COSC2196/CPT110

Introduction to Information Technology

Assignment 2

Team Project

Christopher Hughes - s3807753

Mark Mclachlan - s3778046

Ryan Riddiford - s3817324

Peter Stamatopoulos - s3812509

Christian Torrisi - s3589170

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1. TEAM PROFILE

1.1 Team Name

"404! Group Name Not Found"

1.2 Personal Information

Name: Christopher Hughes
Student Number: s3807753

Christopher has since dropped out from the unit (as far as we know). He has not contributed to any of this assessment's material including the group website. All information gathered on the group website has been translated from his own.

Name: Mark McLachlan
Student Number: s3778046

My name is Mark McLachlan, I am 37 years old and have worked as a boat builder for the last 18 years building boats ranging from small kayaks to 77 foot luxury yachts. I don' t have any experience in the IT industry but have an interest in programming which was sparked over the last 5 years while collecting and analysing data, and automatically trading on sporting markets using visual basics and a small amount of python. I also enjoy web development and have a basic knowledge of WordPress, HTML, CSS, JS and PHP. My hobbies include cricket and hanging out with my wife and 2 beautiful daughters.

Name: Ryan Riddiford
Student Number: s3817324

My name is Ryan Riddiford. I am 20 years old.I am Australian with mainly British descent. The hobbies I find myself engaged in the most are playing drums, listening to music, video games, writing music and loosely reading academic literature. My interest in Information Technology stems from my observation of its near monopolistic hold on the positive aspects of my life. I'm very confident with my current ability using I.T. equipment and software that is used by the average person. That being said, skills exclusive to I.T. specialists (I.T. enthusiasts, retirees and past/present students also) are something I have minimal familiarity with. I have had no notable education or work on it prior to this course.

Name: Peter Stamatopoulos
Student Number: S3812509

My Name is Peter Stamatopoulos, i am 36 years old, i have a wife and 3 girls ages 11,13 and 16. My working background is quite varied. I have worked in several different industries and for different companies. I have worked for Dunlop Foams, SAPOL (SA Police), Bridgestone Earthmover Tyres, Advanced Plastic Recycling, Solitaire VW, Biodiversity SA and Telstra

Business Centre. I come from a European background/culture. I don't have any previous experience working in the IT industry, that is why I am doing this course, to gain a qualification. I have a basic knowledge from working various jobs and being shown by fellow employees. My hobbies are cars, sports, outdoor activities/being outdoors, fishing and my family.

Name: Christian Torrisi
Student Number: s3589170

My name is Christian Torrisi, I am 26 years old and wanting to complete a Bachelor of Information Technology, hopefully with a minor in Human Computer Interaction and Gaming Design. I have had previous experience working in the IT field as a Customer Service Engineer for the Defence Force and a Call Centre Operator for Telstra Platinum department. My interest in I.T. stems from my love of gaming, when I have a chance to play, and my new found love for programming. My hobbies would include spending time with friends and family, gaming, music and playing around with my 3D printer.

1.3 Team Profile

Christian Torrisi

Myer-Briggs Test Result: ISTJ (Logistical Personality)

Learning Style test result: Visual Learner

- Auditory: 30%,

- Visual: 40%,

- Tactile: 30%.

Creativity Test Result: My creative score is 63.3

Ryan Riddiford

Myer-Briggs Test Result: INTP (The Architect), ISTP (The Craftsperson), INTJ (The Mastermind)

- Dominant energy style**:** Introverted 66% - Extraverted 34%,

- Cognitive style: Sensing 45% - Intuition55%,

- Dominant values style: Thinking 66% - Feeling 34%,

- Life management style: Perceiving 55% - Judging 45%.

Learning Style test result: Auditory Learner

- Auditory: 50%,

- Visual: 15%,

- Tactile: 35%.

Big 5 Personality Test Results:

- Openness: 73%,

- Conscientiousness: 25%,

- Extraversion: 17%,

- Agreeableness: 42%,

- Neuroticism: 77%.

Peter Stamatopoulos

Myer-Briggs Test Result: ENFJ-A

- **Mind:** Introverted 86% - Extraverted 14%,

- **Energy:** Observant – 26%, Intuitive - 74%,

- **Nature:** Feeling – 79%, Thinking - 21%,

- **Tactics:** Judging – 76%, Prospecting – 24%,

- **Identity:** Turbulent – 21%, Assertive - 79%.

Learning Style test result: Protagonist

Mark McLachlan

Myer-Briggs Test Result: ISFJ-T (Turbulent Defender)

- **Mind:** Introverted 66% - Extraverted 34%,

- **Energy:** Observant – 62%, Intuitive - 38%,

- **Nature:** Feeling – 56%, Thinking - 44%,

- **Tactics:** Judging – 64%, Prospecting – 34%,

- **Identity:** Turbulent – 54%, Assertive - 46%.

Learning Style test result: Tactile Learner

- Auditory: 20%,

- Visual: 35%,

- Tactile: 45%.

Creativity Test Result: My creative score is 63.93

Christopher Hughes

Myer-Briggs Test Result: INFJ – A (Advocate)

Learning Style test result: Visual Learner, Tactile learner

- Auditory: 30%,

- Visual: 35%,

- Tactile: 35%.

Big 5 Personality Test Results:

- Openness: 81%,

- Conscientiousness: 71%,

- Extraversion: 56%,

- Agreeableness: 83%,

- Neuroticism: 17%.

How is this information helpful to the group?

Personal collaboration with others to progress through an objective requires different considerations. In a solo task, the only contributor you need to take into account is yourself. When others are involved, an understanding of their strengths, weaknesses, skills, likes, dislikes and experience which are relevant to the mutual task is detrimental to the outcomes quality. In our group collaboration's case, the personal information (and all of each other's work from assessment 1) adequately inform us of individual capabilities. We need to react to

this information by making appropriate task delegations, finding the best way of communicating to each individual, how we can help support each other's progress, among other things.

1.4 Ideal Jobs

Compare and contrast Ideal jobs for each person in the group

Although there are some similarities in skill sets and area of focus in the IT field, all of the chosen career paths are distinct from one another..

The jobs "Java Developer" and "Gaming Developer/Software Engineer" (Mark and Christian's ideal jobs, respectively) are both programming-focused roles. The main distinction between the two is that the Java developer solely focuses on working with Java, whereas the Software Engineer isn't necessarily confined to one language.

A "Data Analyst" and "Technical Business Analyst" (Peter and Christopher, respectively) both analyse data as the basis of their roles. The purpose of the analyses is how they are mainly differentiated. The "Technical Business Analyst"'s take on analysis is retrospective and descriptive; the "Data Analyst"' s is more predictive and prescriptive.

Ryan's choice of a career as a "Cyber Security Consultant" has major similarities between both analysis focused roles and programming roles (described by the group). The Cyber Security Consultant requires the engagement with large quantities of data analysis. To be competent with certain programming languages is also, for the most part at least, a requirement. Where it differentiates is the purpose. Its focus is solely on the security of computer systems from malicious software.

2. TOOLS

2.1 Links to group website and GitHub Repository

Our group has set up a group website which includes links to the individual websites of all group members at the following web address:

https://mrm0210.github.io/teamProject/index.html

We have also set up a group git repository to produce and maintain group work such as reports, code, data and also the assignment submission at the following address:

https://github.com/MRM0210/teamProject

How well does the audit trail on the Git repository reflect your groups work?

Our group Github repository has not accumulated a complete audit trail that accurately presents the timeline of our work progress. That being said, an audit trail from the combined use of the computer program "Slack", our Google Docs collaborative report's version history, early messages on our Canvas group hub as well as our group's Github repository is an adequate alternative of the group's Github repository as the sole source. Our group's milestones have been compiled into a timeline below. Its detail points out the fluctuating rate of contribution and collaboration (how often we are engaging with each other, task delegations and the rate of individual progress) and group task-specific hurdles (mainly group members   dropping   out   of   the   unit).

2.2 Audit Trail on GitHub Repository and Other Collaboration Tools

Audit Timeline

RED – Canvas

GREEN – Slack

BLUE – Google Docs

PURPLE– GitHub Repository

Week before Assessment 2 begins – Group of six is formed. Personal introductions are given

September 11th – Suggestions on what to use for communication on our collaboration begins

September 12th – Slack group conversation is set up between the original six members. Chris Hughes produces an Assessment plan

September 16th – Work on Assessment 2 begins

September 19th – Organisation of forthcoming group calls starts

September 21st – First group call. Mark produces a draft report (to be replaced by the Google docs report template). Github repositories from Assessment 1 are shared. Project idea's are reviewed from Assessment 1. Personal information paragraphs and team name ideas are given as tasks to everyone. Tasks are delegated.

* IT Work – Mark and Chris

* IT Technologies – Christian, Tom, Chris and Mark

* IT Industry and Ideal Jobs – Peter

* Tools – Ryan

September 30th – Report template on Google Docs is made by Mark.

September 30th – Tom informs us that he is leaving the course. Mark links us to the report on Slack

October 1st – Ryan takes over Tom's IT Technologies piece

October 5th – Group name is chosen. Christian takes on the responsibility of doing the Project Idea

October 6th - New repository is created called teamProject and initial commit made

October 7th - Christian and Ryan added as collaborators

October 8th – IT Work option switched from an IT Professional interview, to the YouTube video option. Chris Hughes has become inactive. It is now assumed he had also left the course. IT Work has now been fairly distributed amongst all group members. Christian has taken Chris's delegated IT Technologies piece.

October 9th – Updates on member's progress is shared. Three of the IT Technologies pieces, Personal Information paragraphs, the Tools section, and the ideal jobs paragraph are all added to the report

October 9th – Updates were made to the team profile page by Mark

October 10th – Peter shows his progress on his IT Industry piece on the Google Docs report template.

October 10th – Christian makes changes to all website, specifically the images, and the ideal jobs page

October 11th – The project idea is added to the report

October 12th – Christian sends a message to Peter on his progress for the IT Industry section. No response since Thursday and the bulk of the section is missing. The contributions form is also signed by Christian and Ryan. Everyone is messaged to provide the feedback paragraphs to the report and submit SPARKplus feedback

October 12th – Christian adds two IT Work pieces to the report. Christian and Ryan both add their individual feedback pieces to the report. Rest of content moved onto the report

October 12th – Christian merged pull request from a branch he created and Mark makes changes to Ideal job links and some images on the home and individual website pages

October 13th – Christian merged pull request from a branch he created which added images and changes which were necessary

October 13th – Final preparations are made. The group's reflection is finished. The assessment is submitted. Everyone successfully submits their SPARKPlus feedback

3. INDUSTRY DATA

3.1 Groups Ideal Job Titles

The ideal job for each member in our group are as follows:

- Christopher Hughes – **Technical Business Analyst**
- Mark Mclachlan – **Java Developer**
- Ryan Riddiford – **Cyber Security Consultant**
- Peter Stamatopoulos - **Data Analyst**
- Christian Torrisi - **Software Engineer**

The burning glass data for this section is divided into three charts. The first chart is "Top IT job title", this chart consists of all job postings for each job title between March 2017 and March 2018. The second chart is "Top IT skills", this chart consist of all job postings for each specific IT skill between March 2017 and March 2018. The third chart is "Top generic skills" This chart consist of all job postings for each generic skill between March 2017 and February 2018.

3.2 Demand Of Each Ideal Job

The IT industry is seeing an exponential rate increase in its job market. That being said, the amount of growth seen within the field of IT favours certain areas more than others. Where each of our ideal jobs sit on the Burning Glass data we have referenced helps solidify this statement. Of the five ideal jobs we have chosen, only two of them can be associated with the chart "Top Titles". "Cyber Security Consultant", or any Cyber Security focused job, is absent from the chart's findings. "Data Analyst" and "Business Analyst" are also absent from the data.

The ideal job "Java Developer" is ranked 7th on the chart of the 25 fastest growing IT jobs. Java is dominant currently in the field of programming. The job's high ranking can be attributed to that fact. Another separate job title that can also be associated with this ideal job is "Senior Java Developer". This role ranks lower (13th) likely because the role has a more management/authoritative role, and so the trend for these kinds of roles is to be fewer in numbers than similar, albeit less authoritative positions."Software Engineer" ranks in the middle (11th). Although it may be lower in demand than Java Developers, it is still one of the fastest growing jobs in the IT industry.

The reason for Data Analysts and Technical Business analysts not being represented on the chart may not be because of a low demand from employers. It is likely because they are not categorised as a job in the field of Information Technology.

As for Cyber Security professionals, this chart concludes that their job market is smaller than those jobs listed on the chart displaying the top IT job titles.

3.3 IT-Specific Skills And General Skills We Have In Terms Of Demand

Each of our general and IT-Specific skills we currently possess have been researched to find out how sought after they currently are amongst employers.

The IT-Specific skills we currently have are as follows:
- JAVA (Mark)
- Microsoft Office (All)
- Git (Ryan, Christian, Mark)
- Website Production (Christian, Mark)
- Project Management (Christian, Mark)
- Javascript (Mark)
- Microsoft Windows (All)

The IT-specific skills we currently have are within a broad range in terms of employers' demand. JAVA, Javascript, Microsoft Windows and Project Management all rate high in terms of their value when selecting new workers. JAVA and Javascript are near the top of the list because most adverts for programming jobs because it is such a dominant language in comparison to the others. Microsoft Windows weighs in at 4th place likely because the operating system has a near monopoly on computer users. The actual reason as to why they would make sure you knew how to utilise an operating system is that to get anything done with a computer, you need to know how to use the operating system. Git and Website Production are mentioned less likely because they're use is less widespread amongst all the professions within Information Technology.

The general skills we currently have are as follows:

- Communication skills

- Teamwork/Collaboration

- Organisational skills

- Leadership skills

- Time management

- Presentation skills

All of these general skills are highly valued and are in demand from employers. Topping the "Top generic skills" chart by a large margin is communication skills with 44,367 job postings. Organisational skills and teamwork/collaboration come in next with 15,844 and 14,364 job postings respectively. Leadership skills, time management and presentation skills are still in demand from employers, albeit at a more modest amount with only just over 3700 job post

mentions within the data's timeframe. Judging by these findings, there is a trend amongst employers of valuing communication skills over the other five skills we as a group possess substantially more.

3.4 IT-Specific Skills and General Skills We Need In Terms Of Demand

The IT-Specific skills we currently need are as follows:

- JAVA (Christian, Ryan)
- Javascript (Christian, Ryan)
- NET Programming (Christian)
- Systems Engineering (Christian)
- Software Engineering (Christian)
- Business Analysis (Peter, Chris)

The general skills we currently need are as follows:

- Management
- Planning
- Troubleshooting
- Creativity
- Mentoring
- Research
- Analytical Skills

The top three general skills that are not in our required skill set are Trouble shooting with 11471 job postings, creativity with 7475 job postings and Mentoring with 4538 postings.

3.5 Has Your Opinion Of Your Ideal Job Changed?

After learning where our ideal jobs stand in terms of current worker demand as well as the general/IT-specific skills we have and don't have, most of us are even more inclined to start a prosperous career in our chosen jobs. The exception to that is Ryan. Because of the complete absence of any Cyber Security role on the sourced data, he is worried about the potential difficulties he may have while he attempts to acquire a position in the respective field and also maintain it in the long-term.

4. IT WORK

4.1 Data Analyst

Intermountain Healthcare (2019). A Day in the life of a data analyst. [video] Available at: https://www.youtube.com/watch?v=xbTqJiZ8nhA [Accessed 10 Oct. 2019].

Webb, R. (2019). 12 Challenges of Data Analytics and How to Fix Them. [online] Clearrisk.com. Available at: https://www.clearrisk.com/risk-management-blog/challenges-of-data-analytics [Accessed 12 Oct. 2019].
Kaiser, B. (2019). Skills required to be a data analyst. [video] Available at: https://www.youtube.com/watch?v=0iW5jprTAaY [Accessed 10 Oct. 2019].

Snagajob.com. (2019). Data Analyst Job Description - How to Become a Data Analyst | Snagajob. [online] Available at: https://www.snagajob.com/job-descriptions/data-analyst/ [Accessed 4 Oct. 2019].

The conversion of raw data into an easier-to-read format so that others may make an appropriately weighted decision is the Data Analyst's task. Because of this, they are often found working for organisations, big and small, as an important player in the organisation's direction. The type of data analysed for an organisation can be based on sales figures, market research, logistics, transportation costs etc… The uncluttered data they present can help an organisation with fundamental things like deciding on budgeting, staffing, stock, and the best action to take on high-risk decisions.

The professional in this field has interactions on their data findings with people who hold roles that possess power over their organisation's decisions (such as management staff, head office…). A reporting manager (line manager) is usually their go-to interaction for passing on their work on raw data. This manager then goes to appropriate management above his level to pass on this presentable documentation of once raw data the Data Analyst has produced. The Data Analyst, in certain situations such as a work meeting, can have interactions with fellow workers within the marketing branch, as well as influential stakeholders.

The Data Analyst often spends their time on a computer analysing the data as well as making as easy to understand as possible. When the Data Analyst isn't doing this, they may likely be within a meeting consisting of a marketing team and/or stakeholders in the organisation; carrying out a presentation on findings.

Throughout the area of data analytics, there are many challenges. The amount of data to process, the quality of data, dealing with data from multiple sources and pressure from management/higher-ups are all common, difficult challenges Data Analysts must be able to overcome. The data quantity can overwhelm the Analyst fairly easily these days; that's why many are able to reap the benefits of automated systems that organises data with ease. Poor quality data causes the Data Analyst's easy-to-read work to be inaccurate, potentially leading to a misled decision, likely resulting in an organisation's avoidable damage/ loss. It is a fact that risk management is growing in popularity as a focus for executives. As this popularity grows, executives are likely to demand more results from risk managers. This great deal of pressure on the Data Analysts.

4.2 Cyber Security Specialist

Forbes.com. (2019). What Are The Biggest Challenges Facing The Cybersecurity Industry?. [online] Available at: https://www.forbes.com/sites/quora/2017/09/15/what-are-the-biggest-challenges-facing-the-cybersecurity-industry/#57f2d48b2d62 [Accessed 12 Oct. 2019].

YouTube. (2019). *A Day In The Life Of A Cyber Security Specialist (Government Contractor)*. [online] Available at: http://DC CyberSec [Accessed 10 Oct. 2019].

YouTube. (2019). *Cyber Security: Reality vs Expectation*. [online] Available at: https://www.youtube.com/watch?v=w345zZmgudc [Accessed 10 Oct. 2019].

All Cybersecurity specialists share the main goal of safeguarding the data of computer systems. What steps are taken to maintain the security of the data depends on what kind of Cybersecurity specialist they are. There are two main categories of Cybersecurity specialists, those that utilise defence/offence security techniques, and those who work within a compliance or risk area. While the first requires a degree of knowledge in programming, the latter does not. Those that work in the compliance or risk area, would work on the CVE ("Common Vulnerabilities and Exposures" is a non-profit database of vulnerabilities in software or firmware as a free "dictionary" for security purposes) which work on updates that patch vulnerabilities. For this work, specialists of organisations make sure their systems avoid any of the vulnerabilities stated in the CVE.

As for the other category of Cybersecurity professionals, the work they do can be further categorised into three groups of specialists: offensive, defensive and general security. Offensive specialists are less common, and are the ones who focus on penetration testing. The defensive specialists decide on security measures from analysis of known threats/vulnerabilities. A general security specialist is a mix of both offensive and defensive. Contrary to popular belief, Cybersecurity specialists are rarely "hacking" as part of their job. Only the less common offensive security specialist is the exception.

These specialists interact with others in the field for collaborative efforts to uphold cyber security, as well as government IT Professionals for similar purpose (with a greater emphasis on the CVE). The general public is also a major interaction, mainly through patch notes on software/firmware updates with security fixes. This IT professional can work within organisations or governments. Those who update the CVE generally work for the government. Because the profession upholds such a mandatory concept for an organization's health, the profession Cyber Security specialist may be forced to work after-hours; possibly from home via a computer.

We are utilising computers more than ever for sensitive material like personal information, finance, communication and work assets. It is becoming more and more apparent from the rapid increase in threats that the current reliance on Cybersecurity professionals to resolve them is losing efficiency. This worrying reality of the increased use of computers and the expansion of Cyber threats is the biggest challenge facing our Cybersecurity specialists today and likely for many years to come. The only way to rectify this is for Artificial Intelligence to take over the tasks we humans are incapable of keeping up with.

4.3 Video Game Developer

True Valhalla. (2019). *A Day In The Life - Professional Game Developer • True Valhalla*. [online] Available at: https://www.truevalhalla.com/blog/a-day-in-the-life-professional-game-developer [Accessed 10 Oct. 2019].

Doan, D. (2019). *GameDev Protips: Reality vs Expectations of Game Development*. [online] Medium. Available at: https://medium.com/@doandaniel/gamedev-protips-reality-vs-expectations-4533df8e82f8 [Accessed 10 Oct. 2019].

A developer typically starts their day quite early by getting up early. They get in front of a screen as quick as possible because they run run their own business to check if the servers have gone down or to contact clients. The next thing they do is check and answer important emails, especially from clients. They then decide to read some articles on latest trends in tech and keep up to date as well as answering questions from their social media followers (20,000+). This gives the developer the chance to engage with his audience and connect with new customers or potential employees. They would also consider this market research. Twice a week he will have an online meeting with the team to get updates on projects, test the latest builds of new games and give feedback where needed. The team deals with most of the active project which allows them to help develop the business and focus on the bigger picture. For most of the morning and into the afternoon they find that this is their best mental state for coding, designing, testing new games, doing maintenance and packaging games for clients. The rest of the afternoon can either be spent on research, learning advanced tools, blogging, planning for the next day or making business arrangements. One of the biggest struggles they find is the difference in time zones for their clients as they have them from all around the world. Therefore, they are sometimes required to start earlier or finish later in the night because they will have to Skype or conference call with them.

4.4 Software Engineer

YouTube. (2019). Software Engineer: Reality vs Expectations 3 (ft. Mayuko). [online] Available at: https://www.youtube.com/watch?v=JVWHObstw0w [Accessed 08 Oct. 2019].

YouTube. (2019). A DAY IN THE LIFE OF A SOFTWARE ENGINEER. [online] Available at: https://www.youtube.com/watch?v=WWggmC8kYZc [Accessed 8 Oct. 2019].

One of the realities of being a software engineer is that you are not going to be working solo most of the time. You will be collaborating with a lot more different type of people than you think from different companies. Typically, a software engineer will work with the product manager and the product designer to decide what they are building and how it will look. The software engineer will then build (code) the project to get the desired outcome. When first thinking of a project the whole team will have what they call "stand-up" meetings where the whole teams stands up together and discusses the project. The engineer will also collaborate with other engineers and do "code reviews" so that before the project is "shipped away" they can look over it as a team to see if there are any bugs, mistakes, improvements, etc. It was said that soft skills such as communication and dealing with people are just as important as the technical skills of a software engineer (such as coding & problem solving). They would spend most of their time either at their desk or with other people collaborating on the project

at hand. The hardest thing for this software engineer was that at first they thought that they would have to try and fit the stereotype of a "tech person" but after a while then realised that it most definitely ok to just be yourself without having to fit that stereotype.

4.5 UX Designer

YouTube. (2019). A day in the life of a UX Designer in San Francisco (but forreal). [online] Available at: https://www.youtube.com/watch?v=9DOOeX8sVVc [Accessed 12 Oct. 2019].

YouTube. (2019). This Is What A Typical Day In The Life Of A UX Designer Looks Like. [online] Available at: https://www.youtube.com/watch?v=ORZIHuD22UQ [Accessed 12 Oct. 2019].

Generally IT professionals are early starters, the same can be said for a UX designer. A typical day starts with an early alarm before getting ready and heading to the office.

A UX designers morning is typically used to check and respond to emails, read through project documentation and other relevant articles about design. Check to see what's on for the day then allocate some time to plan and prepare for the busy day ahead.

As a UX designer, you are responsible for everything from research and conception through to designing prototypes and testing.

As a UX designer you will be involved in a lot of consultation with other departments, clients, customers and internal stakeholders during the day, sometimes your whole day can be taken up in meetings. These meetings are required as there is a lot of work and design ideas that need to be communicated throughout the team to get all departments on the same page in an effort to move the current projects forward. Online collaboration with other industry people from all over the world is pretty standard in day to day communication within the tech industry.

On any given day there are also many different types of work which can be done such as product conception and prototyping, user research and developing user surveys, communicating navigational guidance and screen flows to the developers, product design work such as sketching and designing wireframes, user testing, facilitation and presentations, research work with clients, customers and internal stakeholders as well as critique and feedback sessions with team members, engineers and product managers.

One of the biggest challengers for a UX designers can be juggling the time between meetings and head down design work. This can be a challenge and restrict the amount of time a designer has to implement the design. Another challenge can be juggling what the client wants compared to what the user needs, it is important to find the right balance.

A typical day in the life of a UX designer is different every day, there is a lot of variety from talking to, and understanding the needs of clients, customers and internal stakeholders to turn those needs into solutions.

5. IT TECHNOLOGIES

5.1 Blockchain & Cryptocurrencies

What does it do?

A cryptocurrency is a digital asset or currency, like money, designed to work as a medium of exchange that can be used to pay for goods and services online. With the use of cryptography, which is the study of methods for communication security, cryptocurrencies are extremely secure and difficult to counterfeit. Cryptocurrencies are built on Blockchain technology.
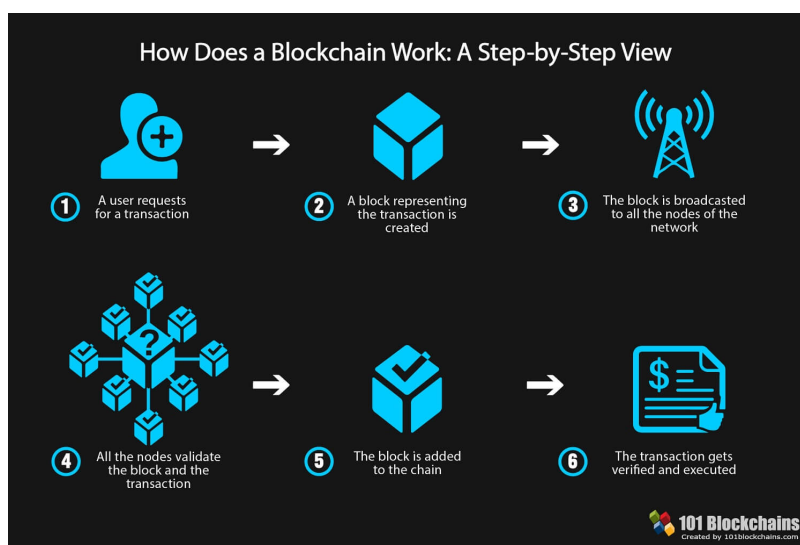
Blockchain technology is a form of data storage that is different from your typical database. Blockchains are blocks of immutable data which are linked by hash codes that reference each other. Each block references the previous blocks hash code which enables a link or chain to be developed. Once recorded, the data in each block cannot be altered without alteration of all subsequent blocks, which requires consensus of the network majority. Blockchains are considered secure by design and are the technology that modern cryptocurrencies are built on.

Modern cryptocurrencies are decentralised, meaning they are not issued by a central authority where economic systems such as Federal Reserve systems, corporate boards and governments control the regulation of the currency supply, instead they are a peer-to-peer network. With decentralised cryptocurrencies, governments and companies cannot produce new units of the currency, this is produced by the entire cryptocurrency system collectively which is pre-specified and made publicly known at the time of creation.

Cryptocurrencies provide an easier alternative to transfer funds between two accounts, with no need for a trusted third party such as a bank. All parties have a full record of every transaction made as well as the balance in all accounts the moment the transaction is completed, this occurs almost instantly.

Blockchain technology was invented in 2008 by a group going by the name of Satoshi Nakamoto to facilitate the public transaction record of the most well-known cryptocurrency Bitcoin, making Bitcoin the first commercial implementation of Blockchain technology.

As of May 2018 there were over 18 hundred cryptocurrencies with various functions and specifications with a total market value of over 120 billion dollars, some of these are clones of bitcoin and others are new cryptocurrencies that are split from existing ones. As of February 2019 Bitcoin had over 17.53 million bitcoins in circulation with a total market value of 63 billion dollars which equates to approximately 50 percent of the cryptocurrency market share.

Many economists predict by 2030 most governments will create or adapt some form of virtual currency. There is also a possibility crypto will be floated on the NASDAQ which will enhance its credibility and its uses as an alternative to conventional currencies. Some also predict that all crypto needs is a verified EFT (exchange traded fund) to make it easier for people to invest in the technology.

On the other hand cryptocurrencies have been described by many industry experts and economists to be a "fad" or a "speculative bubble", similar to a pyramid scheme. Many governments have taken a cautious approach to them fearing the effect they could have on financial security due to the lack of central control. Some government regulators have taken a hard stance and implemented regulatory measures to dissuade users, while many banking institutions have refused services for cryptocurrencies.

Crypto currencies presently face many limitations that may be overcome in the future. Limitations such as the fact that a digital fortune can be erased by a computer crash, or that a virtual vault may be ransacked by a hacker, these issues may be overcome with advances in technology. For cryptocurrencies to become more widely used they have to gain a more widespread acceptance among consumers. There is little doubt that as the leading cryptocurrency at the moment, Bitcoin's success in dealing with the challenges it faces may determine the fortunes of other cryptocurrencies in the years ahead.

What is the likely impact?

Technologies such as blockchain and cryptocurrencies have the ability to rewrite our day-to-day life. The impact that cryptocurrencies have on the financial industry and various markets across the world as well as the effects seen on a personal, organizational and geographical level has been disruptive in both a negative and positive way. The impact on developing countries has been profound as cryptocurrencies have become an alternative to many expensive and inefficient systems. Resulting in countries being able to send money across international borders to trade at a lower cost and more efficient than traditional methods.

The effects can reach anyone, from content creators such as you tubers and internet bloggers to small companies to entire countries. A large number of new industries are being created and existing industries are being re-written every day while small business and traditional

organisations are changing how they operate. Small companies are able to make transactions with improved economy and efficiency.

On the negative side the anonymous nature of cryptocurrency transactions make them the ideal platform for a range of immoral, illegal and unethical activities such as money laundering, tax evasion and web security crimes. The attributes that make cryptocurrencies hard for government to track and regulate are also the attributes that give criminals the ability to conduct illegal activities with relative ease.

The growth in cryptocurrencies has resulted in a surge in cryptocurrency jobs. New jobs range from tech jobs to all roles and functions across the board, this demand has resulted in higher salaries, more flexible contract and better benefits. How the job market performs in the future will be determined by the performance of the industry itself which to this point has been extremely volatile, it has and will continue to be a source of potentially huge financial gains and job growth during the ups swings, on the flip side the volatility also possesses the risk of major financial and employment losses. The ripple effect that cryptocurrencies are having on the traditional economic climate is profound and quite frankly unpredictable.

How will this affect you?

The effect that blockchain and cryptocurrencies will have on my family, friends and my own personal life is largely determined by how the cryptocurrency industry performs and grows over the coming years. If cryptocurrencies are just a "fad" or "speculative bubble" as many experts seem to believe, I think it's safe to say that cryptocurrencies will have very little impact on our daily lives, unless we decide to invest in a certain cryptocurrency, which is a risk due to high levels of volatility.

On the other hand if Bitcoin, Ethereum or any other of the many thousands of cryptocurrencies gain recognition and acceptance from governments to a point where it challenges the traditional financial systems and economic structure we are familiar with then the impact will be astronomical. For this to happen the currency needs to pass three main criteria; Act as a store of value, act as a medium of Exchange and act as a unit of account. If this occurs and cryptocurrencies become a legitimate currency than we as a society will have a financial structure where people will have a fast, secure, economical and efficient payment system, as well as control of our own finances without a bank or financial institution involved. We will have a system that gives us access 24 hours a day 7 days a week, unlike the traditional banking system which close on weekends, and public holidays. We will have a system where fees are low in comparison to the high transaction fees associated with traditional financial institutions and banks without the rules and regulations imposed on the controlling of our own finances.

The general consensus among industry experts is divided, some say cryptocurrencies are here to stay and will slowly replace the traditional systems, while others are sceptical about their unstable and volatile nature while predicting the bubble to burst and cryptocurrencies to

become less relevant as time goes on. Either way cryptocurrencies have create intrigue and interest among the general public. I guess only time will tell.

5.2 Machine Learning

What does it do?

SAS® defines Machine learning as "a method of data analysis that automated analytical model building. It is a branch of artificial intelligence based on the idea that systems can learn from data. Identify patterns and make decisions with minimal human intervention." (Sas.com, 2019). ML isn't a new thing that has developed over the past few years, in fact ML has been around for a lot longer than you would expect. It was born out of the idea that from pattern recognition and the theory computers can learn without being programmed to perform specific tasks. The researchers who were looking into artificial intelligence (AI)wanted to see if computers could learn from the data that they were providing. If focuses on the development of computer programs that can easily access data and use it to learn for themselves.

ML algorithms are often put into two different categories; supervised or unsupervised. However, there are different methods than can be a mixture or completely different. The 4 most common methods are (dzone.com, 2019):

- Supervised ML algorithms: This method uses data that has been analysed in the past and applied to new data using labelled examples so that it can predict the future.
- Unsupervised ML algorithms: This method studies how a system can infer a function to describe a hidden structure from unlabelled data. It doesn't exactly get the correct output, but it explores the data to help describe hidden data structures from unlabelled data.
- Semi-supervised ML algorithms: This method falls in between the first two methods. This is because the algorithm is using both labelled and unlabelled for its training. Typically, this would be a small amount of labelled data and a large amount of unlabelled data.
- Reinforcement ML algorithms: This is a learning method that interacts with its environment by producing actions and discovers errors or rewards. This method allows the programs to automatically determine the ideal behaviour within a specific context in order to maximize its performance.

There are many industries that have realised the potential of ML technology and what value it can bring to their company. When these companies are gathering insights from the data that they are collecting, often in real-time, they can work more efficiently or gain an advantage over their competitors. Some of the most common application in some of the biggest industries are as follows:

- <u>Financial services</u> such as banks are using this technology for two main purposes: to gain important insights on data such as investment opportunities or to help them know when to trade. Also, to help prevent fraud by using data mining.
- The <u>healthcare industry</u> is rapidly implementing ML technology, thanks to the advent of wearable devices and sensors that are allowing us to monitor patient health in real time and help experts analyse large amounts of data to find trends of red flags to improve diagnoses and treatments.
- <u>Retail</u> is one of the largest, websites that are recommending items to you after you have made a purchase are using ML to analyse your buying history. They reply on ML to capture this data analyse it and make personalised ads to improve your shopping experience, create a marketing campaign and optimise their prices.

With the rapid growth in technological advancements, there are bigger (or smaller) and better CPUs, GPUs, etc. coming out all the time. With this, programmers can utilise those hardware components so that they can push the limits or ML and create systems that can analyse larger amounts of data in a shorter period. From this the programs can create outputs for the user in a quicker time frame, giving them more opportunity to analyse the outputs and implement the solution that is needed.

What is the likely impact?

Machine learning has no signs of slowing down at all. A lot of companies are already implementing ML technology into their business models and have shifted towards a "community" model of working so that the boring tasks are left to ML> This means that all of the will be more data-driven and teamwork driven entirely by AI. However, there are a lot of companies out there that still don't trust AI and is sub area of ML, which makes it hard to convince then that it can in fact work in their favour. Overall there are five main points that will excel in the area of ML:

- <u>Fine-tuned Personalisation:</u> Smart devices, autonomous cars and more, companies can access the data we are willing to give them and they are able to build relationships with customers to give them a more personalised experience with their products.
- <u>Better Search Engine Experiences:</u> This is going to improve tremendously to help you search for exactly what you are looking for. Not only will it help the user find what their looking for but will help the admin experience as well.
- <u>Evolution of Data Teams:</u> ML will be one of the foundational tools for developing and maintaining digital applications over the coming years. This means that IT teams will be spending less time programming/updating their applications and instead have them learn and keep improving themselves continuously.
- <u>No-Code Environments:</u> This will enable no just programmers to use and implement ML where they need it but anyone who wants to learn and use ML where needed. With all the infrastructure, datasets and tools that are available these types of environments will slowly start to roll out.
- <u>Rise of Quantum Computing:</u> With new technological advancement, quantum computing will change the way we look at ML. We will be able to see faster processing, accelerated learning and increased capabilities. This means that the complex

problems that we are facing today with current methods will be solved in a fraction of that time in the future.

How will this affect you?

Ultimately, it is already starting to affect us in ways that some of us are not aware of. Personalised ads being the major one. As mentioned above, companies are tailoring ads to make us go to their website and make us want to buy more of their products because they know what we like, and it's not just products that we may want as a one off but necessities like groceries. Woolworths will now send you personalised emails stating that you can receive "bonus" Rewards Points for items you have previously purchased, especially on high priced items. This make the shopper feel good about buying that product because they are being "rewarded" for that purchase.

ML technology is not about how we the programmers and users can better improve the technology that we are creating but instead about how the programs can better themselves, and with the rise in technological advancements these machines are going to get smarter, quicker and more efficient at their jobs which in turn will make our lives easier in some ways. On the other hand, some jobs may become obsolete because of these advancements, jobs that we once needed to be done by 2-3 people to try and predict patterns and trends will now be done by algorithms that can process large amounts of data at speeds that humans are simply not capable of. It may already be happening now but there will be a lot more ML technology implementations in our future meaning that more people could be losing jobs to machines.

5.3 Autonomous Vehicles

What does it do?

An Autonomous vehicle is essentially a car that can drive itself without any human intervention. Most modern manufactured vehicles have some sort of driver assist systems built into them. These are only assist systems, not a substitute or autonomous system, there is still a requirement for human intervention.

Car companies such as Ford, Toyota, VW and Mercedes have several assist systems built into their vehicles. Some examples of assist systems currently available in some VW models include, park assist, which is a parking assistant that will automatically park a car for you in your desired car park, if there is more than one car park available, and it will give you the option of which park you would like. Active Cruise Control and Lane Assist, which will notify you if you are drifting into the lane next to you. Emergency braking, will automatically brake if the vehicle senses a collision is imminent, the reaction is not measured by time, but distance using forward facing radars.

All these systems are designed to assist the driver, but are definitely not an Autonomous method of driving, they still require some input from the driver, as opposed to a fully autonomous vehicle, which will accelerate, brake and steer for you.

These assist systems use cameras, sensors and satellite navigation to guide drivers as required. Collision avoidance systems have forward facing cameras and sensors (as shown in the picture) that have calibrated measured values programmed, so when a vehicle is approaching an obstacle, it will warn the driver, if the driver continues to ignore the warning, the car will eventually slam on the brakes if it senses a collision is imminent.

All this technology is giving drivers less control of the vehicle, as we are becoming more reliant on electronics, making our reactions times slower.

I work for a local VW dealership, part of our job is to test drive new cars to familiarise with the systems. I have experienced firsthand that the collision alert system isn't completely accurate. I was driving down a road in Adelaide, Tapleys Hill Road, there was a slight elevation change of the gutter to the right side of the car, and the collision avoidance system kicked in and slammed on the brakes and the car came to a halt. The system was overly sensitive, but it still did its job as the sensor picked up an obstruction on the road. It was actually quite scary, especially because you aren't expecting it. I have also experienced the Adaptive cruise control, where the car will steer temporarily above 63 kph, but the system then requires driver input, otherwise it will think the driver is asleep at the wheel and simultaneously activate the brake to alert the driver.

The white car pictured above, is a fully automated self driving taxi service by a US company called Waymo, a division of Google, and is about to be launched in Phoenix in the United States of America.

Industry experts believe that we won't see fully autonomous vehicles on our roads before 2020. There are several Automotive and Tech companies currently working on Autonomous vehicle projects. A lot of these projects are run in conjunction with cities and towns. To give live test simulations, and be able to test in real life conditions.

Back in 2015, South Australia was the first city in the Southern Hemisphere to have an autonomous vehicle demonstration. Volvo and the South Australian government closed the Southern Expressway to host the first autonomous vehicle demonstration on a public road. The test was deemed a success and gave Volvo invaluable real time data to work with to further develop the autonomous systems.

What is the likely impact?

One of the positive impacts of autonomous vehicle is the reduction of accidents. Industry experts believe that collisions will drop by 90 % once the majority of vehicles on our roads are autonomous. The number one factor for collisions is inattentive driving, and 40 % of those accidents are generally single car accidents. The flow-on effect of drive less cars is insurance and liability. Currently under Australia law, autonomous cars are not permitted to be driven on Australian public roads. The Australian government is working with all states and

territories to finalise guidelines and the legalities of driverless cars, and who will be at fault if an accident occurs. Driverless cars are Legal in the USA.

The negative impact of driverless cars is, it will make us less attentive while in the car, as we will be more inclined to go on our phones, or watch tv/movies, undertake other activities while in the car. It will also mean that driving will eventually become a dying trait, as with autonomous vehicle and driverless ride sharing, no one will really need to have a license or car. The potential for future job losses is huge, as we are taking another job that has been done by humans for the last 70 + years and made it autonomous.

The price for autonomous and electric vehicle is also more substantial than a convention combustion engine vehicle. Batteries for electric cars require the use of more high end ferrous metals, such as gold and copper. This drives the cost up, At the moment, a Hyundai Kona Electric car is over $60,000 in Australia. (Shown below). These autonomous systems require more computer programmes and storage onboard. Currently in a Tesla, the auto pilot feature is an additional $7,000 US Dollars in America.

As production and sales of electric vehicles increases, prices will come down. But the initial cost of research and development is much higher, due to the lower volume of cars being sold.

Photo: Hyundai

Audi e-tron GT concept
11/18

In a cutaway picture of the Audi e-tron shown above, you can see where the internal combustion engine traditionally sat, now sits the battery pack that powers the vehicle, as well as the sensor and electronics to guide vehicles.

**How will this affect you ?**

Personally, I am opposed to autonomous / self driving vehicles. I am happy embracing electric cars, but the thought of not being in control of a car, albeit a computer controlling. Its kinda scary knowing that you could be on a freeway doing 110 kph, and a computer is controlling your car. Once the technology is perfected and proven in the open space i will probably have more confidence in the systems, but for now, I'm happy still driving my car.

It makes me worried that in the near future, I don't believe we will need a license, as we will be able to order a ride via an app, and driverless cars will arrive and take us to our desired destination. Unlike when you get in a taxi or uber, you can engage with the driver (if you choose to). This will make us even more so less anti social.

I don't think it will affect my family and friends as much as it would affect me. I love driving, but my family members just want to get from A to B.

Electric Car Sales – Global 2019

Tesla is by far the largest electric vehicle company in the world currently.
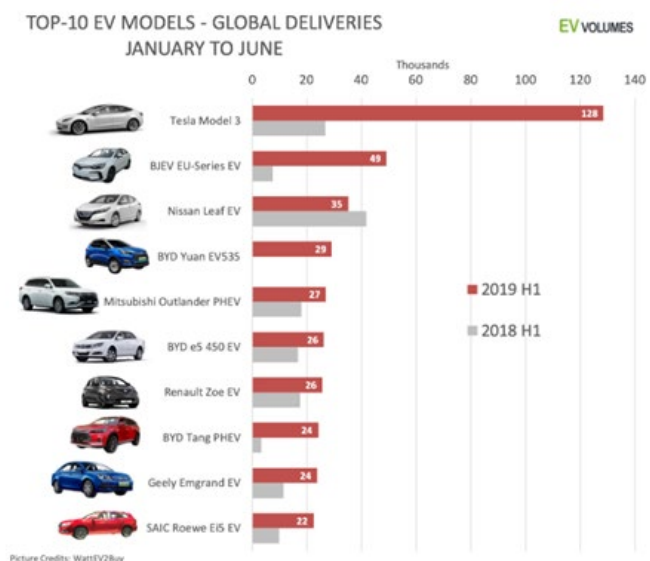
5.4 Cyber Security

What does it do?

Cybersecurity is what we develop, implement and improve upon to deter Cyber Attacks that target our hardware, software and data. Its future is looking promising as AI's (short for Artificial Intelligence) growing area of effect in the field is proving a huge boost to Cybersecurity's capabilities. Cybersecurity is implemented in various ways; in the form of software as well as hardware (you could also consider end-user education on Cybersecurity as a form of Cybersecurity as well). Cybersecurity isn't just about protecting one's computer system from malicious intent; things like websites and networks need protection too.

Reputable anti-virus software is a must for any attempts one has to minimise their computer's risk of being compromised by malicious software. The list of features on programs such as these varies. All antivirus software possesses the primary function of the detection and removal of computer viruses. Depending on the program, it may be able to perform tasks such as a System Analysis (checks hardware component performance to detect, find and remove viruses it may be unaware of), Malware Removal (scanner that specifically detects and removes Malware), File Quarantine (makes a file it suspects is infected unable to cause damage if it is compromised, giving the user the option to remove the file, or retrieve it if the detection was a false positive), Threat Identification (sends copy of threat to anti-virus developers for early threat intervention), Online Security (blocks malicious websites and alerts the user to remote intrusion of their system) and Data Protection (fail-safe procedure that provides the user backups of important files if they were damaged from malicious software).

Aside from anti-virus software, Firewalls, considered the first line of defence in protecting private information, are also indispensable for preventing Cyber Attacks. They are a network security system that's sole purpose is to prevent unauthorised access to or from a private network. It does this by examining each incoming/outgoing message and blocks those that fail to meet its specified security criteria There are different types of firewall techniques but they all follow this protocol similarly. Firewalls come in the form of software and hardware. Using a combination of the two is ideal. Firewall software defends a single computer, while its hardware variant defends a whole network. Firewall hardware generally provides stronger protection compared to firewall software.

Offering a unique and effective layer of computer login security, Yubico's YubiKey line of USB and NFC security keys showcases hardware's potential for protecting computer systems. The product is similar to a normal USB stick, albeit with a button on it's side. Once appropriate configuration has been implemented, the accounts connected to it will ask for a one time password when login is attempted. This password can only be inputted when the YubiKey's button is held down, which means those who attempt to get into one of your accounts without your approval (which has YubiKey connected), will have no way of accessing your account.

Websites are frequent victims of DDOS attacks (distributed denial-of-service attacks) which floods the entry to a website (or websites), interfering with the victim-sites accessibility temporarily. To circumvent this threat, as well as prevent it from compromising a website, multiple defence techniques are implemented with great effectiveness. Websites can also be infected either for the purpose of retrieving sensitive information directly off the website, to infect computer system's accessing the website or both.

In many of the aforementioned types of Cybersecurity, AI's prominence is growing. It can detect and resolve threats and vulnerabilities much faster than human intervention. The speed at which threats are resolved has been largely in favour of Cyber Terrorists (those who develop and spread malicious software; often for some form of gain) in the past due to making use of unknown vulnerabilities before Cybersecurity developers have a chance of addressing. Still, minor exceptions for where AI is unnecessary within Cybersecurity exists (Yubikey as an example). For AI to be sufficiently integrated into the majority of Cybersecurity systems, further AI algorithm developments are necessary.

What is the likely impact?

As progression of AI-Cybersecurity integration continues, the technology used to fend off Cyberattacks, the structure and prevalence of Cyberattacks and the types and quantity of jobs in the field of Cybersecurity are all subject to huge change.

AI's integration into Cybersecurity will likely impact antivirus software more than any other inherent Cybersecurity tool. Within the technological discipline of Artificial Intelligence, there are multiple subsets. The subset "Machine Learning" is what antivirus developers see as currently the most practical subset to assist the prevention of Cyber Terrorist's success. Machine Learning within antivirus software has already been a part of this type of security. It is also not a new feature. Although true AI integration is rather rare in antivirus programs, Machine Learning is quite widespread. As we are seeing developments and the increase in use of both, the speed of spotting and nullifying threats, the amount of threats being discovered, as well as the financial cost of maintaining these program's competency, will all likely see constant improvement for the years to come.

On the downside of our major technological advancements, the Cyber Terrorist's threats are becoming more and more cunning. AI gives hackers many major benefits such as an inhuman pace and level of complexity to attacking scripts, a much higher degree of scaling, better personalization of phishing schemes etc… AI's use between the two sides was inevitably bilateral. Due to this alarming fact, it is hard to determine whether or not the end-user's safety will improve, diminish or roughly stay at its current state.

As for the Cybersecurity job market, it will see a near certain change of its landscape. Although machines are making humans redundant in some types of jobs, this isn't the case for Cybersecurity. The skills and focus of Cybersecurity specialists will change as AI takes over many of the tasks humans once had to do. Due to AI's limitations, stuck within its given parameters (among many other limitations), humans still have a purpose within the field. The

result is a complementary relationship between the two contributors to the security of our computer systems.

How will this affect you?

Whether future computation is better protected, more susceptible, or generally indifferent to hacker's quantity and/or quality of threats is unpredictable due to the volatile rate of evolution of both Cybersecurity's and malicious software's structure.

In the case of Cybersecurity being just as effective as it is against threats today, the advancements likely won't affect anyone any differently than they do now. Although, because of the radical shift in the field of Cybersecurity, there may be Cybersecurity developers who have fallen behind in the field, due to this implementation of AI, likely making their tool/s redundant.

If Cybersecurity were to gain more control over Cyber threats, computer users will be better protected and the Cybersecurity tools responsible for this improved protection will be seen more as a must. Although I am appropriately cautious and proactive when it comes to detecting and avoiding Cyber threats (due to my own awareness, as well as my Cybersecurity tools), having this boost in protection would ease my mind. Those who are less tech-savvy and knowledgeable in terms of computers (my parents and grandparents for instance) will see the much needed Cybersecurity padding they need.

The worst case scenario would be if Cyber Terrorists gain more control over Cybersecurity. We would see an unspecified increase in successful hacker activity. Websites, networks, computers, online services and many other computational systems may be more susceptible compared to the current risk levels. Computer users less knowledgeable about computer systems and Cybersecurity practices/tools they should follow/use would be the most affected. Even those that are competent in safely using computers (like myself) and use a decent group of Cybersecurity tools may be infected on more occasions by malicious software.

6. PROJECT IDEA

6.1 Terms

The "user" refers to the person who has bought the product and owns it.

A "recipient" refers to a person who approaches the home and is visible to the system.

A "facial pattern" refers to the algorithm that the system will use to determine who is at the front door.

6.2 Description

The project idea is a video doorbell product that will allow users to see who is at the door (like 'Ring'). It will allow the user to access the video doorbell from a device of their choice so that they can see who is at the front door whether they are at home or out and about. This product, however, will have some features that other video doorbell products do not. It will include facial recognition software so that the system can detect a recipient who is at the front door and notify the user if it detects them. The system will also be able to connect to your home assistant devices such as Google Home and Alexa where you can customise your own doorbell sounds or alerts. Any product will also include small device that can be plugged into any power point which will be the sounding system for the doorbell, if they don't own a home assistant device.

Regarding the facial recognition software, the system will be able to detect and store a facial pattern of a recipient on a cloud service of their choice and the user can assign a name of their choice. Facial patterns will be stored for a maximum of 7 days before they are deleted automatically. If the users friend Robert visits for the first time after the system has been installed, the user will go into the app and assign a name that they want such as "Robert" or "Robo" to that facial pattern. Each time the user visits the software will be able to detect the face more clearly and most likely give a quicker response with time. Once the system recognises a facial pattern it will alert the user. This can be done two ways; via an app that will send a push notification to their device or via the home assistant through the speaker.

If the notification is sent to a device, the user has a few options that they can do. They can open a video connection via the camera to see who it is, send a customised reply via the speaker which can be pre-recorded or reply to that person if they know who it is via a communication method of their choice (phone call, SMS, Facebook Messenger, etc.).

If the user is home the app will detect its location and know that it will not need to send any push notifications to them. This setting can be turned off if the user still wants to receive notification on their device, in case they might be in the backyard, shed, etc. It will work like a normal doorbell through the device that comes with the product or through the home assistant which can be set up through the app or online portal.

Another feature that will be included with the product is for delivery services. This product will partner with Australia Post and StarTrack so that when a delivery needs to be signed for and the user is not home, the delivery driver will show the camera a QR code which it will detect to tell the user which company has tried to make a delivery, what the item is, date and time and where they can go to pick up and sign for the item.

Although this product will seem like a simple doorbell on the outside, it will be a feature packed home accessory to help automate your home and make life a little bit easier. The details about further features and specifications of this product will be disclosed in a further assessment.

7. Group Reflection

7.1 Ryan Riddiford

From my perspective, how the group assessment progressed wasn't ideal. Most of the reasons for this are group-related issues (avoidable and unavoidable). Looking back at myself in particular, my participation in work output and group communication was too reserved for the first two weeks. This is something I need to improve upon in the future. I will make sure to be proactive from the beginning and not leaving things to the last minute in all future group-collaborative tasks.

The last two weeks of the project's development had put me in a far more preferable light, as I consistently made necessary communication with other members of the group, shouldered the responsibility of tasks originally assigned to past members, among other things. I found the two former members of our group leaving, rather surprising. This was especially the case when we had realised Christopher had left without telling us, resulting in more trouble than there should have been.

Looking back at how our assessment's trail of progress, it is a fact that each of us have produced work to the best of our abilities. In future group tasks I am a part of, I will make sure that the work output is at an evenly distributed pace throughout the development's given timeframe. I have also learnt that in group tasks, especially with people I am unfamiliar with, I must make room for emergencies mainly related to the flow of work output.

7.2 Christian Torrisi

Overall I think we handled the project pretty well to some degree. CConsidering that we had one group member drop out 2 weeks before the due date and one team member not respond for the last two weeks (while having delegated work to them) I think that we created a pretty good report and website. I think as a group we all found it quite hard to meet up at the same times due to our schedules and work/life commitments, and because of this we did not communicate as clearly and as often as we could have been. Personally I think I tried my best to communicate with the rest of the group but I know at times where I was having a busy few days I should have been more present.

I think as a group we would need to delegate more work, more evenly at the start of the journey instead of trying to delegate bits and pieces here and there. I think what made this that hardest part were the two students dropping out but in future maybe having a backup plan of who can do what if such a situation was to occur again might be something to think about.

I believe I tried to use GitHub in the correct way by creating new branches and using pull requests but I am still very new to Github and would like to explore it a bit further, especially when collaborating with other people working on the same thing.

7.3 Mark McLachlan

From my point of view, I feel, considering the challenges we faced, and the surprise we all experienced when losing 2 group members, the group pulled together very well to achieve the tasks necessary to complete the assessment at the best of our abilities. I think that the work was delegated and distributed between all remaining group members reasonably evenly and tasks were consistently completed at a high standard within the required time frame.

When reflecting on my personal involvement and contribution to the project, I feel I have grown more comfortable within a group work environment. I have learned that in a group work environment consistent, clear and concise communication is the key to everybody knowing the role they need to play to get the job done efficiently. I feel that my communication could definitely improve in that regard. If I improve my ability to consistently and concisely answer questions asked by fellow group members, and explain concepts clearly, this would reduce the amount of uncertainty experienced by other members of the group. I will endeavour to improve in this area as we approach the next assessment over the coming weeks.

7.4 Peter Stamatopoulos

Once we approached the final 2 weeks of the assignment, we found out that there was only 4 of us left in the group. I think together as a group, we banded together, distributed the tasks amongst the remaining 4 members and completed the assignment.

I think it would have been good to find out earlier that we had 2 members were going to pull out. All the assignment tasks could have been distributed better and we could have gotten on to it a lot earlier. Me personally, I would start my section a lot earlier, to alleviate any last minute stress, and to be able to help the group out more.

One thing that did surprise me was how much actually had to be done. There was quite a lot of research required and a lot of information required to be put into the project.

One thing I have learned doing this group assignment is that with everyone have work and personal commitments, it makes it very hard to arrange to meet up all at the same time, this is where we had to rely on Slack to be able to communicate and share files as required.

7.5 Group "404! Group Name Not Found"

Taking into account the difficulties often associated with group collaborations (which is probably more severe in online only collaborations like this) and projects in general, the four of us have each contributed to the best of our abilities. Some of the challenges we have had dealt with was two of our members leaving, being able to communicate with each other when necessary, updates on progress and time management.

By around the start of our second week on the assessment we had lost Tom due to leaving the course. Roughly the start of the final week before our assessment's due date, we realised Chris Hughes had also left us. To resolve this problem, the tasks delegated to them were shared around the remaining members. Our joint coordination of communicating objectives and instructions during these times of stress was commendable.

One thing we learnt from our group projects is just how difficult it is having a 4 members, that are all in different locations, having their own work and personal commitments, and trying to communicate and meet up to discuss project ideas and information. After we found out we had 2 members drop out, the group seemed to band together even more, and chip in to complete the assignment on time. Everyone seemed to happily take on more to get the assignment completed on time.

For the most part our group's ability to communicate and equally contribute to the project went very well. As the deadline for submission approached and all group members were focused and committed to the task at hand, the report came together very well and in good time, which was notable considering the 2 members who dropped out. Task delegation was flexible and reasonably efficient and the ability of all members to complete tasks in the given timeframe was very good. Taking on board there is still scope for improvement to be made, the team work and work ethic shown by all remaining members of the group was of a high standard.

In regard to the GitHub Repository I think that is something that we could all improve on. we did use it for the Group website and that it was updated with branches, pull requests, etc. but don't think we utilized it to its full potential. Especially with documents and other sources of data that may have been used throughout the assignment.

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