interesting role as I have always enjoyed Programming and pairing that with Cyber Security would pair well together and considering that problem-solving skills is in high demand developing software/applications that can solve security problems. At the end of the day I would prefer being a Developer after researching more into Cyber Security and I have always enjoyed coding and watching applications/software come together.

Ethan Fleming *(Cyber Security Specialist)*
After reading the burning glass data, it did worry me a bit not seeing that Cyber Security Specialists are in high need. But after doing more research I discovered that Cyber Security is quite a broad term, and that a lot of the high demand jobs fall under the field of Cyber Security. This is good for me, because that means that the job that I want to do is in high demand and can go whatever direction I would like it to. After looking at the high demand general skills it was good to see that my skills fit in with the ones that are in high demand, this just reinforces my dream of doing a cyber security job. As it shows that my skills are needed in the workplace and that it shouldn't be too hard for me to find a job. Looking at the I.T specific skills was an eye opener as it showed me all the coding languages etc that employees are looking for. This did worry me a bit as I don't know many different coding languages, but I also have a couple more years until my degree is finished, and I'm a quick learner. So hopefully I can learn some of the high demand languages by the time I've finished this course.

Jade Gower (*Cyber Security Specialist)*

I wouldn't say my opinion has changed, but it has definitely opened my eyes as to what is needed to be successful to gain employment in my ideal job.

Nathan Jenkins *(AR/VR Technical Officer)*

Although my ideal job isn't illustrated specifically inside the data, other cited sources within demonstrate a high demand within the sector and I have not changed my mind about my selected role. Further to this point, it is my contention that the strong request for my jobs particular required skill set, such as graphic design, not only supports the argument that there is a robust industry growth not shown in the data, but working towards this job role also puts me in a favourable position due to having a an easily transferable and sought after skill set.

Zachary Vine *(Financial Planner)*

The Burning Glass data has done little to influence me one way or another because, as previously stated, my ideal job falls outside the scope illustrated by the data which presents information solely around the IT field.

Other cited sources, particularly Advisor Logic (2019), have illustrated a strong growth in the sector with an upward trend in the foreseeable future. Based on this information I see no reason to doubt my choice of ideal job role. I was interested however to learn about the strong demand for IT specific skills within the sector, particularly relating to specific specialist software suites, which has given me a lot to think about.

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Information Technology Work

Interview with website developer Anonymous

Q) Please tell us about your IT work. What exactly do you do?

A) I am developing a social Web app, for a niche demographic.

Q) Please tell us about the industry you work in.

A) There are hundreds of social apps available, but only a few are well known. It is a very competitive space, especially if you want to make a living from your app.

The GDPR regulations that was implemented on the 25th of May 2018 in the EU, makes it very difficult to launch a social app over there. However, the GDPR protects users from the misuse of their personal information and I am all for it.

I guess everyone who develops a social app sees Facebook as the giant they have to face, no pun intended, but Facebook is banned in China. This provides an opportunity for exploiting that demographic, with an 'acceptable' social app.

There is another bright side to all the social apps; it shows that different people use different social apps and sometimes more than one, which leads me to the -humble- conclusion that there will always be people who will find another social app useful for their specific social space.

What other kinds of work do you have to do

Developing this Web app requires knowledge of a few things;

- HTML
- CSS
- JavaScripting
- PHP
- SQL
- Webservers

Fortunately, there are several tools available for free. Since the tools are regularly updated, I check the providers' websites on a monthly basis for updates.

The IDE I use to make development easier is NetBeans. I use XAMPP to provide PHP, a Webserver and a database for development and testing on my PC. XAMPP is a "completely free, easy to install Apache distribution containing MariaDB, PHP and Perl".

There are several PHP frameworks available, which also helps to make PHP development easier and quicker.
I use CodeIgniter, because it was recommended by a friend who works for a large company. I find it easy to use.

I use jQuery for JavaScripts. "jQuery is a fast, small, and feature-rich JavaScript library. It makes things like HTML document traversal and manipulation, event handling, animation, and Ajax much simpler with an easy-to-use API that works across a multitude of browsers. With a combination of versatility and extensibility, jQuery has changed the way that millions of people write JavaScript."

Learning to use these tools properly can be time consuming, but it is something that needs to be done and makes development easier once you got the hang of it. Fortunately, documentation and forums are always available.

I document every day's work and keep record of the lines of code I have written. I am doing this, because it is easy to lose track of time and the work that has been done if you spend most of your day coding. This enables me to look back by the end of a week, month or year to see what I have done.

I use git and make backups at the end of the day, if I have written new functions, made significant changes to existing code or before I do a language or framework update.

Q) Who are all the different people you interact with in your work? Please tell us about them.

A) I mostly work alone, but I have a friend who helps me when I get stuck. We met at Uni and I am fortunate to have him as a friend. He works as a developer at a company.

Q) Please tell us about your interactions with other IT professionals.

A) I have a few friends who are IT professionals. They are always willing to give advice when I need it. We try to avoid talking about IT when we are socialising, but it is not easy, because it is a shared passion.

Q) What about your interactions with clients or investors?

A) I don’t have clients at the moment. I have done a little bit of research on investors and was told that you have more leverage when you can present investors with a finished product, so I will contact investors once my app is done.

Q) What aspects of your work do you spend most time on? Please tell us about these.

A) Testing on different devices and different browsers. It is very time consuming to make changes to pages that has a perfect layout on one device, but simply won’t work on another. It means changes have to be made to CSS and sometimes even that does not fix a problem. I usually try to resolve those problem by creating a layout that works best on a larger screen size, but is still acceptable on a smaller screen size, at least according to my standards.

Apple mobile devices has given me a few headaches with JavaScripts, which simply does not work on it, but works without problems on Android devices. A recent example is a button which scrolls a page to the top in a smooth way. It works on Android devices as well as Apple devices, but then blocks the execution of other scripts on Apple devices. After trying for a day to resolve that problem, I removed the script and used a link to the top of the page: defined as a button at the bottom of the page. When the button is clicked, it immediately takes you to the top of the page. Although it works, it is not smooth, and I wasted a day trying to figure it out.

Testing is always time consuming, but it is worth spending time to know for certain that your app will work on the devices that you have tested it on.

Q) Which aspects of your work do you find most challenging?

A) I have learned the hard way that it is better to test the whole app when I do a language or framework update instead of discovering that somethings are not working anymore, a month later when I do a test and accidently find a problem that did not exist previously.
It can be a huge challenge to find the cause of the problem and rewrite code to fix it, especially if you don’t read the changelog before you do the update. Having a backup that was made before the update is valuable in a situation like this.

Q) Finally, can you share an example of the work you do that best captures the essence of the IT industry?

A) You can buy a mug on Amazon that states: “ENGINEER Solving problems you didn’t know you had in ways you can’t understand.” I think it is also a humorous way of describing the essence of the IT industry.
Did anyone, except Mark Zuckerberg, knew that not having Facebook is a problem that needs to be solved?

The Free Dictionary defines IT as:

Noun 1. information technology - the branch of engineering that deals with the use of computers and telecommunications to retrieve and store and transmit information

My Web app makes use of computers (servers, databases, mobile devices, etc.) and telecommunications to transmit information provided by users to a database where it is stored, and from where it is retrieved and transmitted to other users with whom it is shared.

Summary

The person is a developer for a social web application, which targets a niche demographic. They are required to have professional understanding of HTML, CSS, JavaScripting, PHP, SQL and web server concepts. The professional uses a range of tools for development of this application such as NetBeans, XAMPP, CodeIgniter and jQuery. They find these programs easy to use and suitable for the development they conduct.

Along with development, the professional also keeps documentation of their work every day so they can manage their time effectively. They also keep track of the code they have written to make sure they are not doubling up on work that has already been done. At the end of each day, they use git to make backups of all their work to ensure it is all saved and secure. This is a practice that every IT professional must ensure they have to save countless hours of unnecessary work.

The professional tends to work alone on their application. When they need assistance, they contact their friend who works as a software developer. They have a strong network within the industry as many of their friends are working within it, which is a huge advantage when developing this application. They currently do not have any clients or investors; however, they plan to meet with investors soon once their application is polished.

Testing responsiveness on different devices and browsers is the most time-consuming aspect of the professional’s job. There are so many different variations to be made to a single page to make sure it is perfect on all devices. The professional combats this issue by creating a layout template to use for new pages that works on all devices and browsers. Their time regarding this issue is mainly spent on optimising Apple device support as JavaScript does not tend to work most of the time. A key issue recently has been creating a button which the user can press to smoothly take them to the top of the page. This feature worked perfectly fine on Android devices. However, on Apple devices it would block the execution of other scripts on the page. It took almost a day for the professional to polish their aspect of the application, so it was optimised for all devices. Although testing is the most time-consuming aspect of their job, they state it is the most important to ensure a polished product.

They find that doing language and framework updates the most challenges aspect of their position. They have developed a strong habit to avoid bugs when conducting this through backing up their work. One time, they updated only a small part of their application to realise a month later that there was a bug created due to the update. This could have been avoided if they read the changelog of the update and completed a successful backup.

Interview conducted by Ethan Fleming,
Summary written by Austin Knight

IT Areas of Interest

Cyber Security

What does it do?

Cyber security is the process of protecting electronic systems, online networks and computer programs from malicious attacks in the form of viruses, spyware and malware to name a few.

According to arnnet.com.au, Australians are spending almost $3.9B on security which includes services such as consulting, hardware support, implementation and IT outsourcing services.

Cyber security is essential in protecting our hardware, software and digital data from theft and/or damage.

As our online world grows, so does the threat of cyber attacks.

What is the state of the art of this new technology?

Businesses are building new offices to hold their advanced cyber security facilities.
The state-of-the-art cyber security headquarters sole focus is the protection of digital data, hardware and software of their customers from malicious attacks

What can be done now?

There are lots of things you can do now to protect your family's data.

1) Use strong passwords for all your online accounts.
A strong password should be hard to guess, contain at least one capital letter and one number.
You should also have different passwords for each account you have.

2) Don't click on links that you are unsure of.
A lot of people make the mistake of clicking a link without thinking. If you're not sure about the link that you see, ask the person who sent it. A link may send you to "phishing" sites where it collects your data.

3) Use a trusted antivirus software.
Protect your data from theft with antivirus. You should have an antivirus that includes antivirus, antispyware and anti-phishing as a minimum.
Parliaments are now changing the way companies can collect and use private citizens personal data.

The General Data Protection Regulation (GDPR) approved by the European Parliament in 2016 which replaced the Data Protection Directive 95/46/ec in 2018, is the fundamental law followed by companies in the protection of the digital data of European citizens.

Under the GDPR terms, companies have to see fit that their customers personal data is collected in a legal way under strict conditions and that if a data breach does happen, their customers data is protected from misuse or they will face penalties for failing to do so.

What is likely to be able to do be done soon

Stricter laws will be imposed governing the rights and responsibilities of both the customer and the businesses.
Harsh penalties will be put into action when the people behind the attacks are caught and brought to justice.
New and more advanced anti-virus software will be developed to help the customers stop attacks before they happen

What technological or other developments make this possible?

Companies are developing smarter more sophisticated security measures every day.
One company, Trend Micro have developed a new solution called XGen™ that is

- Smart: Protects against the full range of known and unknown threats using a cross-generational blend of threat defence techniques that applies the right technique at the right time, and is powered by global threat intelligence
- Optimized: Delivers security solutions to protect users, networks, and hybrid cloud environments – all designed specifically for and tightly integrated with leading platforms and applications, like VMware, Amazon Web Services (AWS), Microsoft® Azure™, Google Cloud, Office365, and more
- Connected: Speeds time to response with automatic sharing of threat intelligence across security layers and centralized visibility and control XGen™ security uses proven techniques to quickly identify known good or bad data, freeing advanced techniques to more quickly and accurately identify unknown threats. This identification in rapid succession with right-time technology regardless of location and device across a connected system, maximizes both visibility and performance. This core set of techniques powers each of the Trend Micro solutions, in a way that is optimized for each layer of security: hybrid clouds, networks, and user environments.

What is the likely impact?

The world is moving online more and more each day. In order to keep up with the threats of harmful attacks, we need to stay one step ahead to keep the attacks at bay. We, as a society, will become smarter when browsing online.

What is the potential impact of this development?

The potential impact will be towards the hackers who start the viruses. It will make it harder for them to succeed and when caught, they will be given harsher penalties.
Children are exposed to technology from a young age these days which means they learn the do's & don'ts of the internet. Just as we learn to look both ways when crossing a road, children are taught not to click links they're unsure of.

What is likely to change?

New laws in regards of data collection will come about.
The California Consumer Privacy Act of 2018 was signed by California Governor Jerry Brown and is due to go into effect by the end of 2019.
It is an act that increases rights of privacy and the protection of the residents of California, United States.
The rise in VPNs in 2018 will continue to grow as people take control of their data into their own hands.

Which people will be most affected and how?

The current generation will be the most affected with these changes. With new viruses and new technology coming out every year, we are the ones who must keep up with the demands. The next generation of people will come in where they have learnt about how to defend themselves from attacks from an early age.

Will this create, replace or make redundant any current jobs or technologies?

This will create new jobs in the cyber security industry. With new threats, breaches of data & viruses popping up all the time, more people will be needed to help stop the attacks.
New security software, more advanced software, will need to be developed in order to stay ahead of the hackers.

How will this affect you?

This will affect myself personally because I will need to keep learning in order to be one step ahead.
By continuing to learn and research how my data is used by businesses, I will learn how to best protect my myself and my family's data.

In your daily life, how will this affect you?

It will affect my daily life because I will need to read each article on websites I visit to see what data they will collect, how they use it and if they sell it and to whom.
I will need to spend more money on internet security, both on anti-virus software and on VPN's to help protect my privacy.

What will be different for you?

Not a lot will be different for me. As long as I stay protected as best I can, be smart about what information I give out, and teach my family and friends how to stay protected, I can continue to browse the internet safely.

How might this affect members of your family or your friends?

Older members of my family do struggle with the online world in general, so I do help them by teaching them how to browse safely and what not to click.
My friends are wise when it comes to not clicking links, but by giving them further advice on anti-virus software and giving them the choice to use VPN's I can help them learn to browse safely too.
The children need to be taught to ask questions. By asking questions about links or pop-ups, they will learn what is safe and what is not safe

Written By Jade Gower

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Robots

What does it do?

The field of Robotics is a interdisciplinary branch of engineering and science that involves the creation of Robots, as well as the design of the systems for their control, feedback and information processing. It can be broken down further into several subcategories such as:

- Military
- Industrial
- Domestic
- Agricultural
- Medical

All forms of Robotics, however, serve a singular overall goal: To substitute human involvement with machines to better human life. A discussion on Robotics, published by the EU-OSHA (Kaivo-oja, 2015)[1] stated that Robotics pose a great potential benefit to health and safety of humans in hostile work environments. (such as defence, space, or the nuclear industry)

As of 2019, the state of the art robotics vary depending on the field in which the robots were designed.

For Medical Robotics, robots are capable of performing surgery (Robotic Surgery on a Grape, 2019)[2] with extreme dexterity, up to twice the precision as the best human surgeons, allowing for faster recovery times on potential patients. Another medical application of robotics is in the form of robotic prosthetics. Limb amputees are able to be fitted with a robotic replacement limb that picks up their brainwaves, allowing them to have a functional limb again, in the form of a robotic counterpart.

In Military Robotics, robotic drones are already being used regularly by countries such as the US, Turkey, Italy and Morocco and provide an unmanned aircraft capable of carrying out airstrikes.

On top of this, there are many different types of robotics used in active warzones to reduce soldier casualties by providing surveillance, supplies or even cover-fire for soldiers (10 types of Military Robots, 2019)[3].

Industrial Robotics sees automation of creation of products through the use of robotics. Large robotic arms have been automated to create cars for several large automotive companies for many years (Acieta.com, 2019)[4].

This technology allows for cars to be created at a higher rate and reduce work injuries for employees who have been trained to operate said robots.

In the Agricultural Robotics field, automation is again the main goal (Association, 2019)[5].

Through the use of automated harvesting and weeding systems, the labour for farmers is drastically reduced, allowing them to focus on other areas in their work. This also allows for an increase in production speed, as more produce can be planted than a human would physically be able to tend to, yielding more crops during harvest times.

For Domestic Robotics, there are robots designed to assist with everyday life. An example of this is the Alpha 2 robot. The Alpha 2 provides many different functions such as supplying information, setting reminders and providing entertainment (Indiegogo, 2019)[6].

The future for robotics is set to advance quite rapidly in the next few years, engineers are planning for robots to eventually appear more human-like to remove the stigma around such machines.

On top of this, as processors become smaller and more efficient over time, robots can potentially have more processing power installed into them, allowing them to become smarter and faster than current standards.

One rather important outcome in the future will be the emergence of true AI. As AI advances, the need for human intervention shrinks, allowing robots to autonomously perform their supplied tasks.

The state of robotics, in its current form, owes a lot of its success and progress to the fields of Engineering, Computer Science and Metallurgy. As these three fields progress and produce faster, cheaper and more effective materials and methods, the field of robotics thrives in their successes and incorporates their latest achievements into their own production to produce greater machinery for mankind.

What is the likely impact?

The impact of the field of robotics has already started to be felt around the world, many individuals have adopted robotics into their daily lives with relative ease. Of course, with any new technology, there are those that are skeptical or downright critical of its emergence. The vast majority of adopters are benefitting from robotic prosthetics, automated systems and domestic robotics to enable them to return to a normal quality of life.
As the field expands into other forms of robotics, as well as the current fields becoming more advanced, we, as a species will potentially see the worldwide adoption of robotics in mainstream society.

The people most noticeably affected by robotics will be farmers with automation systems and amputees with robotic prosthetics. Amputees would be capable of living a normal life again, without the struggles of their disability, thanks to a robotic prosthetic. Farmers may react negatively towards the automation systems and be slow to adopt them due to the misplaced fear that it would replace their jobs.

The robotics field opens up a great number of employment opportunities, especially considering the niche areas that robotics can go into. (Agricultural, Military, Medical, ect..) As time goes on, we could potentially see robotics being adopted into all forms of education for the workforce.

Many jobs will be replaced by the robotics field (CNBC, 2019)[7] through automation, however, through education and training, these workers may not be completely replaced, but transferred to instead ensuring the robots do their job efficiently and safely.

How will this affect you?

In the greater scope of things, I don't actually feel like the field of robotics will have a large effect on my daily life. Should I pursue it, I could potentially have robots assisting me in my office and home life to make my job and housework easier or even non-existent, however it would be through my interaction with the field and not the passive emergence of the technology that causes this.

There are many potential differences for, not just me, but everyone in the future, as robotics become more prevalent in major public areas. A possible scenario is having robotic bus drivers around my city, whilst I do not take buses, many other people do. As the technology advances, we may see these types of introductions into everyday society that greatly alter our knowledge of life as we know it.

At a more personal level, I think the biggest impact of this technology would be with my father, whom has a prosthetic foot. If the advancements in robotics continue, he could potentially live to see a robotic foot instead of a hardened plastic one, which I think would have a massive positive impact on his confidence and his mood in regards to his disability.

Written By Nathan Jenkins

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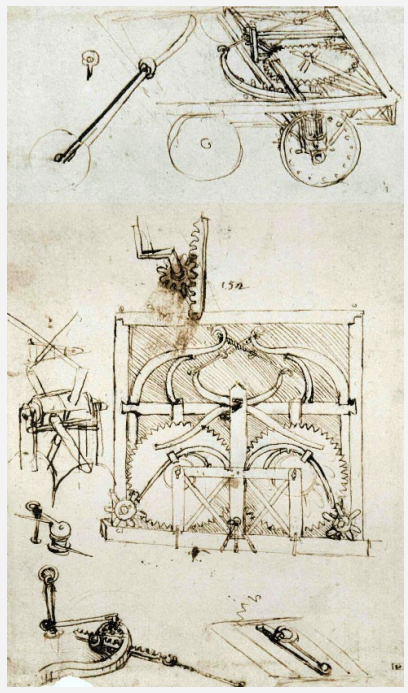
Autonomous Vehicles

What does it do?



Autonomous Vehicles often seem like something straight out of a science fiction movie.
The first self-driving vehicle known to exist (WIRED, 2019)1 was an invention by Leonardo da Vinci's Self Driving Cart (En.wikipedia.org, 2019)2 in the 16th century.
This cart was able to have preprogramed paths set into it, and it would be able to follow them by itself with no one steering it or making it move forwards.
The next massive outbreak was the first semi-autonomous car (Vanderbilt et al., 2019)3 in 1977 produced by Tsukuba Mechanical Engineering.
This Japanese company revolutionized and pioneered the autonomous vehicle industry that we see today.
The car created in 1977 was a Volkswagen Tourag called Stanley.
It was equipped with two cameras that used old analogy computer technology to process the signal. It could travel up to 30km/h and avoid objects.
The only downside is that it had to use a guide rail. This was considered the first real autonomous vehicle.
We've come a long way since then with Tesla coming out with its fully functioning Auto Pilot system (Tesla.com, 2019)[4] in 2015 . This is a massive improvement with the new systems allowing cars to travel at up to 100km/h and over while being able to propel themselves as well as slow down to avoid incidents.
There are 6 levels of automation that allow us to aim for a goal regarding what we want in the future and show us how far we have come since the start .
There are a few main technologies used that result in self driving vehicles existing.
The 3 main ones are sensors, connectivity, and software/control algorithms (The Franklin Institute, 2019)[5].
All the sensors we use today are quite advanced and allow the car to stay in its lane, detect obstacles etc.
It's only a matter of improving their reliability and safety. Connectivity allows the vehicles we utilize to gain access to all details that we take for granted. This includes weather, traffic, temperature, engine, infrastructure etc. It then combines those details to provide the best experience possible and ensure that your drive is safe. This is an area that needs constant work to ensure that the car is constantly updated and uses the information in the correct way.
The most complex of the 3 areas behind autonomous vehicles is software/control algorithms.
Because were allowing the car to make all our decisions for us, we're just creating Artificial Intelligence.
Currently all cars are at the 3rd level of partial automation. There are some cars at the 4th level including all Teslas (no surprise there) but legally were not allowed to have level 5 and 6 automation as that means that we must allow computers to make all the decisions for us. Which comes into a lot of ethical issues since artificial intelligence is still a highly debated issue.
Within the next 3 years most sources agree that we should be able to achieve the 5th level of automation which means that everything cane be done for you.
Already cars can park themselves, drive themselves, accelerate, brake etc. Its only a matter of time before we don't have to do anything, we can just sit back and let the car do everything.
Regarding other vehicles besides cars, we do have fully autonomous planes now, that will fly based of a pre-recorded flight plan.
As well as take off and land by themselves. I personally find it interesting that no-one minds that planes are pretty much fully autonomous now, but if you see a car without a driver they freak out.

What is the likely impact?

I think that as autonomous vehicles become more commonplace. The way we travel will become much simpler. Things like Uber will become completely autonomous allowing people to order cars to come pick them up and take them wherever they need. It would just make everything much more accessible.
Also, for people with disabilities it will make a massive difference. Once vehicles are level 6 autonomous , people with severe disabilities can have their own cars that they can “drive”. This would give them a whole new level of independence.
I think it would make the taxi and uber service redundant, as the companies could cut the cost so much by not having drivers. But then on another level it would also provide new jobs for software developers, as well as creating many new jobs for mechanics. I don’t think that everyone will want to move over to driverless vehicles just because a lot of people enjoy driving their own cars. But I think if they made autonomous vehicles easily accessible, it would become a massive industry very quickly. If you look at the aircraft industry you can see that even though the massive airline planes like the Boeing 747, Airbus A380 are almost completely autonomous. They can fly, and land by them selves using the Autopilot feature (CNBC, 2019)[6]. Although people don’t trust Artificial Intelligence that much so we do have Pilots that do take off, and then fly the plane, but if they want, they can let the computer fly the whole trip and land. Even though pilots are almost irrelevant, they are still used in every single flight since systems fail, as well as people don’t trust artificial intelligence or a computer with their lives. So, in that respect I don’t think that vehicles will ever become fully autonomous with no user input.

How will this affect you?

I have a physical disability; I can currently drive my cars. But since my disability is degenerative, eventually I won’t be able to drive anymore. So, if autonomous cars were a reality to the point which I could use them by only steering or something like that, then it would improve my independence on a massive scale.
There are plenty of people out there that are like me or worse. So, having an autonomous car would make a huge difference in their lives. It would allow me to go out when I want, giving me, independence and I wouldn’t have to rely on anyone to take me places.

I think it would affect family and friends because it would allow my family to get to things when they’re busy. If they had an autonomous vehicle. They could study in the car while it drives them to uni. If they had something to be at, the car could go and pick the kids up from school. Its all about accessibility and making things easier for people. I personally think that it would change the world as we know it.

Written By Ethan Fleming

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Raspberry Pi &Arduinos

What does it do?

Well a Raspberry Pi is a low-cost, credit card sized computer that can be plugged right into a computer display or TV and uses a standard keyboard and mouse[1]. The original plan was for the Raspberry Pi to be an accessible and affordable computer for kids to learn programming, but because it was so successful with over 12 million units sold it allows users to explore computing and learn how to program in languages like Python. It can do everything that you would expect a computer could do right now from surfing the net, and gambling, high definition video, to making spreadsheets, phrase-processing, and playing video games. It has also been used to interact with the outside world in a wide variety of different projects ranging from music machines, facial recognition, parent detectors to weather stations and tweeting birdhouses with infra-red cameras.

Raspberry Pi has already such a huge range of developments with that it's not possible to talk about all of them. Regarding what can be done soon developers will be looking at making more automated systems to aid in everyday life. With the release of Raspberry Pi 4 with its increase overall performance to its predecessor Raspberry Pi 3 through a new CPU, new RAM and increased GPU speeds with support for 4K output a lot more projects can be possible[2]. With future develops such as automated lights, fans and being able to view anything around your house through projected light without needing a screen to view it using sensors. This adds to reducing energy consumption. Entering a room using black box technology, the internet, relay board, light sensor, temperature sensor, breadboard, using Raspbian operating system, and an application on your phone to control it all[3]. We can expect to see mobility in cities increased by optimizing the public transport system, vehicle flows and traffic conditions in rush hours. The desired goal is public vehicle (Bus) tracking using GPS with expansion boards connected to Raspberry Pi to provide communication of data and localization through the cellular network[4].

Arduinos

Arduino is an open-source electronics platform primarily based on smooth-to-use hardware and software [6]. Arduino circuit boards (referred to as a microcontroller) are capable of reading inputs, light on a sensor, a finger on a button or a twitter message and turn it into an output, activating a motor, turning on a LED light, publishing something on a line. The Arduino does not need a separate programmer (separate piece of hardware) in order to load new code onto the board, it can be done with just a USB cable. Over time Arduino has been the mind of lots of projects, from normal gadgets to complicated clinical units. Right now, Arduino can be used to build a weather display system, motion triggered light lamp for under your bed, muting any phrase you want on tv, build a fingerprint scanner for your garage door opener, build a robotic arm, build an autonomous "follow me" cooler and build a personalized alarm system [7].These are just some of the projects that have already been created with this useful technology. The current focus for Arduino is to work on Internet of Things (IoT) communications.

In the future we can expect to see Arduino being used to reduce the cost of prototyping, allowing companies iterate during development, leading to better more functional state-of-the-art products such as a parking system used to manage free parking spots, indirectly reducing congestion and car accidents while also reducing the time it takes to find a parking space[4]. Using Infra-Red (IR) sensors to detect if a parking spot is free, using an LCD display in the parking lot entrance to obtain information about free spots[4]. With the use of RFID cars to manage authorization if it's a public or private car park[4]. All this hardware will be processed locally using the Arduino board, with an ESP8266 module we can communicate this information wirelessly so this information can be sent to an external system to inform users of the current parking lot state[4]. This can also be paired with Raspberry Pi and drivers can verify available space through the use of their smartphones. They will be able to do things that you aren't able to do with remote sensor networks right now which could lead to making buildings more comfortable, saving energy and reducing maintenance costs for equipment, with new control strategies[8]. We can expect Arduinos being used to implement these developments[8].

What is the likely impact?

Raspberry Pi public mobility system

We can expect the mobility system to impact efficient movement of vehicles, reduce accidents, reduce congestion, tracking public vehicles in urban city areas to enhance mobility around the city when traveling.

With the growing need for energy efficient, cost efficient, reduced size, robustness, and communication technology being ideal for new technology systems to be developed we can expect the government looking to prototype new developments that can improve their overall mobility around urban city areas through the use of IoT open-source electronic platforms. This allows for trip planning, identify bottlenecks, and adjust services based on real-time conditions[9].

The people that would most likely be affected with this development are the people living in urban city areas, and people traveling to the city via public transport or their own vehicles. This system will allow for reduced travel times for people and easier trip planning when traveling around the city.

I feel as though this system will create new jobs in the government allowing experienced technology team to make traffic management system that can be developed to improve the overall congestion issue in cities.

Arduinos parking system

So, the potential impact of this development would be indirectly reducing congestion and car accidents when trying to find a parking spot in urban areas by allowing users to verify whether a vehicle parking spot is free without the need of driving around everywhere looking for a spot.

We can expect governments or corporations testing prototype open-source technology systems in the future that will allow for vehicle parking in the city in order to improve city life and reduce the road congestion while trying to find available parking spots.

The people that will be affected by this would be people traveling to and from work, and people traveling to the city. This system will make finding an available vehicle parking spot easier to find and allow for a more efficient travel experience in the city.

I feel that this system will create more jobs by giving experienced technology users the chance to develop an advanced parking management system.

How will this affect you?

Raspberry Pi public mobility system

In my daily life this type of system should make traveling, and planning trips while using public transport system to the city much easier and more convenient for me when needing to go somewhere. Although I don’t live in the city or rarely travel to the city it won’t really affect me at all, but it could be implemented in urban areas with a lot of congestion outside of the city as well, so it certainly would make things easier for me.

This system will make a world of difference for a lot of people not just myself in the future if we see it developed as it will allow users to track current road conditions, traffic congestion during peak hours, and work out how far away the bus is from your arriving and sending you alerts if they have taken a different route.

I could certainly see this being a very useful system when family and friends are looking to travel via public transport or via their own vehicles when in another state or country, they do not know too well as it will improve their experience with more convenience.

Arduinos parking system

This system will certainly be useful in my daily life as I'm always having to go to the shopping centre during the week and at times it can be highly congested especially on Saturdays. So, a system where I would be able to verify where an available vehicle parking spot would save me time having to look for ages.

This will make a world of difference to everyone not just me in the future if it is developed. It will save me time and be much more convenient for me to look up available spots on my phone rather than mucking around driving everywhere.

I could certainly see this being a great addition to my family and friends as it will make their lives easier when they are going shopping or need to go somewhere as trying to find a parking spot in a congested area is so much of a pain for a lot of people.

Written By Adrian Gordon Leveris

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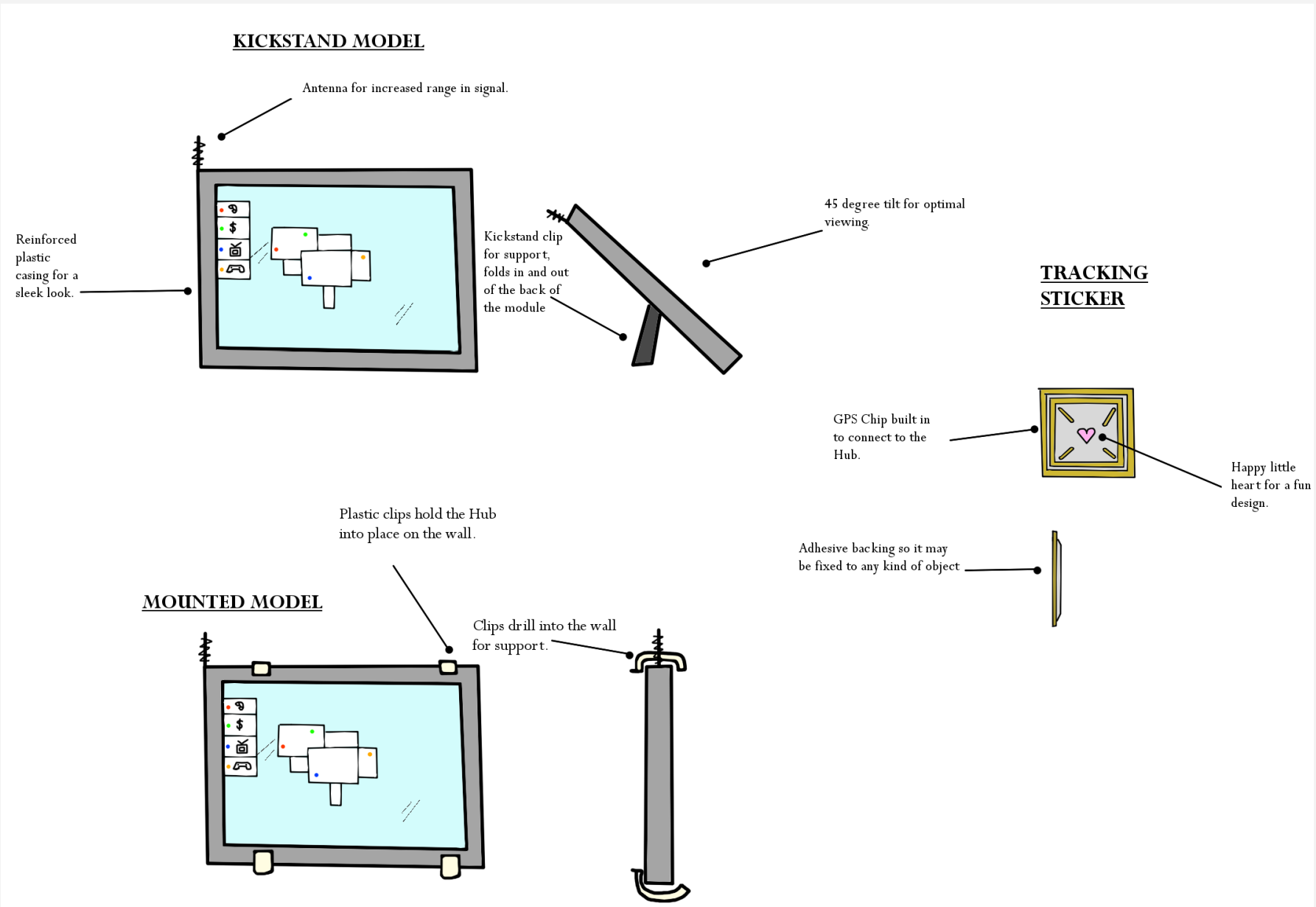
Project

Project Idea and Motivation

Our groups project idea has been derived from the idea used by Jade Gower in the first assignment.
Her idea was essentially a wireless hub which can be linked to portable devices, such as key fobs, remotes and mobile phones, with a wireless chip. A corresponding button on the hub could then be pushed to make the device emit a sound so it could be found. As a group we have expanded on this idea taking it a few steps forward to pretty much offer the same functionality but through different means.
The motivation behind the idea is simple, people lose stuff and they want to easily find it.
Jades original assignment illustrates this by citing A 2017 study conducted by Bluetooth tracker company Tile, which shows that lost items have cost Australians $1.2Billion in the previous year (2018) alone.

Project Features

An early rendition of what our project might look like:



Technologies and features our project will use:

- Bluetooth (5.1) device tracking
  Range won't be an issue for us because we intend to have Bluetooth receivers which will be placed throughout the house, these will be always on but very low power consumption. They will connect to each other as one device, then to a wireless network to send/receive information to the main hub. The main hub will illustrate the location of the device on the screen. Bluetooth 5.1 has been cited as being capable of giving location information to accuracy within 1cm since major improvements have been made to Angle of Arrival (AoA) and Angle of Departure (AoD) which are used for location and tracking of devices, making it ideal for things like finding a remote without taking off ALL the couch cushions. But it also presents the limitation, albeit it a small one, that multiple receivers would have to be within Bluetooth range of each other (around 10m-20m).
- GPS Tracking
  We will offer the option of GPS chips, the reason we would use two technologies is simple, range and cost. A Bluetooth only tracker is very cheap compared to an always on GPS tracker which would also need to include a pre-paid sim card. However, due to range issues, without using expensively made and highly powered Bluetooth receivers and chips, range is limited to around 10m-20m, although this is a conservative estimate. To compensate for short range at the cost of financial expense, a GPS chip could be placed on a phone or wallet and used to track a device pretty much anywhere so if it's lost or stolen outside range of the Bluetooth receivers it can still be located. However, this more expensive option would not be necessary for things like a remote control or possibly a key fob, or it could be, we just wish to offer some consumer choice. We would potentially include Wi-Fi in the GPS chip as well so that by combining Wi-Fi location tracking with GPS we could track devices more accurately and in areas with poor GPS accessibility/accuracy, such as cities and underground. This would of course also come down to a cost vs need analysis.
- Wireless Charging
  Each Bluetooth receiver device will also incorporate automatic detection of activated chips within its range so that the chip batteries can be charged wirelessly. New technology has recently emerged where wireless charging ranges have increased from requiring direct contact to being capable of distances up to roughly 15 feet (4.5 meters). We would also potentially offer an option where the chip can be charged via a cable from the hub or a USB port, however, this would require further research as we wish to keep the tracking chips as small and lightweight as possible to increase battery life and keep them aesthetically pleasing.
- Room Mapping
  During hub setup we will use software like PLNAR, a room-mapping app that runs on Apple's ARKit, which will map out the area within range of each receiver. This will either be run from a user's phone or from the receivers themselves. We are leaning towards a phone so as to save overall cost when manufacturing the receivers however we will need to delve further into this to weigh up what the actual costs would be in creating and maintaining an application on multiple platforms as opposed to having something simple worked into the receiver which would also mean we are less likely to lose customer base. This information will then be displayed on the HUB when locating a device so that the user is easily able to identify location within the house. GPS tracking outside of this perimeter would be displayed using google map information.
- Security Software

The hub would be able to connect to a user's telephone using an app so that devices could be tracked, and information displayed on a user's phone. We would also incorporate some additional software whereby if the phone was stolen the hub could send a signal to the phone application to take a photo which was then uploaded to a cloud server which could be used when pursuing criminal charges.

Summary

In summary our project has a wide range of applications which could be used not just by personal individuals but for various commercial applications, such as integration with various security systems.
Advances in Bluetooth have made the system much less easily compromised than previous models and GPS in combination with WIFI tracking have been successfully used for years.
By integrating these models into an accessible and easy to use package, which has low cost options and powerful applications at an additional cost, we feel we have come up with a device that appeals to a multitude of users from the old lady who doesn't want to lose her remote, to the businessman who needs to be able to track and secure his devices throughout the world.

Project written by Zachary Vine, Mock up drawn by Nathan Jenkins

Group Reflection

Adrian Gordon Leveris

What went well?

Regarding what went in our group, well I would consider our overall group social atmosphere was exceptional, considering we didn't know each other. I will say that right off the bat everyone was committed to helping the group by volunteering to complete tasks and if we had any questions, they were answered in our weekly Discord chats or during our discussions on Facebook or Discord. I was committed to making sure that we

had a team leader with the help of Ethan in order to make sure everyone knew what they were doing, and tasks were completed. Our group was certainly productive, and everyone was open to helping one another about certain tasks in the assignment and we did not have any conflicting views on things. I was surprised with how well we all worked together, and I would be happy to work with the same group of likeminded people again

What could be improved?

I will say that there was micromanaging at times where we were pushing each other to get things done, and I believe that would be something we need to work on as a group for next time. I know that I personally didn't have much time to work on the assignment due to being so busy with working full-time, so I know I would need to work on my time-management skills.

At least one thing that was surprising?

Honestly the most surprising thing was the fact that even though we were all very different regarding our abilities and skill sets we were still able to work together as a team exceptionally well.

At least one thing that I have learnt about groups?

If everyone has the same goal in mind to complete a task by the deadline then we should have no trouble achieving it.

Nathan Jenkins

What went well?

I believe that our groups communication efforts worked extremely well. At any point that one of us had an issue, question or comment, the entire team knew almost immediately, which was great for any sudden obstacles. Our organization was also amazing, I often found that if I needed a piece of information for my portion, someone else on my team already had it lined up. I'm really glad I was accepted into this team.

What could be improved?

Certainly my own time management. I feel like I could have done more if I didn't procrastinate and set myself a clear-cut schedule to follow in order to maximize my efficiency.

At least one thing that was surprising

How well everyone got on! I'm a very socially anxious person and one of my biggest concerns was that I wasn't going to get along with people when it came to working in groups.
The team I am in, almost immediately put those fears to rest with how nice and supportive they are.

At least one thing that I have learnt about groups

I always dreaded group assignments, constantly thinking to myself "I'd much rather work alone."
Working in this team not only taught me that teamwork can be fun, but it can also get huge projects finished in an insanely short amount of time.

Ethan Flemming

What went well?

Our groups communication went well. We used Discord, Google Docs, and Facebook Messenger to stay in contact constantly. If we had any issues, we were able to solve them quickly due to the constant communication. Regarding our teamwork, we were able to organise who did what easily. And this resulted in everything going smoothly.

What could be improved?

I didn’t do a great job with letting other people do their own stuff. I micromanaged too much.

Resulting in some people getting annoyed. Next time I’ll leave people alone more, and trust that they get their jobs done.

At least one thing that was surprising

The thing that was surprising to me was the amount of work that got done in such a short space of time.
Everyone worked well given the small-time limit.

At least one thing that I have learnt about groups

Micromanaging isn’t the best way to get stuff done.
Much better to trust that the group gets their jobs done by the due date.

Jade Gower

What went well?

I feel that considering we have come from different walks of life; we have worked very well together. Some took up the leadership of the group, others took up leadership of certain areas (i.e. the website) but everyone knew what they had to do and got it done.

What could be improved?

I do feel that our time management needs to be improved in order to help people try and stick to their work. I don't think that I realised how much time would be needed to be spent on certain areas and really should've put the time in earlier.

At least one thing that was surprising

One thing that surprised me was how I, myself, worked in the group. I am very introverted, very quiet, but the group always helped made me feel at ease, which was a great feeling. I was more expecting to divide the work and come back at a later point with it finished.

At least one thing that I have learnt about groups

One thing I learnt about groups is that they are hard to manage. Especially with online learning, everyone's schedules are different, some people are available through the day, others later at night. Some people have differing ideas to you, and you need to learn to speak up and put your ideas forward and to always have an open mind towards others ideas.

Austin Knight

What went well?

Our communication as a group was stellar and everyone had a fair say in what was going on. Our use of various platforms such as Facebook messenger, Discord and Google Drive was a key factor in our ability to get this project done seamlessly. Everyone in our group was willing to give everyone a hand with their own work to ensure we got the best result possible.

What could be improved?

My time management skills to ensure I do not negatively affect the rest of the group. At times I felt like I was letting my team mates down due to not getting work done in a suitable time. I can improve on this next time by allocating time during the early days to plan appropriately when I will get tasks done.

At least one thing that was surprising

Everyone in our group had common interests despite coming from different walks of life. We all had a can-do attitude and were very respectful, positive and friendly to each other.

At least one thing that I have learnt about groups

They are so effective if everyone in the group has the same common goal. Due to everyone having similar interests in IT, it was such a stress-free assignment. I am appreciative of that.

Zachary Vine

What went well?

I think the lack of conflict was great, I almost always expect there to be some sort of conflict issue when undertaking group projects, but there was none. I would also point out I don't believe this to be due to an abundance of individuals with a passive nature but instead to be due to a genuine want to contribute and be part of the team.

What could be improved?

Time management, this is probably the only area I think we maybe lacking. As a person new to studying online and a full time father I have a hard time managing my own time, never lone trying to manage it around 5 other individuals all of whom obviously have their own things going on as well, some of which aren't even in the same time zone. I think this is something we can improve on going forward as we learn more about when each other are available and split work requiring more than one of us into suitable partnerships.

At least one thing that was surprising

I think at times this team of people where possibly genuinely considerate and respectful of each other to a fault. I feel it sometimes made decision making take a little longer and created unexpected work for individuals who were just too eager to help out, that being said I don't feel anyone took advantage of this and everyone was the same when taking on extra pieces so this is not necessarily a bad thing except it possibly slowed processes down a little bit and conceivably impacted our time management a bit as well.

At least one thing that I have learnt about groups

When everyone is working towards the same goal, a team of like-minded individuals can come together in a strong, positive, conflict-free way. Open communication can allow people with different skill sets to really compliment each other, even when those skills at a first glance may not be beneficial. This is the first time I have completed an entire group project and genuinely had no problems with any of the other members.

GROUP SUMMARY

Every single person in our group endeavoured to achieve well in this assessment piece which was the biggest positive take away from this project. We had a great mix of individuals who took pride in their work which is portrayed in our final submission. The segregation of jobs was a stress-free process as everyone was so willing to do whatever they needed for the team to succeed.
We used Google Drive to merge all our content together. We used Discord to communicate as a group and Facebook messenger to send non-urgent messages.
Our overall communication amongst each other was exceptional which led to us being a very productive group. We understood everyone's strengths and weaknesses – which led to easily allocating jobs as a team.

There are not many things that need to be improved upon for next time except for time management. We all had our own separate tasks to complete but some relied on others to be completed to then complete their work. Many of us did not have enough allocated time in our busy lives to work on this assessment piece so creating a schedule of team agreed due dates would have been a great idea. The micromanagement was great to push each other to get the project completed but next time a schedule should be in place to ensure we do not need to hassle one another. Overall the only significant improvement for next time would be to manage our time individually and as a group more efficiently.

We all got along with each other instantly. This was a huge surprise to many of us as we all understood that each of us had commitments outside of this project from the get-go.
We were all genuinely considerate and respectful to each other.

When everyone has the same mindset to achieve well, they can achieve strong results.
Open communication is the most important factor in a group setting and if it is done well – anything is possible. We all learnt that team assessments can be a fun learning curve in our studies if they are done correctly and respectfully.