SWELDD Report

Add your data completed tasks to this document

Team Profile 5%

Team name - Done

Personal information

Team profile

Ideal Jobs - Done

Tools 5%

Industry Data 15% - Done

IT Work 15% - Done

IT Technologies 20%

Jordan - Done

Francis - Done

Sophie - Done

Suki - Done

Project Ideas 10% - Done

Feedback 10%

Group Reflection 10%

Presentation 10%

Assigned Assessment Criteria

Team Profile (Personal Information) - All contribute

Tools - Francis

Industry Data - Chris

IT Work - Suki

IT Technologies - Jordan, Sophie, Francis & Suki

- Francis - Graphics., Multimedia Technology.

- Suki - Machine Learning

- Sophie - Robots

Jordan - Raspberry Pis, Arduinos, Makey Makeys and other small computing devices

Project Ideas - Chris

Feedback - Everyone

Group Reflection - Everyone

Presentation - Jordan + Group

Report Content

SWELDD Team Profile (Personal Information) - All contribute on paragraph per person

Name, student number, background, hobbies, IT interest and IT experience. Test outcomes and how this information will be helpful to the group.

Team Profile

Team name: SWELDD

Personal Information, Profile and Ideal Jobs

Jordan Draganoff

Student Number: S3818714

Hi, my name is Jordan. I was born in the late 1990's and grew up in the large country town of Bundaberg, Queensland. I enjoy an active lifestyle and love to travel, hike and go jet-skiing. I graduated high school in 2013 and have been working in my parent's business in the areas of sales, marketing and web development to name a few. In 2018, I decided to pursue my dream and started on my journey to become an IT professional.

Myers-Briggs Style Test

Extroversion>Introversion by 12%

Sensing>Intuition by 3%

Thinking>Feeling by 47%

Perceiving>Judging by 3%

Source: Humanmetrics.com. (2019). Personality test based on C. Jung and I. Briggs Myers type theory. [online] Available at: http://www.humanmetrics.com/cgi-win/jtypes2.asp [Accessed 10 Sep. 2019].

Learning Styles Test

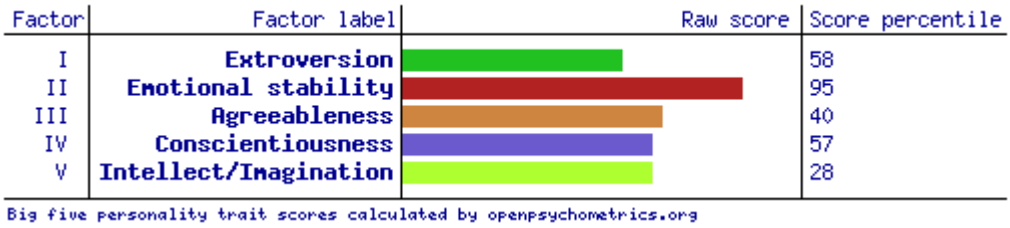
Auditory: 20%

Visual: 40%

Tactile: 40%

Source: Humanmetrics.com. (2019). Personality test based on C. Jung and I. Briggs Myers type theory. [online] Available at: http://www.humanmetrics.com/cgi-win/jtypes2.asp [Accessed 10 Sep. 2019].

Big 5 Personality Test



Source: Openpsychometrics.org. (2019). Big Five Personality Test. [online] Available at: https://openpsychometrics.org/tests/IPIP-BFFM/ [Accessed 10 Sep. 2019].

The results of the online tests outline that I'm a visual/tactile learner, have high emotional stability and have a preference for thinking rather than feeling. These results point out that while I do have good emotional stability, I may struggle with understanding other emotions. The results such as my preference for extraversion and agreeableness indicate that other team members would be happy with my behaviour as part of a team. When forming a team, it would be beneficial to find other members with a similar learning style of visual/tactile as this would likely affect communications preferences and sharing of useful resources throughout the group.

Ideal Job

Business Analyst - Ecommerce

Source: SEEK. (2019). [online] Available at: https://www.seek.com.au/ [Accessed 03 Sep. 2019].

This job is calling for a business analyst to help a commercial wholesaler replat form their current ecommerce system to the newest version of Magento. This position appeals to me as I currently have experience in website development and am somewhat familiar with Magento. This job pays up to $150,000 for it's 12 month contract. This type of work appeals to me as I love to travel; this kind of high paying short contract work will allow me to travel more.

This job is calling for a person with great business and management skills/experience. It also favours someone with experience in B2B ecommerce and Majento. For me to pursue a job such as this one, I would first have to gain more experience in a business analyst position. It would also be greatly beneficial for me to learn and get more comfortable with the Magento ecommerce platform.

I will first need to gain some experience working as a business analyst. The job position of Junior Business Analyst would be a great to gain experience as often the junior position doesn't require nearly as much experience. Once I have gained enough work experience in lower position, I would have a much higher chance of securing a contract for a high paying business analyst position. It would also be greatly beneficial for me to become more familiar with common software used in the B2B selling environment.

Francis Dharmasiri

My name is Francis Dharmasiri a Sri Lankan born Australian. I migrated to Australia in 1990 and lived in Melbourne from then to 2010. now I live in Bunbury, WA. I have 3 children and I am a proud grandpa of 6 grandchildren all of whom live in Melbourne.

I started my work in Australia in the hospitality industry and eventually in year 2000 started a company in facilities management that I am managing to date.

My hobbies are mainly reading, and my favourite topic is Philosophy, but I like keeping in touch with all the developments in the field of computing, including software and hardware. I have been interested in the field from the time BASIC (Beginners All Purpose Symbolic Instruction Code) language came out in the 80's. I am glad that now I have some time to pursue that interest in IT and do this degree in IT for my personal satisfaction and If possible to do some contract work in the field of systems security and penetration testing.

Myers-Brigs Style Test

My Type INFP

Introvert (19%)

Intuitive (88%)

Feeling (25%)

Perceiving (12%)

You have moderate preference of Introversion over Extraversion (19%)

You have strong preference of Intuition over Sensing (88%)

You have moderate preference of Feeling over Thinking (25%)

You have a slight preference of Perceiving over Judging (12%)

INFPs never seem to lose their sense of wonder. One might say they see life through rose-coloured glasses. It's as though they live at the edge of a looking-glass world where mundane objects come to life, where flora and fauna take on near-human qualities.

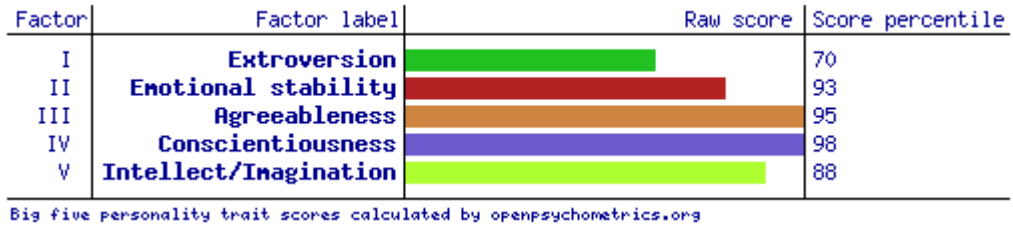
INFPs are not exempt from the same disappointments and frustrations common to humanity. As INTPs tend to have a sense of failed competence, INFPs struggle with the issue of their own ethical perfection, e.g., performance of duty for the greater cause. An INFP friend describes the inner conflict as not good versus bad, but on a grand scale, Good vs. Evil. Luke Skywalker in Star Wars depicts this conflict in his struggle between the two sides of "The Force." Although the dark side must be reckoned with, the INFP believes that good ultimately triumphs.

Some INFPs have a gift for taking technical information and putting it into layman's terms. Brendan Kehoe's Zen and the Art of the Internet is one example of this "de-jargoning" talent in action.

(INFP stands for Introvert, Intuitive, Feeling, Perceiving and represents individual's preferences in four dimensions characterising personality type, according to Jung's and Briggs Myers' theories of personality type.)

Source: Humanmetrics.com. (2019). Personality test based on C. Jung and I. Briggs Myers type theory. [online] Available at: http://www.humanmetrics.com/personality/infp-type?EI=-19&SN=-88&TF=-25&JP=-12p [Accessed 05 Oct. 2019].

Big 5 Personality Test



Factor	Factor label	Raw score	Score percentile
I	Extroversion		70
II	Emotional stability		93
III	Agreeableness		95
IV	Conscientiousness		98
V	Intellect/Imagination		88

Big five personality trait scores calculated by openpsychometrics.org

Source: Openpsychometrics.org. (2019). Big Five Personality Test. [online] Available at: https://openpsychometrics.org/tests/IPIP-BFFM/results.php?r=3.5,4.2,5,5,4.6 [Accessed 05 Oct. 2019].

The results of the online tests will reveal to the group about my personality, it's strong points and weak points thus helping them to be able to know me better to interact and work with me better.. I think these tests are a good general-purpose indicator for employers and others to know why a person is the way they are.

Ideal job

My ideal job would be to be a Systems Security analyst in order for me to achieve this I will need to complete the Information technology Degree that I have currently undertaken and then do many more Study programs including CompTIA Cyber security analyst + Certification, in order for me to meet the criteria needed as described below

Create specific protocols that audit file changes such as updates, deletion, additions and moving

Penetration testing and monitoring of digital assets

Risk analysis to identify any security issues that could lead to lost or stolen data

Monitoring security alerts to patch software such as operating systems with the latest versions

Prevent intrusions using current security hardware and software

Identify security breaches and take action to stop them and prevent them in the future

Implement the right software and hardware into current and future network environments

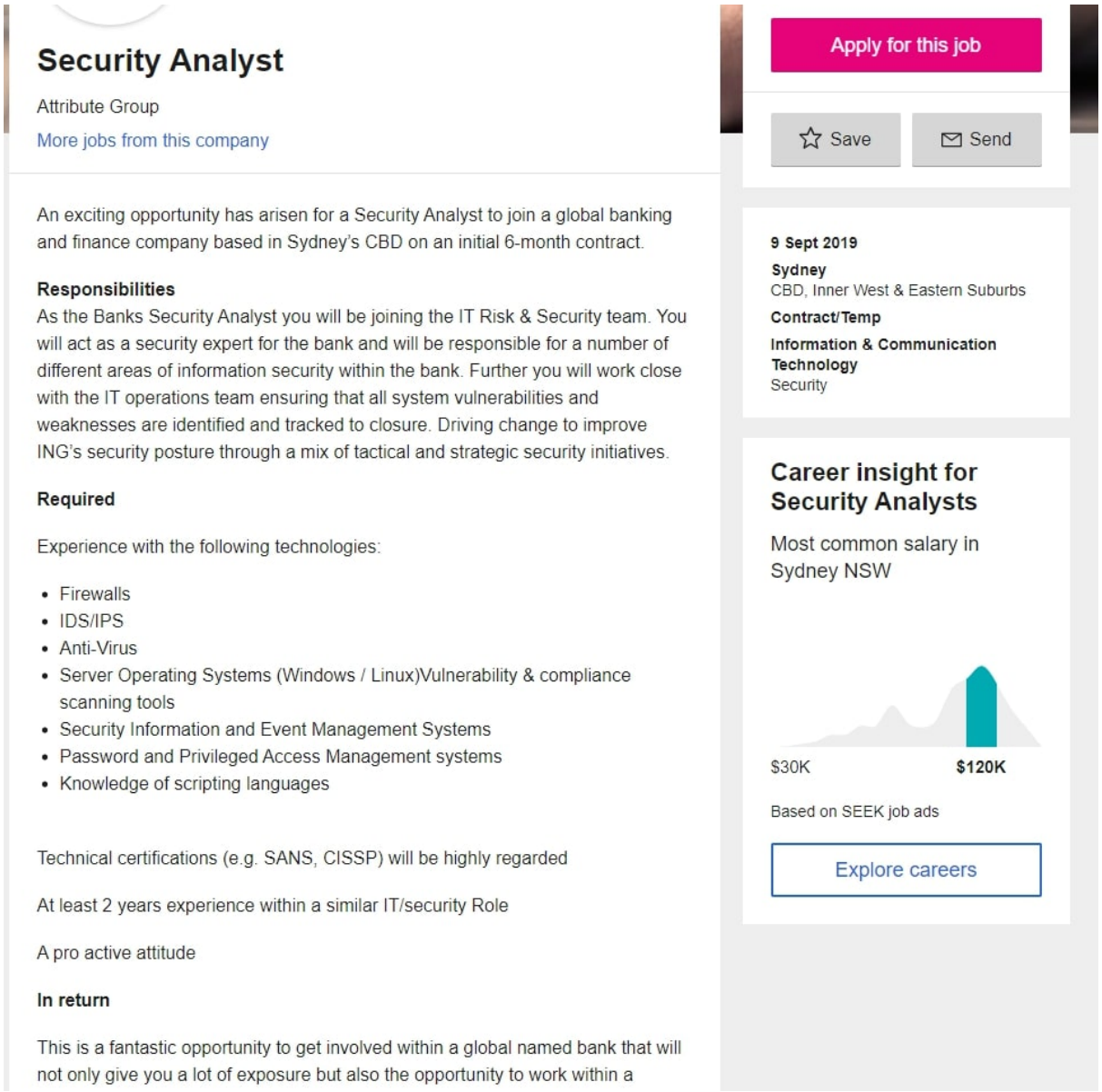
Define enterprise level security policies and actively enforce these procedures

Train employees to understand security and implement the right strategies

Work with law enforcement and vendors to manage security threats

After the completion of study, I will then need to focus on gaining hands on experience in dealing with the above criteria in a real working environment. So, it's a long journey to achieve this goal.

However, it is not my desire to obtain a full-time job but to be able to secure contract work. Like in the examples blow.



Security Analyst

Attribute Group

More jobs from this company

An exciting opportunity has arisen for a Security Analyst to join a global banking and finance company based in Sydney's CBD on an initial 6-month contract.

Responsibilities

As the Banks Security Analyst you will be joining the IT Risk & Security team. You will act as a security expert for the bank and will be responsible for a number of different areas of information security within the bank. Further you will work close with the IT operations team ensuring that all system vulnerabilities and weaknesses are identified and tracked to closure. Driving change to improve ING's security posture through a mix of tactical and strategic security initiatives.

Required

Experience with the following technologies:

- Firewalls
- IDS/IPS
- Anti-Virus
- Server Operating Systems (Windows / Linux)Vulnerability & compliance scanning tools
- Security Information and Event Management Systems
- Password and Privileged Access Management systems
- Knowledge of scripting languages

Technical certifications (e.g. SANS, CISSP) will be highly regarded

At least 2 years experience within a similar IT/security Role

A pro active attitude

In return

This is a fantastic opportunity to get involved within a global named bank that will not only give you a lot of exposure but also the opportunity to work within a

Apply for this job

Save Send

9 Sept 2019

Sydney
CBD, Inner West & Eastern Suburbs

Contract/Temp

Information & Communication Technology
Security

Career insight for Security Analysts

Most common salary in Sydney NSW

$30K $120K

Based on SEEK job ads

Explore careers

Suki

My name is Susika 'Suki' Sumanasuriya, student number: S3620271. I was born in Sri Lanka but migrated to Australia when I was 12, I am bilingual and can speak 2 languages (English & Sinhala), my favourite pastime includes watching tv shows & movies. My interest in IT has been a lifelong obsession, ever since I was a kid, I always had a particular interest in technology over other things. I currently have no actual experience in IT apart from the IT electives i took during my grade school years. I am very happy to be part of the SWELD group and hope to do the very best.

Test results:

Myers-Briggs test

Learning style test

Career Recommendations

These tests have shown what my true personality is, it's something I have never directly contemplated about but i think these personality tests will prove useful when I am working in a team environment, for example the career test prove that my need for leadership is low but my need for organization is high so my role in a team could include helping to organize the necessary objectives in regards to solving a problem.

Ideal job

My ideal job would be to someday be a Research Scientist specialising in Machine Learning like the advertisement posted at seek.com.au (Link and Snapshot is below). The position is meant to help device novel techniques powered by Machine Learning algorithms to explore minerals and metals in a much more sustainable way. This role requires the researcher to have at least 4 years of experience in researching novel machine learning algorithms, preferably a master's in computer science and expert level proficiency in a variety of programming languages. IN order for me to qualify for this job I would have to finish two courses I am currently studying (IPT and ITT), and then finish the Bachelors in Information Technology, afterwards find a junior research job and get a Masters in Computer Science as i am doing my job and then hopefully in a half decade I would qualify for this job.

Sophie

Chris Evans

My name is Chris Evans (RMIT Student number S3813726), I am 32 years old and live in Newcastle NSW. I have a beautiful wife (Caroline), a nine-month-old son (Austin) who keeps us very busy and a dog (Leo). My hobbies include sports such as baseball, golf and touch football. I also dabble in amateur home brewing, barbecuing, gardening, fishing and camping. I am currently trying to involve

myself in any kind of climate change and renewable energy movements I can. I feel strongly about reducing the adverse effect we are having on the environment and have a personal goal to be involved in making a difference. My interest in IT began in high school in 2003 where I did my first computing studies. I then pursued a career involving IT as an Electronic Communications Tech in the Air Force where for over 13 years I have progressed through the organisation from being a hands-on technician to a technical workforce manager. The further I progress in my career, the more managerial roles I undertake and the less technical knowledge I retain. I am studying IT to increase my knowledge and understanding of all things IT and in the process, limiting my skill fade. I am hoping to find a way to combine my interest of IT into my aspirations of environmental change. Whether that is through green energy technology advancements, sustainability with automation or networking household energy storage; only the future will tell.

My test results:

Myers-Briggs result – Protagonist ENFJ-T

Learning Style – Visual 45%

Creativity – Ability to carry large quantities of information and manage effectively, desire to change the accepted norm and to push for continual improvement.

How this will help the group: The results of my tests indicate that I need to be open and accepting of team feedback and take this on board for future interactions. I also should start as soon as I can when making big decisions as I can lose confidence if time gets away from me. I digest things better if they are visually intuitive and I like logical information structure to ensure I can comprehend our progress.

Ideal Jobs comparison and contrast.

Jordan - Business Analyst

Francis - Systems Security Analyst

Suki - Research Scientist in Machine Learning

Sophie - Data Analyst

Chris - Project Developer

Ideal Job Questions...

What common elements are there, if any? There is a common theme of Analyst across three of our members. All roles are different and across varying fields.

What differentiates each position from the others, if anything? The industry that the individual has an interest in seems to be the differentiating factor.

How similar or different are your career paths across the group? The career paths are vastly different from each other, this shows the diversity that the IT industry offers.

Tools

Francis

Set up a group GitHub website. Link each individual profile to the group site.

The link to your group's website - https://sweldd.github.io/

The link to the groups Git repository - https://github.com/Sweldd/sweldd.github.io

Your comments on how well the audit trail on the Git repository reflects your groups work.

Industry Data

Chris

What are the job titles of your group's ideal jobs?

Jordan - Business Analyst

Francis - Systems Security Analyst

Suki - Research Scientist in Machine Learning

Sophie - Data Analyst

Chris - Project Developer

How do each of these rank in terms of demand from employers?

Jordan - 165 job listings

Francis - 173 job listings

Suki - 58 job listings

Sophie - 45 job listings

Chris - 278 job listings

From your group's ideal jobs, can you identify a set of skills required for these jobs?

General skills:

Analytical skills

Research

Communication Skills

IT specific skills:

Microsoft Windows

Project management

Business Analysis

How do IT-specific skills in your required skill set rank in terms of demand from employers? Our IT-specific skills are all in the top 10 skills in demand from employers. We have two skills in the top 5. We consider that to be quite beneficial for our future careers.

How do the general skills in your required skill set rank in terms of demand from employers? Our general skills come in at number 1, 10 and 17. This seems to be an even spread with highly sought-after skills and skills that aren't so desired.

What are the three highest ranked IT-specific skills which are not in your required skill set? SQL, JavaScript and JAVA.

What are the three highest ranked general skills which are not in your required skill set? Problem Solving, Organisational skills and writing skills.

Having looked at the Burning Glass data, has your opinion of your ideal job changed? Why or Why not? No, while there are some good and not so good aspects of the skills in demand for our job roles, we consider our skills a good mix across the board. It could be very rare to require all the top-ranking skills and, in some cases,, you might need all of the top-ranking skills. It depends on the unique role that you go for. When it comes down to it, we all want to do what we are passionate and interested in doing. The Burning Glass data is handy; it has not changed our opinion of our ideal jobs.

IT Work

Suki

Interview an IT professional.

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

I work as an IT Specialist. My work consists of a range of various projects of which primarily focus on the development and implementation of systems to replace old systems to allow for more simplification and automation. This is because the old systems mostly consist of older command line interfaces.

Please tell us about the industry you work in.

I work for an IT multinational corporation known as IBM. This company primarily offers cloud computing services which consists of a range of services from database storage to artificial intelligence like machine learning. The company also provides other services such as leasing equipment to smaller companies.

What other kinds of work do you have to do?

I am undergoing a project administrator role for a part-time project. This is where I am in charge of organizing meetings, allocating tasks and creating meeting minutes. Meeting minutes are a summary of what happened during a meeting and of what each individual has completed since the meeting prior to the current one. This is done on Atlassian's JIRA.

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

So far I have interacted with a few members of the small team that I work with. I have interacted with project managers, business analysts, software developers and database administrator. The current team is part of the support team representing the system that is currently used. This is for the Asia Pacific region. Because of this I have also interacted with people from Malaysia who were similar roles as previously mentioned.

Please tell us about your interactions with other IT professionals

My interactions primarily consist of the team I work with for the past projects. These professionals have had various personalities who all work differently. For example, some have had excellent time management whilst others have lacked in time management.

What about your interactions with clients or investors?

I have had no interactions with clients or investors. I have only had interactions with my current team and other teams of whom I have helped produce new functions for.

What aspect of your work do you spend the most time on? Please tell us about these.

As the agile methodology consist of working on iterations, this would consist of designing, developing and testing the iterations. Primarily, the development side will be what I work on the most. This section involves producing the system that was initially designed.

Which aspects of your work do you find most challenging?

The most challenging aspects of work would have to be the development phase of some projects as this involves coding. Coding can consist of many bugs or errors that can occur in which I have to find the solution to fixing it or checking stack overflow for assistance.

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

What best captures the essence of the IT industry would have to be working with individuals who seek a piece of software to be produced and working with developers in order to produce that software. In my experience, this would consist of using data visualisation to produce dashboards for which other teams will use to allow for simplification. This involved me interacting with the product owner – of whom represents what the end users would like in the dashboard.

What kind of work is done by the IT professional?

The IT professional works as an IT Specialist, he works for an IT multinational corporation known as IBM. This company primarily offers cloud computing services which consists of a range of services from database storage to artificial intelligence like machine learning. The company also provides other services such as leasing equipment to smaller companies. His work consists of a range of various projects of which he primarily focuses on the development and implementation of systems to replace old systems to allow for more simplification and automation. This is because the old systems mostly consist of older command line interfaces. He is currently partaking in a project working as a project administrator, he is in charge of organizing meetings, allocating tasks and creating meeting minutes. Meeting minutes are a summary of what happened during a meeting and

of what each individual has completed since the meeting prior to the current one. This is done on Atlassian's JIRA.

What kinds of people does the IT professional interact with?

He interacts with a few members of the small team that he works with. He has interacted with project managers, business analysts, software developers and database administrator. The current team is part of the support team representing the system that is currently used. This is for the Asia Pacific region. Because of this he has also interacted with people from Malaysia who were similar roles as previously mentioned. His interactions primarily consist of the team he works with for the past projects. These professionals have had various personalities who all work differently. For example, some have had excellent time management whilst others have lacked in time management. He has had no interactions with clients or investors. He only had interactions with the current team and other teams of whom he helped produce new functions for.

Where does the IT professional spend most of their time?

As the agile methodology consist of working on iterations the professional spends most of his time working on iterations, this would consist of designing, developing and testing the iterations. Primarily, the development side is what he works on the most. This section involves producing the system that was initially designed.

What aspect of their position is most challenging?

The most challenging aspects of work for the professional would have to be the development phase of some projects as this involves coding. Coding can consist of many bugs or errors that can occur in which he has to find the solution to fixing it or checking stack overflow for assistance.

What does the Professional think of the IT industry?

According to the professional what best captures the essence of the IT industry would have to be working with individuals who seek a piece of software to be produced and working with developers in order to produce that software. In his experience, this would consist of using data visualisation to produce dashboards for which other teams will use to allow for simplification. This involved him interacting with the product owner – of whom represents what the end users would like in the dashboard.

IT Technologies

Jordan, Sophie, Francis & Suki

Graphic Technologies

Francis

Graphic technology is a huge industry and one of the largest in the world. Over the past decade we have seen this industry grow exponentially in the areas of Software as well as hardware giving us the capability to create realistic visual imagery be it in the form of cinema, gaming, virtual reality, augmented reality and the ongoing research into holography.

The biggest contributing factor in its current development is due to the unprecedented development in graphic processors and random-access memory. When we take these into consideration it is hard not to acknowledge two companies that have contributed largely to its momentum in growth and those companies are NVidia and AMD graphics. Due to their ferocious competitiveness with each other we have been able to enjoy some of the best technologies base on hardware, however hardware alone will not contribute to the visual graphic capabilities that we currently possess.

It is fair to say that the strides we have made in the are of Graphical software is mainly due to the popularity of games as well as the scientific research and development that demands innovation and new capabilities.

Gaming Software - Unreal Game engine by epic games

If you want to develop an epic game you might probably want to use this game engine, considered one of the best game engines in the world and created using C++ programming language It has all the necessary features built into it. A 3D game engine with Terrain, Physics and all other features that you need to create graphics that mimic reality. This game engine may not be suitable for small games as it also needs high end hardware like Nvidia GeForce RTX2080 Turing with ray tracing to get the optimal capabilities of the game engine. An excellent example what current high-end software and hardware can do.

Platforms: Windows, Linux, iOS, Android, PlayStation, Xbox and more games created: Marvel Heroes, Batman: Arkham Origins, Infinity Blade 3, WWE Immortals and more.

Some of the other software for gaming include but are not limited to Unity based on programming language C#, Godot written in C, C++ and C# with GDNative bindings such as Rust, D , Nim or using it’s own scripting language GD Scripts a high level , dynamically typed programming language like Python.

But we also need to have a look at other very essential software that is used in the graphic creation space like Autodesk Maya, Photoshop, 3DS Max to mention a few of these software's normally used for creation of commercial products in specific areas including Movies like Nemo and other popular graphic based characters that we see in movies like Transformers just to mention a few.

Medical Imaging.

Graphic technology is not limited to entertainment as I mentioned previously, the industry's growth was influenced by our need to innovate graphical capabilities for more essential needs like in the area of Health. This imaging technology is mainly based on Computed Tomography, Magnetic Resonance Imaging, Positron Emission Tomography and Phase-Contrast and Proton CT to name a few. The latest software and hardware developments in this field is also spearheaded by Nvidia. Recently they have developed a platform of hardware and software incorporating artificial intelligence known as Nvidia Clara Platform. This software kit will give the developers to apply a wide range of AI powered applications to existing medical imaging equipment that I mentioned above.

Nvidia is not the only company that is making innovation in this area of medical Imaging. For example, Deep learning start-up Aidoc has created a software platform that can use AI to analyse Computed Tomography (CT Scan) for comprehensive full body Technology.

Also, the Deep learning company Subtle medical who is a member of Nvidia's Inception virtual accelerator program is aiming to create an MRI machine that acquires images in a quarter of the time while requiring just 10% of the contrast dosage to patients.

In conclusion, I must mention that I have not even touched on the subject of Hardware and other aspects that cover the area of Graphic Technologies that span the whole IT industry and incorporates every aspect of it, a comprehensive look at the industry may fall under writing a book about it and may not be within the scope of an article.

Machine Learning

What does it do?

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

Machine learning enables machines to acquire new skills by analysing copious amounts of data and looking for patterns within those data, this essentially makes them better at a task simply through trial and error. This is made possible by giving a machine training and testing sets (data) of the very thing we would want a machine to be better at, an example could include facial recognition; through machine learning a machine can learn from the two sets, one set (the training set) to sift through to look for patterns within the data, in this case the data could be faces of random individuals and another set (the testing set) could include an extra set of people completely separate and unique from the training set to verify those new found patterns, if for some reason the verification comes to a halt, the machine learning algorithm makes an automatic adjustment to its own algorithm and tries again till it gets better over time through trial and error and eventually if the algorithm is upto the task, after the initial training period the machine should be able to recognize different faces.

What can be done now?

Currently one of the uses of machine learning algorithms includes the enhancement of the customer experience for example some enterprises use machine learning powered chat-bots that has been trained on different so called chat-bot datasets to provide its customers efficient and quick self - service without the need for staff based service, and as the technology matures it is said that more businesses both large and small will adopt this technology for the benefits of efficiency and cost saving.

What is likely to be able to do be done soon (say in the next 3 years)?

According to some computer scientists, machine learning algorithms would soon be able to generalize its abilities in detecting patterns as the current methods requires an enormous amount of data to excel at specific singular tasks (i.e. chatbots), if an algorithm can generalize its learned abilities from one data set to another (i.e. reading) it will be a more efficient use of resources and ability. Also current learning algorithms are prone to so called adversarial attacks where simulated signals implanted within the data set can trick the algorithm and could cause it to malfunction, it is hoped that solutions for these types of attacks will be designed within the next couple of years.

What technological or other developments make this possible?

On a technical level, more processing power in the near future should aid machine learning algorithms to generalize its abilities, as well as advances in data storage and management, this will aid in further understanding of the depth of current data-sets and this will enable researchers to extrapolate relations between different tasks so they can design much more proficient and generalizable algorithms. As for adversarial attacks better more robust algorithms will have to be implemented, it is said that by embedding human biases into these algorithms it could help machine learning algorithms to identify these signals and purge them out of the data-set before any malfunction occurs, although for the time being this method is unproven for the most part.

What is the likely impact?

Advanced machine learning algorithms could have profound impacts on the job market as algorithms begin to replace human workers, for example in the United States, the increase in automation over manual labour is on pace to take close to 35% of jobs within the next couple of decades, also according to some economists the economic benefit gained by implementing these new and novel technologies will only benefit the rich as the monetary benefit in cost saving and efficiency won't necessarily trickle down. While the majority of the workforce will still be employed in 20 years, the creation of new jobs will slowly stagnate noticeably as attrition gradually leads to fewer people in the workplace, this could in turn make economic inequality worse and further divide the gap between the poor and the rich. According to a report published by ONS (Office of National Statistics) of England, 3 most at risk jobs are waiters, shelf fillers and elementary sales occupations.

How will this affect me?

As according to what is mentioned above, this technology will displace many people in the workforce in turn possibly disrupting the financial and or economic livelihood of many people.

According to some researchers machine enabled job loss could have profound socio economic issues that is hard to predict, and some tech leaders such as elon musk has gone far as to recommend a Universal Basic Income or UBI to guarantee these displaced people a livable wage. It is yet to be seen how these advanced algorithms will affect the economy.

Robots

Sophie

Robots are machines capable of completing complex series of actions automatically. They can be guided by external programming or the programming can be embedded within and can be used autonomously or semi-autonomously, ranging from humanoids through to medical operating robots, therapy robots and also for the military. With the different uses for robots, the continual developments being made in robotics vary greatly, such as the TOSY Ping Pong Playing Robot, the advances in military equipment like Unmanned Aerial Vehicle drones and the emerging nanorobotics. With various methods such as, evolutionary robotics, where a number of different robots are submitted to testing and those with the best performance are submitted as a model to create subsequent “generations”, as well as developmental robotics, which involves the tracking of changes and developments within a single robot in the areas of problem-solving and other functions. According to a Forrester report, ‘robots will eliminate 6 percent of all jobs in the United States by 2021. McKinsey’s assessment on the matter is more extensive, with them believing that by 2030 one third of American jobs could be more automated. According to a new report in 2019 by Oxford Economics, “How Robots Change the World”, up to 20 million manufacturing jobs could be lost to robots by 2030, in line with the assessments made by McKinsey. The report suggests that in Australia, South Australia is most vulnerable to the future robot rollout.

Although there are a significant change in society that robots will influence in the future, there will also be new careers and fields of technology that will evolve as a result. With the advancements in medical and rehabilitation robots, researchers at Carnegie Mellon were able to experiment with millimetre sized robots to perform heart surgery, and engineers at Autodesk were also able to help medical researchers to develop nano-robots that could be injected into cancer patients to kill cancer cells.

Raspberry Pi's, Arduinos, Makey Makeys and other small computing devices

By Jordan Draganoff

A Raspberry Pi and Arduino UNO Device. Source: Self

Small computing devices such as the Raspberry Pi, Arduino and Makey Makey are challenging what many people think a computer is and should be used for. This report will cover these three small computing devices and discuss what they are, what is their impact and how they affect me and the people around me.

Just a few years ago if someone told you that you could buy a computer mother board complete with CPU, Memory and networking for just US$35 (Raspberry Pi Foundation, 2019) they would walk away laughing. If you then told them that this cheap computer could support two 4k displays, or over 16 million pixels, there's no way they would take you seriously. But the aforementioned device is commercially available today from Raspberry Pi. The smallest Raspberry Pi device actually starts from US$5 and with the addition of an SD card for storage, operating system, keyboard, mouse and display it is a fully functioning computer system. The Raspberry Pi's CPU is based on the ARM architecture which is a common architecture used for smartphone CPU's. ARM based CPUs are known for being more compact and energy efficient than their x86 counterparts (Android Authority, 2014). A Raspberry Pi device will typically be loaded with a GNU/Linux based operating system such as Raspbian. The Raspbian operating system comes with education and programming software such

as Python and Java (Raspberry Pi Foundation, 2019). As Raspberry Pi boards are the size of a credit card or smaller, they can and are often used to power other devices ranging from VPN routers and compact web servers to miniature weather stations and drones. The Raspberry Pi isn't the only kid on the block when it comes to small computing devices to power the world's latest technology and gadgets though.

Arduino is an electronics platform circuit board that comes in multiple shapes and sizes much like the Raspberry Pi. The Arduino is different as it cannot support an operating system like the Raspberry Pi can, instead it uses a microcontroller that is programmed by a connected computer. Arduino programming is based on the C++ programming language but is simplified by the Arduino Programming Language and the Arduino Software package (Arduino, 2019). Arduino boards can be used to power a huge number of projects including automatic lighting, fingerprint readers and basic robots (Ubuntu Pit, 2019). Arduinos are great for projects that do not require the full processing power of a computer to perform lots of complex tasks at the same time. For people with less technology knowledge or experience that wouldn't be comfortable setting up a Raspberry Pi or Arduino, but still want to get involved in the small computing craze, there is another device called the Makey Makey which allows you to turn basically any object into an input source for your computer.

The Makey Makey doesn't really fit into the category of small computing devices as it doesn't really do any computing. It is a device designed by two students at the MIT Media Lab (Makey Makey, 2019). Makey Makey is a small circuit board sold with a set of alligator clips and probes. The clips and probes are used to connect the circuit board to everyday objects, such as bananas or play-doh. The device connects to a computer via USB cable and is an input source, kind of like a keyboard. If the connected objects are at least slightly conductive, and a circuit is made through it, it will register a key press on the computer. The Makey Makey device was designed to be simple, as a way to introduce people to the basics of electronics and circuits, rather than be a standalone computing device like the Raspberry Pi or Arduino.

The introduction of small computing devices, namely Raspberry Pi and Arduino, have been widely adopted by technology enthusiasts and professionals alike and really questions how big a computer should be and how much it should cost. A great example of how small computing devices have been widely adopted is the increased use of Chromebook laptops in schools. These are used as an example as Chromebooks share similar properties to Raspberry Pis as they are a low cost, low power alternative to another product. In the United States there has been a massive shift from traditional laptops running Apple or Microsoft software to devices running Google software (New York Times, 2017). I feel that this shift will affect other parts of the computing world such as data servers and home computers as people and companies alike will discover the lower cost, and arguably better, alternatives. Devices like Arduino have also been successful by providing people an affordable entry into the electronics and programming circles. The popularity of Arduino can be seen all over the internet with people creating videos and writing about their projects. This has been a great advancement as the electronics market shows huge potential for the future and I believe it will be more and more important that people have an understanding of how these things work. Devices like the Makey Makey help to bridge the gap where people are interested in computers and electronics

but don't quite know how to get started. Once they are more comfortable, they may progress onto more complicated projects involving a Raspberry Pi or Arduino.

The introduction and use of small computing devices affect my daily life in multiple ways. As I'm a person that enjoys tinkering with things to get them working, I have already found multiple uses for these kinds of devices. I currently use Raspberry Pi type devices for things including an ad-blocking DNS server, VPN Wi-Fi access point and a home media server. I also use an Arduino powered 3-D printer and have been toying with ideas for other Arduino projects. These small and inexpensive devices remove many previously set barriers about what someone can create and do with technology at home. I feel that this has a positive effect on both myself and my family and friends around me as projects and ideas designed for entertainment or to simply make life easier can now be realised with some tinkering and determination.

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Project Ideas

Chris

Our group had a variety of ideas for projects from assessment one in Introduction to Information Technology.

Jordan came up with a remote animal interaction device to entertain a cat while the owner was not at home. While he has expressed that he is not a 'cat person', it was a humorous read that made what could have been a boring project, enjoyable.

Suki went all out and provided a futuristic project by means of a 'Carbon Dome' capable of sustaining life on mars! He mentions important aspects such as how the Dome will be powered and how CO2 will be broken down.

Chris aimed for a sustainability inspired plant management system with remote monitoring capability. He was attempting to implement solar power as the power source and make amendments to the software on the fly.

Noting that this portion of the assignment emphasises problems that need to be solved, we will come back to these ideas in just a second.

On a recent holiday, one of our team members had the pleasure of undertaking a nocturnal wildlife tour of a National Park in Kakadu. The tour guide was a passionate local who spoke persuasively to the tourists about wildlife and environmental conservation. While he had the audience captivated with his heavily rehearsed dialogue, he would make reference to 'the great Sir David Attenborough' and attributed his knowledge of his ancestral land to excessive animal planet documentaries he would watch. Throughout the tour he bought the tourists attention to a cat he observed hunting a group of native birds in some long grass on the riverbank. He proceeded to regurgitate animal planet facts about feral and domesticated cats killing on average, about 75 animals per year. He continued to mention that many of Australian native species can't withstand these levels of predatorial domination and will become increasingly at risk of extinction if the matter cannot be addressed.

This news was saddening to hear and only one aspect of a myriad of environmental statistics that may see our children not afforded the same wildlife experiences that we take for granted today.

This also got us thinking, the three ideas mentioned above from assignment one was, Jordan with his cats, Suki with his Dome's and Chris with his sustainability aspect. That's it, we have our project.

The pure and simple solution that we have for this issue is a 'Remotely monitored and self-sustainable, domesticated cat indoor habitat'. This incorporating all three of our ideas to reduce the impacts of cats hunting native animals outside of the home.

Ideas we have come up with include creating a collar to track the cat's movements within the home, heart rate and provide stimulus to the cat when needed. The household 'dome' could be managed by robotics or advanced software that would be able to conduct minor tasks such as, cat monitoring and behavioural cue identification, cleaning of any faecal matter, stimulating the cat when needed and providing nutrients and water as required. On the sustainability front, proper promotion and publicising of this project would incite interest amongst cat owners around the world and in turn be adopted or implemented. The result of the above points would have a positive impact on the general wellbeing of domesticated cats and in turn a change to the predatorial impacts that cats have on our native animals.

By far this is not a completely achievable project and it does require some technology advancements, hardware creating and software building. This is our little crack at tackling a larger problem with the various ideas that we as a group originally came up with. It has been an enjoyable topic to address and write about.

Feedback - Logged in a completed Spark Plugs

Jordan -

Francis -

Suki -

Sophie -

Chris -

Group Reflection - Everyone 200Words

What went well

What could be improved

At least one thing that was surprising

At least one thing that you have learned about groups

How well the GitHub log reflects the activity of the groups work.

Jordan

What went well?

I feel like our chosen collaboration (Google Docs and Github) and communication (Discord) technology mix worked fairly well for our team, seeming it was our first time collaborating in this way.

What could be improved?

For future assignments it will be important to improve our organisation in regards to team meetings. Team meetings should be arranged in advance and documented better so that there is no confusion about when meeting will be held.

What was surprising?

I was surprised that we lost a team member very early in the assignment. Our team name was an acronym of our original team members last names, although we chose to keep it the same after losing our sixth member.

What have I learned about groups?

I have learned that all people are different and may prefer to work and communicate in different ways. Because of this, it is very important for the group to try their best to accommodate everyone's preferred work and learning styles.

How does the Github log reflect the groups work?

For this assignment, the Github log doesn't necessarily reflect on everyone's actual contribution to the groups work. This is because we are using other collaboration technologies as well as Github. We are using Google Docs for our report PDF so that everyone can see and contribute to the document in real time, instead of using Github 'pull' and 'push' requests to get the latest version of the report. Our group website is hosted on Github pages, and any group member that has contributed to the website code will be acknowledged in the Github log.

Francis

What went well?

I think our collaboration effort went well , with the tools we chose like Discord and google docs. Discord helped us to have our group meetings and Google Docs helped us organise our Canvas documentation. And we used the Github repo updating And tracking our edits as specified in the assignment and to create our website.

What could be improved?

Better communications and understanding of the assignment specifications.

At least one thing that was surprising

Sudden disappearance of a group member

At least one thing that you have learned about groups

I learnt that communications, coordination and being respectful is the key to a successful and a conflict free group work experience.

How well the GitHub log reflects the activity of the groups work

I dont think that the GitHub log activity will reflect very well on the groups activity as some of our members were still learning how to use Git, but the rest of the members were happy to step in and complete the tasks

Suki

What went well?

I feel like all the tasks were assigned without any issues from the very start and our use of google docs helped us keep track of everyone's submissions under one cohesive document. I would also like to mention Chris and Jordan for their quick thinking on how everything should be arranged and delegated, especially the timeline document created by Jordan helped us keep track of what part of the assignment should be finished by which date.

What could be improved?

There were some minor communication errors from the start, but as time passed, I feel like it it got much better but there is still room for improvement.

At least one thing that was surprising?

From the very start, almost everyone in our group was very resourceful and respectful of one another and were very responsible for their respective assigned tasks. The fact that there were no misunderstandings between the group members was refreshingly surprising.

At least one thing that you have learned about groups.

Communication is the most important element so there are no misunderstandings, I believe that our group communicated very well but there is room for improvement.

How well the GitHub log reflects the activity of the groups work.

I would say GitHub log reflects poorly on our group activity as it does not take into account the work done on our group Google document.

Sophie

Chris

What went well? I think as a group we assigned tasks effectively and everyone was willing to put their hand up and accept responsibility for completing them. We planned for meetings, gave it our best to make them and if anyone was unable to attend, they would let the group know prior to the commencement of the meeting. The team made their intentions clear from the beginning by signing a group charter that sets out the standards we planned to abide by for our fellow members.

What could have been improved? The group was slow to initiate the assessment planning. There was initial contact with members but the first meeting and decisions on the collaboration tools were delayed. Once the group arranged and conducted a meeting on Discord, there was some confusion and communication issues using voice chat. The issues included, people speaking at the same time, people not speaking at all and personal IT issues. Another improvement would be the group meeting its timeline goals to ensure we stick to the plan and have enough time to finalise the assignment.

One surprising thing was that we lost a team member in the early stages and had to manage the workload with five members.

One thing I have learned about groups is to break the ice and get the team together for an initial meeting.

How well does GitHub track our group activity? I don't think it tracks it well at all. GitHub is only one aspect of the assignment and is the online repository of all of our work. As a team, we utilised Google docs, Canvas, Discord and GitHub. We have multiple documents that members have contributed to with online discussions in Canvas and on Discord that is not tracked in GitHub. I think GitHub accurately tracks the contributions of the members uploading the data to the site. To mitigate this issue, we tried running a GitHub demo for some of our less experienced members and this helped spread the load on the more experienced members.

Presentation

This PDF document is complemented with our group website found at:

https://sweldd.github.io