The mission of ‘OpenMinds’ is to enrich our knowledge, education, and skills within the I.T. industry through active participation, collaboration and analysis, enabling us to achieve our career objectives and thrive within our chosen fields, as individuals and as a team.

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Overview

As part of our higher educational pursuits in I.T., we were required to form a group with our fellow students and expand our knowledge within this subject to produce a report on various aspects of the I.T. industry, as well as formulating a plan to create an original I.T. project. The purpose of this assignment was to achieve core learning outcomes through: Enabling knowledge, Critical analysis, Problem solving, Communication and Teamwork.

To document further learning of the group's assignment we research and discussed the following tasks: Documenting our team profiles and personalities, after which we then discussed and compared our ideal jobs within the I.T. industry. To better assist our understanding of what it's like to work in the I.T. industry we also interviewed an experienced I.T. professional whom provided valuable insights to the daily workings, and possible career progression of I.T. professionals.

In addition, our group researched and explored I.T. technologies that can and are having a profound impact on the developed world, simultaneously changing the course of history. The technologies we chose were: Cyber security, Cloud/Server Services, Blockchain and Cryptocurrencies, as well as Machine learning. The group enjoyed furthering their knowledge in these areas and took inspiration from this to assist us in the creation of our project idea - an interactive chatbot application that monitors online activity of youth and young adults in an attempt to recognise those that may be at risk of mental health disorders and other behavioural concerns and connect them to supportive networks and services.

To effectively allocate a fairly equal allotment of work and complete the assignment as a group. Each member was delegated a task well suited to their personal strengths - this was either decided through self nomination or group consensus. Assignment progressed as follows:

- Original initiation and group formation conducted by Aaron B
- Meeting facilitation, set agenda, and minute recording by Carla J
- Individual Profiles completed by each relevant member
- Ideal Job & Industry Data Comparison by Carla J, and Arianna M
- I.T. Technology Topics delegation:
    - Cryptocurrencies by Lachlan S
    - Cloud/Server Services by Andrew B
    - Blockchain and Cryptocurrencies by Aaron B
    - Machine Learning by Sean M
- I.T. Professional Interview conducted by Carla J
- Project Idea by Aaron B, and Sean M
- Project Idea psychologist research and interview by Arianna M
- Additional text by: Carla J
- Website design and construction by Lachlan S

To encapsulate the group's research findings and project, we created a webpage with the use of GitHub pages to upload and display our work which can be viewed here: https://cpt110-openminds.github.io/

Finally through reflective assessment and contemplation the group worked efficiently and collaboratively to bring to fruition our ideas collective work, and deem it to be a successful project and hope that our readers will agree.

Team Profile

Aaron Balkin - s3819878

https://ajbalkin.github.io

Ideal Job: Business Analyst

Aaron Balkin is an aspiring entrepreneur looking to make it in the IT world. He is from regional Queensland; a small town called Beaudesert. Currently he resides in the Brisbane area where he works as a Patient Support Officer at the Royal Brisbane and Women's Hospital while he completes his studies at RMIT. Aaron is also a tech enthusiast showing a strong interest in mobile technology, cryptocurrency and blockchain technologies.

Test Outcomes:

Myers-Brigg: Commander ENTJ-T, Extrovert

Commanders are natural born leaders. Commanders tend to be led with great charisma and confidence which can draw a team behind a common goal. Commanders also tend to be judged by others a ruthless individual that uses their drive and determination to achieve their goal. Aaron does see himself has a natural born leader as he likes to contribute as much as he can and take control when others cannot. Like most commanders he is also an extrovert, which enables him to more sociable and quite likeable among groups and teams.

Learning Style: Visual Learning Style

According to the learning test, Aaron is a visual learner and prefers to learn from material that can be viewed graphically. A visual learner or a spatial learner prefer to use images, videos and pictures to organise information and to communicate with the team.

The Big 5 personality test: Openness Test.

The Big Five Personality Test is a test based on someone's ability to think in abstract and complex ways. Much like the Myers-Brigg test, the big 5 personality test showed that Aaron exceeded at being an extrovert. However, when it came to Aaron being ranked in openness, it scored him lower at 56% where the average is scored at 58%. While this test is quite accurate, it also showed that Aaron was more of a concrete thinker than an abstract thinker.

Andrew Bonney - s3529361

https://s3529361.github.io/IT-Profile/

Ideal Job: Senior Systems Administrator

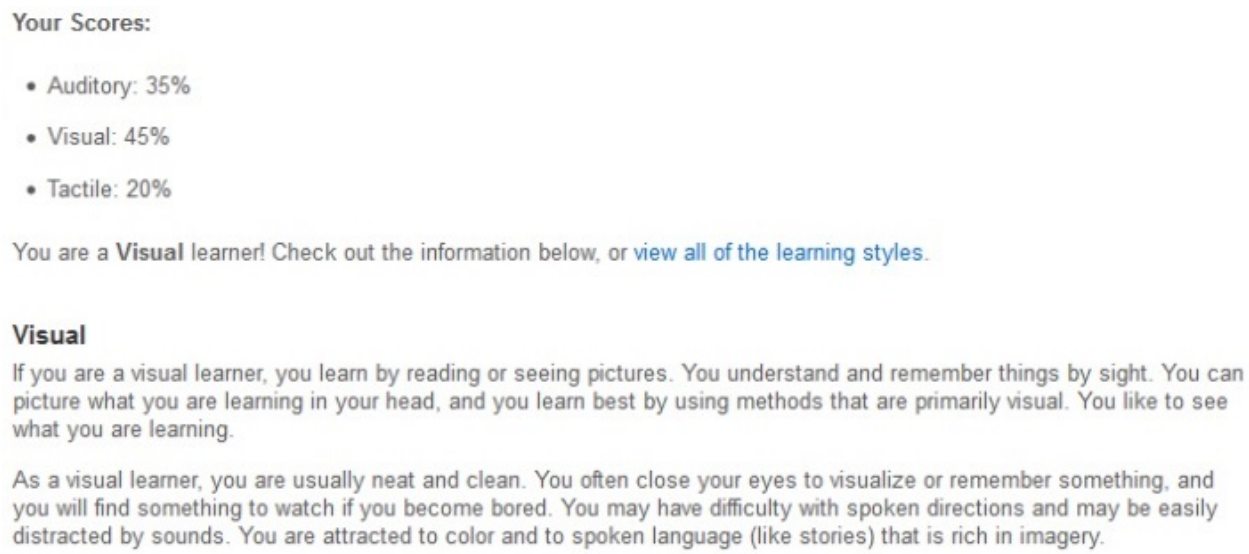
Andrew Bonney is a part-time student at RMIT both on-campus and online study, his Student Number being s352936.His nationality is Australian however his background is English, Scottish, German, Irish, Dutch, Italian and Spanish so he comes from a varied background (despite only know a bit of Italian).His hobbies include but are not limited to video games, history, computers (especially tinkering with computer hardware), sports (AFL, SANFL, NFL & NBA), listening to music and watching videos/TV shows. Andrew is quite interested in IT to the point that all of his careers in his adult working life has been in the IT industry and hoping to keep that way since he has early two years in IT experience. This current experience having worked a traineeship in 2014 at his former High School and his current position of employment as an ICT Support Officer for an Aftermarket Automotive/Airconditioning Company.

Test Outcomes:

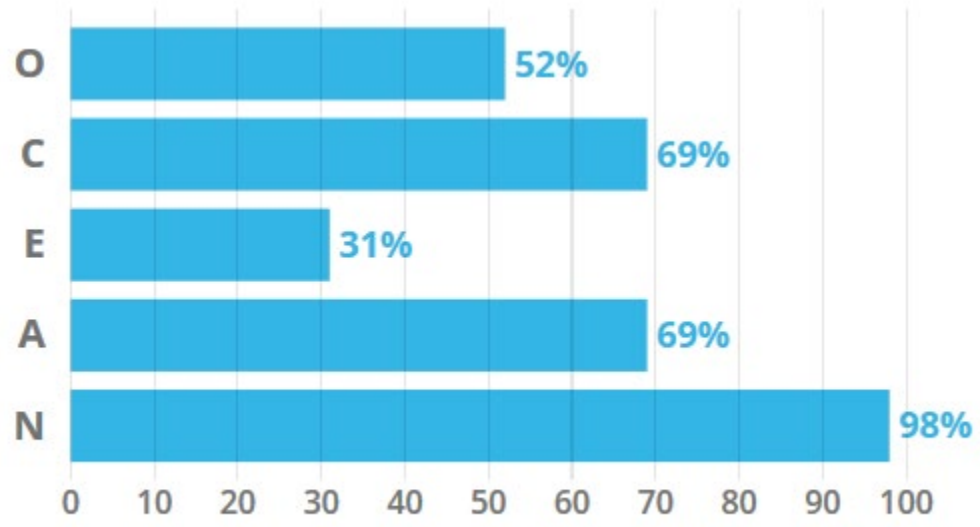
Myer-Briggs Test: Architect INTJ-T - Analyst - Constant Improvement

It can be lonely at the top. Being one of the rarest personality types and being among the most capable people, Architects know this all too well. They make up just two percent of the population, and women with this personality type are especially rare, forming only 0.8%. It can be difficult for Architects to find people who can keep up with their non-stop analysis of things. People with this personality type are imaginative yet decisive... ambitious yet like their privacy... curious about everything but remain focused.

Learning Style Test:



The Big Five Personality Test (Ranked in Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism)



Carla Jilani - s3812516

https://furrucci.github.io/carlajilani.github.io/#

Ideal Job: Graduate Paraplanner

Carla is a current full-time student studying to complete her Bachelor of Business at RMIT and is looking forward to advancing her qualifications in the area of financial planning. Having a background and experience in the 'Banking and Finance' sector, Carla understands the importance of I.T. literacy through the heavy reliance that this sector as well as many other industries have on I.T., and views technology as a crucial element in developing solutions to many of the issues society faces as a whole. In an effort to increase her own literacy skills in this area, Carla enrolled in 'Introduction to Information Technology' and as part of her studies joined the group 'OpenMinds' - a collaborative group of IT students exploring developmental ideas to make positive contributions to the mental health of youth across Australia. Whilst the group and concepts of OpenMinds are still within a formative stage, Carla is confident in the group's potential, and is enjoying contributing to the groups pursuits.

Test Outcomes:

Myer-Briggs Test: Introverted - Sensing - Thinking - Judging (ISTJ)

Carla has stronger tendencies for thinking and analytics, which is reflective of her work ethic to assess situations and tasks at hand, frequently seeking effective and productive solutions to workflows. She is well-organised, responsible and dependable, with an ability to work steadily towards goals. These traits may assist in group scenarios by making productive contributions and offering solutions focused approach.

NC Learning Style Test: Sensing and Sequential

Carla is most apt to learning via facts and solving problems via well-established methods with clear definitive plans. She holds a strong preference for linear logical sequential stepwise paths valuing structure and consistency. This will prove beneficial when working with others as she will be able to provide planning and organisational guidance within group projects.

IQ Test: Bright range of intelligence (110 - 130)

Carla's IQ indicates she has a strong grasp on both basic and advanced logical concepts (left-brain dominant). She has good word comprehension skills, performing well at language based tasks such as writing and constructing arguments with an ability to follow through ideas to their logical conclusion. Therefore she will be a strong contributor to written tasks within collective projects, allowing for other members to exercise their strengths in visual designs and technical developments such as coding.

Lachlan Stevens - s3705762

https://lachlan-stevens.github.io

Ideal Job: Mid level .Net Developer

Lachlan is 28 years old and living in Sydney, Australia, though he grew up a little further north in Newcastle. This isn't his first foray into tertiary education, with bits of pieces of a Bachelor of Communication, Bachelor of Business and a few Certificate IVs in the resume.

In his free time, Lachlan enjoys spending time with his partner and their two cats. They're in the middle of applying for partner visa at the moment so his partner isn't able to leave the country, but once she's able to they'd love to take a trip to West Coast USA and Canada to visit Lachlan's sister.

Lachlan first found his passion for IT quite young in life while tinkering and modding the games of the day. As he's gotten older, the necessity to deal with large datasets at work has gotten the wheels of industry turning in his head around how to deal with such datasets in smarter and faster ways. It's this exposure that his driven his interest in complex, data-driven cloud and web applications.

In terms of experience, Lachlan has a bit of everything - having at least touched most popular languages. If asked where his most prominent skills lie, Lachlan points toward the below three as his strongest skills:

- HTML
- CSS
- C# - specifically around .NET Core and Unity.

Personal Profile:

Perhaps unfortunately for his colleagues in Open Minds, Lachlan's personal profile results point fairly squarely towards an individual who could be described with the phrase "does not play well with others," despite what best intentions he might have around a particular interaction.

The MBTI type most aligned to Lachlan's personality is that of the Turbulent Logician (INTP-T) - despite only making up around 3% of the population, Open Minds have two in their team! One key consideration which any Logician must take into account when working within a team environment is their tendency to not consider the possible ramifications of the things they say to the people around them. Despite this, the ability of INTPs to analyse complex problems and conceptualise solutions to these problems is a big plus for any group. In his day job, Lachlan has the ability to pick up potentially unforeseen problems and propose and implement solutions to mitigate such risks.

In terms of his Four Tendencies results, Lachlan sits within the category of a Questionnaire. The Questioner analyses all expectations, both those from outside sources and also their inner expectations, and will confirm these expectations if it makes sense to them. However, if they find these expectations to be unreasonable, or by their own belief illogical, they will actively argue against them. The role of a Questionnaire within a team is important as they will seek to ensure a given direction is the most logical, however this can often be a subjective belief, and if constant this can lead to disruption and delay of progress within the group.

With these points in mind, Lachlan aims to be measured in the way he looks at the work of Open Minds, and to try to understand the point of view of his other team members before jumping to conclusions or value judgements on directions or decisions taken.

Sean MacAulay - s3812544

https://s3821544.github.io/assignment/index.html

Ideal Job: IT Manager

Sean is studying part time as well as working full time as a Bottleshop Manager. He is looking forward to completing the Bachelor of Information Technology and moving into the IT Industry. Having exposure to the IT Industry at an early age due to his father being an IT Professional has left some deep seated questions about how it all works. From playing the original Doom to as an adult not quite understanding how the technologies around him actually work, he is curious about IT on a deep level. Looking to pursue something that will not only satisfy his thirst for knowledge but also give him an amazing career, IT is an amazing opportunity for Sean to better himself.

Joining the group Open Minds is an exciting opportunity for Sean. It will allow him to collaborate with a group from various backgrounds, who are using this course as a platform to a variety of

other professions and jobs within IT. He is excited to not only gain knowledge but where he can add to the group to make the most of this opportunity.

Test Outcome:

Myers-Briggs: INTP-T Turbulent Logician

Sean is armed with a powerful intellect and vivid imagination, Sean can overcome or outmanoeuvre obstacles that seem unbeatable to most. At the same time, his many quirks, such as often unconstrained rationalism, lead to many people misunderstanding him. Those misunderstandings end here. What you have read so far is just an introduction, there is a lot more to what he is capable of.

Learning Style: Tactile Learner

- Auditory 20%
- Visual 30%
- Tactile 50%

Sean is a tactile learner who likes to have their hands dirty in whatever they're doing. Spending long a time reading or listening isn't very effective for him. Should he need to read a lot or listen a lot, it’s important he frequently takes breaks.

Creativity Test:

55 Out of 80

37-58 Intermediate

59-80 Strong Creatively

As an upper Intermediate range Sean is creative but it's time to engage other people around his ideas. The creativity is there but without other people his creativity won’t progress much further. It's important for Sean to get more of an idea how other people view the same problem he’s looking at to get a better understanding of the issue.

Adrianna Mizuro - s3814683

https://amizuro.github.io

Adrianna is a student of Business in Financial Planning at RMIT since last year. Previously she graduated with a degree in Dental Technology overseas and worked as a Prosthetist in Europe and Australia for a few years. Adrianna expects to graduate as a business professional with developed skills to achieve the financial planner qualifications. She knows that Information

Technology is incredibly diverse pathway, allowing to take her future business career in a vary of different directions. She has chosen to study the Introduction to Information Technology at RMIT to develop the foundation knowledge of contemporary technologies, software, applications and job skills required to enter the IT market. She currently works as a project administrator, with the requirement to have a basic knowledge of information technology and perform effectively in exchanging information processes with clients through different types of communication platforms. An opportunity to study IT will benefit her technological skills, allowing her to implement them at work and get the attractive job opportunities in the future.

Test Outcomes:

Myers-Briggs Test: '**The Advocate'** type of personality
Individual traits: Introverted - Intuitive - Feeling - Judging – Turbulent (INFJ-T)

Her judging trait reflects her approach to work, planning and decision-making. Adrianna is decisive and well-organized, which can have a positive impact on teams' planning process. She values predictability and prefers to have a clearly prepared, well- structured working plan. This attribute may help to keep the assignments' preparation and organisation steps in sequential and logical order. She is also willing to help others, has a lot of empathy. Her main focus is on creating a harmony and an effective communication between the organisation members.

Learning Style Test: **Visual Learner**

She learns by reading, seeing pictures and understands things by sight.
Adrianna's preferred learning style and her great experience in finding effective learning techniques may be helpful to the group by inviting, looking for visual solutions to make the overall presentation of the assignment more attractive, eye-catching and memorable.

Big Five Personality Test: **Openness**

Test shows that Adrianna has been classified as a diligent person who is open to experience with impressive intellect and imagination skills. Her personal profile should be valued and positively received by team members once forming a group. Adrianna is excited to be a creative participant of the 'Open Minds' project team and get the chance to make things by practical application of the knowledge learnt from the theoretical content of the IT course.

Ideal Jobs & Burning Glass Data Analysis

Team Member	Ideal Job	Required Skill Set - General	Require Skill Set - IT Specific	Similarities	Differences	BGD - General Skill Demand	BGD - IT Specific Skill Demand	BGD - 3 Highest IT Specific Job not in current skill set	BGD - 3 Highest IT General Skills not in current skill set
Aaron B	Business Analyst	• Advanced business analysis • Business Analytical skills • Advanced knowledge of project management • Ability to build and maintain stakeholder relationships • Financial Market knowledge (fixed income and foreign exchange) • Market data provider knowledge • Critical thinking and problem-solving skills	• Agile/Scrum software experience	• Analytical skills • Frequent client contact • Project management • Financial industry knowledge • Problem solving skills	• Frequent customer contact • Use of Agile/Scrum software • Financial Industry required	• Problem Solving Skills = High • Analytical Skills = Moderate • Management = Moderately low • Maintain stakeholder relationships = Very low demand • Financial Industry knowledge = Not listed	• Scrum = Low demand • Agile = Very low demand	• SQL • JavaScript • JAVA	• Organisational skills • Writing • Teamwork/ Collaboration
Andrew B	Senior Systems Administrator	• Analytical aptitude • Advanced critical thinking and problem-solving skills • Organisational skills • Multi-Tasking • Effective collaborative team work • Excellent verbal and written communication • Strong technical documentation skills • Research • Troubleshooting	• Server hardware and software technology knowledge • Windows Server Operating System/ Active Directory Domain • Microsoft Windows/ MS Exchange • Office 365 administration • LINUX • VMware Sphere 6.x virtualized environment	• Communication skills • Analytical skills • Organisational skills	• Server hardware and software technology knowledge required • Less customer contact • No financial industry knowledge required	• Analytical aptitude = Moderate • Problem Solving Skills = High • Teamwork/ Collaboration= High • Organisational skills= High • Multi-Tasking= Moderately low • Excellent verbal and written communication= Very high • Strong technical documentation skills= Not Listed • Research= Moderate • Troubleshooting= High	• Microsoft Windows= High demand • Software Engineering/ Microsoft Office/ LINUX= Moderate • Server hardware knowledge/ Systems Engineering= Low • Windows Server Operating System/ VMware Sphere 6.x virtualized environment= Not listed	• SQL • JavaScript • JAVA	• Planning • Detail-oriented • Creativity

Carla J	Graduate Paraplanner	• Excellent communication • Excellent report writing • High attention to detail • Analytical aptitude • Researching skills • Time management • Organisational skills • Excellent interpersonal skills • Planning Skills	• IT skills (Use of Microsoft suite, Xplan/XTools)	• Communication skills • Attention to detail • Analytical skills • Time management • Organisational skills	• Moderate customer contact • No coding skills required • Use of Xplan/XTools • Financial Industry knowledge required	• Communication skill = Very High • Organisational = High • Writing skills = High demand • Attention to detail = High • Analytic Skills = Moderate • Research = Moderate • Time Management = Moderate • Interpersonal = Not on list • Planning= High	• Microsoft suite, Xplan/XTools = Very low demand in the IT industry.	• SQL • JavaScript • JAVA	• Teamwork/ Collaboration • Troubleshooting • Creativity
Lachlan S	Mid - Level .Net Developer	• Analytical aptitude • Problem solving skills • Communication skills • Adaptable & quick learner • Project management	• Coding/Language Skills: C#, Javascript, JAVA, Moq, Unit, N Unit, CI/CD, Design Pattern, SQL Server • Further coding skills: Net core,Css NodeJS, Azure/AWS, React/Amgular/Vue.js, React-Native/Xamarin, Umbraco	• Analytical skills • Problem solving skills • Communication skills • Project management	• Coding and language skills required • Less customer contact • No financial industry knowledge required	• Communication skill = Very High • Problem Solving Skills = High • Analytical Skills = Moderate • Management = Moderately low • Adaptable = Not listed	• JavaScript/JAVA = High • SQL = High • C# = Moderate • Moq, Unit, N Unit, CI/CD, Design Pattern, = Low demand • Net core,Css NodeJS, Azure/AWS, React/Amgular/Vue.js, React-Native/Xamarin, Umbraco = Very low demand	• Business Management • Microsoft Windows • SAP	• Organisational Skills • Writing • Teamwork/ Collaboration
Sean M	Business Systems Manager	• Ability to work effectively in a team environment • Improvement of efficiency/ review and audit of business systems and processes • Strong stakeholder management skills • Strong change management skills • Excellent communication skills • Strong people leadership capability	• Office 365 administration • Business Management/ SalesForce Software expertise required • Customer support services/ Zendesk / IP Scape • Advanced knowledge of business system analysis	• Communication skills • Analytical skills • Frequent client contact • Problem solving skills	• Use of Business Softwares as Zendesk / IP Scape/ SalesForce • Financial Industry required • No coding skills required • Team leader capability required • Business Management skills required	• Communication skill = Very High • Teamwork = High demand • Problem Solving = High • Quality Assurance and Control/ Audit of business systems = Moderate • Leadership= Moderate • Management/ Building effective relationships with stakeholders= Moderately low	• Business Analytical/ Management skills= High • Customer service/ Microsoft Office= Moderate	• SQL • JavaScript • JAVA	• Organisational Skills • Writing • Troubleshooting

Adrianna M	Business Rescue & Insolvency Strategist	• Background in financial planning, accounting, business banking or insolvency • Finance related customer service experience and knowledge • Communication skills • Team work ethic • Problem solving skills • Attention to detail • Organisational/ Planning Skills • Time management	• IT skills (Use of Microsoft suite, Xplan/XTools)	• Communication skills • Problem solving • Attention to detail • Organisational skills • Time management	• Frequent customer contact • No coding skills required • Financial industry knowledge required	• Communication skill = Very High • Teamwork = High demand • Problem Solving = High • Attention to detail = High • Organisational skills = High • Financial Industry knowledge = Not listed • Customer Service = Not listed • Time management = Moderate • Planning= High	• Microsoft suite, Xplan/XTools = Very low demand in theIT industry.	• SQL • JavaScript • JAVA	• Writing • Troubleshooting • Creativity

Aaron’s ideal career in the IT environment would be a business analyst. General set of skills required for Aaron’s job are Problem Solving highly demanded by employers, Analytical Skills in moderate demand and Management Skills in moderately low demand from employers. Maintaining stakeholder relationships have been ranked very low in terms of demand from employers. Financial Industry knowledge hasn’t been listed on Burning Glass analysis, which is indicating skills in greatest demand from employers. IT- Specific set of skills required for Aaron’s job are Scrum and Agile software experience, which both have been ranked low in terms of demand from employers.

Andrew found that being a Senior Systems Administrator is an appealing job opportunity to him, because we would love to manage an IT Department in the future. General set of skills required for Andrew’s job are Problem Solving, Team Work, Troubleshooting and Organisational skills highly demanded by employers. Research and Analytical Skills in moderate demand and Multitasking in moderately low demand from employers. Excellent verbal and written communication skills have been ranked very highly in terms of demand from employers. Strong technical documentation knowledge hasn’t been listed on Burning Glass analysis. IT- Specific set of skills required for Andrew’s job are Microsoft Windows knowledge highly demanded by employers, Software Engineering, Microsoft Office and LINUX which have been ranked in moderate level in terms of demand from employers. Server hardware knowledge has been ranked low in terms of demand from employers and operation of Windows Server Operating System hasn’t been listed on Burning Glass analysis. The three highest ranked general skills which are not in Andrew’s required skill set are Planning, exceptional Attention to detail and Creativity.

Carla’s ideal career is to continue her progression in the banking and financial services industry as a Paraplanner. General set of skills required for Carla’s job are Organisation, Planning, Writing and Attention to detail highly demanded by employers. Research, Analytic Skills and Time Management in moderate demand and Interpersonal Skill hasn’t been listed on Burning Glass analysis. Excellent communication skills have been ranked very highly in terms of demand from employers. IT- Specific set of skills required for Carla’s job are Microsoft suite and Xplan/XTools which have been ranked very low in terms of demand from employers in the IT industry. The three highest ranked general skills which are not in Carla’s required skill set are Team Work/ Collaboration, Troubleshooting and Creativity.

Lachlan decided that being a mid level . NET Developer perfectly combines his interest and existing skills with those he’s looking to further invest in. General set of skills required for Lachlan’s job are Communication and Problem Solving highly demanded by employers, Analytical Skills in moderate demand and Management Skills in moderately low demand from employers. Good adaptability to constant changes hasn’t been listed on Burning Glass analysis, which is indicating skills in greatest demand from employers. IT- Specific set of skills required for Lachlan’s job are knowledge of JavaScript/JAVA and SQL highly demanded by employers and knowledge of C# in moderately low demand from employers. Moq, Unit, N Unit, CI/CD, Design Pattern and Net core,Css NodeJS, Azure/AWS, React/Angular/Vue.js, React-

Native/Xamarin, Umbraco have been ranked low in terms of demand from employers in the IT industry.

Sean would like to move into a new industry and work as a Business System Manager, using his knowledge and technical skills to simplify and improve the efficiency of business systems and processes. General set of skills required for Sean's job are Communication, Teamwork and Problem Solving highly demanded by employers, Quality Assurance and Control and Leadership Skills in moderate demand and Building effective relationships with stakeholders in moderately low demand from employers. IT- Specific set of skills required for Sean's job are Business Analytical and Management skills highly demanded by employers and Microsoft Office knowledge, which have been ranked in moderate level in terms of demand from employers. The three highest ranked general skills which are not in Sean's required skill set are Writing, Troubleshooting and Organisational Skills.

Adrianna's ideal job selection in the financial industry would be a Business Rescue and Insolvency Strategist, as the concept of finding the best financial strategies for businesses would be meaningful and rewarding to her. General set of skills required for Adrianna's job are Organisation, Planning, Team Work, Problem Solving and Attention to detail highly demanded by employers. Time Management in moderate demand, but Financial Industry knowledge and Customer Service Skills haven't been listed on Burning Glass analysis. Excellent communication skills have been ranked very highly in terms of demand from employers. IT-Specific set of skills required for Adrianna's job are Microsoft suite and Xplan/XTools which have been ranked very low in terms of demand from employers in the IT industry. The three highest ranked general skills which are not in Adrianna's required skill set are Writing, Troubleshooting and Creativity.

The three highest ranked IT-specific skills which are not in all group member's required skill set (except Lachlan's) are knowledge of coding language as SQL, JavaScript and JAVA. The three highest ranked IT-specific skills which are not in Lachlan's required skill set are Business Management, Microsoft Windows and SAP. The three highest ranked general skills which are not in Aaron's and Lachlan's required skill set are Writing, Teamwork/ Collaboration and Organisational Skills.

After having completed the comparison of the teams' required skill set to the current job market and their ideal jobs, they were asked if their opinion in relation to their chosen career paths had changed after analysing the Burning Glass Data. The following are their respective responses:

Aaron B:

After reviewing the Burning Glass data for the position, Business Analyst, the position is still appealing to Aaron for future employment. He has great interpersonal skills which isn't ranked on the burning glass data but strong communication skills are highly ranked by future employers. Following up in more detail to the burning glass data, the IT specific skills are listed

are working with scrum projects. While it's in very little demand from employers, further skills that Aaron requires are; problem solving, analytical skills and management skills. Based on the above data, Aaron will continue his career choice.

Andrew B:

Upon reviewing the Burning Glass Data for the position, the Senior Systems Administrator is still a more than appealing job for future employment, given pre existing experience, training and education in key parts being Microsoft Windows, Microsoft Office, Linux and Server is comforting to know that it aligns with requirements of that career role. Despite specific server knowledge not necessarily being in rather high demand, given the knowledge needed for Windows Server and similar server knowledge for Systems Administration will be quite useful and Andrew feels he is on the right path towards achieving his ideal goal and for the large part, the Burning Glass Data seems to mostly align with the ideal job requirements and he is still quite enthused at the idea of being a Senior Systems Administrator.

Carla J:

When comparing the burning glass data to the skills required for the position of Graduate Paraplanner, it can be seen that the general and interpersonal skills are well aligned with the skills that are in greatest demand according to the data. The I.T. skills listed: XPlan, and XTools however, are not in high demand in relation to the I.T. industry. This is due to the fact that the role of a 'Graduate Paraplanner' is not an I.T. specific role and therefore the I.T. skills and software required for this role are designed for the Banking, and Finance industry. Although, Carla's ideal job is not listed within the top three highest in-demand jobs for the I.T. industry, this has not been a deterrent for Carla as she understands there are different demands within different industries. It is collectively for this reason Carla, has not changed her opinion of her chosen ideal job of Graduate Paraplanner as her primary interest and goals are to pursue a career within the Financial Planning area, and she still views Paraplanner roles to be a viable and promising career choice.

Lachlan S:

After reviewing the burning glass data with the position description for a Mid Level .Net Developer, Lachlan is reasonably happy with his choice of ideal position. The major skills relating to his ideal job are all of high or moderately in demand, and while the other required skills are listed as low demand, most of these are fairly minor skills within the scope of the job and support the major skills. Based on this Lachlan will continue toward his chosen ideal job, and feels his initial assessment of the role was strong.

Sean M:

After comparing the Burning Glass Data with the Business Systems Manager skill set, the data shows that this is a highly technical role that requires a strong communicator. The ability to recognise opportunities for improvement, communicate the ideas to a variety of people involved

with the projects in a way they understand and having the technical know how to implement the solutions. The communication, teamwork and business analysis are highly sought after according to Burning Glass. After taking all of this in Sean feels his initial understanding of the role is accurate and is happy to keep with the same ideal job.

Adrianna M:

Burning Glass Data presented an analysis of the most in demand IT occupations and also general and IT-specific skills required in the IT industry. The presented data is an important source of information and will be considered by Adrianna to be conscious about IT employment trends. Provided analysis will also help Adrianna in preparation during her education process to develop valued qualities appreciated by her potential employers. It has not changed her option about her ideal job selection, as an Insolvency Strategist is classified as an occupation in Financial Industry. However, it is worth to have a broader knowledge of employment requirements in the IT Industry, as it is a very dynamic and strongly growing environment, having a significant impact on many other industries as Finance, Business or Economic related sectors.

I.T. Professional Interview

The ‘Information Technology’ industry as a whole is an extensive and a highly dynamic field with a multidimensional expanse that reaches directly, and indirectly into different aspects of societies and people's daily lives - constantly changing and evolving the way in which civilisations function. As such, the I.T. industry is one of the most robust in the world offering vast opportunities for I.T. technicians and professionals of all kinds to pursue a career in a multitude of forms within the industry itself, therefore making it an attractive vocation for many, particularly in the developed world. However, as appealing and exciting as the I.T. industry may be, and can be an overwhelming and misleading task trying to determine where to start for applicants’ new to the field. To help resolve this, we endeavoured to seek out and interview an experienced I.T. professional to gain better insight into the daily workings, encounters and career progression of an industry professional.

We were very fortunate to be granted an interview with Peter Smith, an accomplished and highly proficient leader and manager in ‘Information Technology’, adult education, project and change management. Peter has over 30 years experience in technical industries on a statewide and national basis, with a multitude of qualifications, ranging from trade proficiency certificates, diplomas, advanced & graduate diplomas, through to bachelor’s degree. Having had several roles over the course of his career, Peter has developed an extensive range of skills as a: Quality, Audit and Risk Manager, Teacher and Coordinator, National Customer Service Manager and Technical Services Manager, as well as an Electronics and Senior Technician. Peter has developed and obtained these titles and skills through his employment with multiple TAFE Institutes, several electronics companies, in addition to multinational conglomerates for I.T. communications systems and defense equipment, and the Royal Australian Navy to name a few.

Interview Questions:

Peter generously gave 30 minutes of his time to answer the following questions:

1. Please tell us about your IT work. What exactly do you do?
2. Please tell us about the industry you work in?
3. How did you start in the IT industry - was there specific qualifications you acquired to do this?
4. Was there a time during learning your trade, that you thought about giving up?
5. As you’ve had several different roles within the IT industry, which would you describe as the most IT intensive/relevant/specific?

6. What other kinds of work do you have to do within your current role?
7. In your most IT specific role, who are the different people you interact within your work?
8. In the context of your position, how would you interact with other IT professionals?
9. Were you required to interact with clients and/or investors?
10. What aspects of your work do you spend the most time on?
11. Of all your IT roles, which was the most challenging, and what were the specific aspects that made it so challenging?
12. Can you share an example of the work you have done that best captures the essence of the IT industry?
13. What area of IT do you think has the greatest impact on society as a whole?
14. In a broader sense, regarding changes to licensing requirements and registration of software engineers, what impact do think this will have on the IT industry and software engineers in particular?
15. What are your views on outsourcing roles within the IT industry offshore, is this beneficial or harmful to the Australian IT industry?
16. What advice would you have for someone wanting to pursue a career as an IT professional, particularly in Australia?

The full interview and Peter's answers to these questions can be listened to on our website.

I.T Technologies

Cybersecurity

Many new and emerging issues within the Information Technology field relate to exciting new ways society can leverage new capability to improve progress in business, manufacturing, conservation and many other fields. Within this, Cybersecurity sits as a foundation block to secure private and proprietary data in an increasingly connected and cloud-based world. With the number of interconnected devices expected to reach 24 billion by 2020 (Internet of Things IoT A vision, architectural elements, and future directions)), getting cybersecurity right is a key part of an organisation fulfilling it legal and ethical obligations to those whose data it acts as a steward of.

Rainer Jr and Prince (2016) identify three major types of information security controls – physical controls, access controls and communication controls. With data increasing being hosted on open networks as opposed to heavily secured closed ones of the past (Riahi Sfar et al., 2018), physical security becomes less of a risk factor than perhaps it was in the past, as physical vicinity is no longer as important as it once was.

Access controls relate to ensuring that a data source is being accessed by the correct person, rather than a malicious outsider. Authentication in the early days of the internet consisted of username and password. Single-factor authentication such as this imposes incredible vulnerabilities, as it relies on users selecting a highly complex password and using a unique password for every service they use. With the average user using the same password across approximately four different services (Rainer Jr and Prince, 2016), and the large number of passwords users are prompted to create an enter on a daily basis, poor password choices are seemingly encouraged (Renaud and Zimmermann, 2018). As such, two- or multi- factor authentication greatly strengthen authentication controls as they rely on something the user has (such as a smart card or USB key) and/or does (such as receiving a push notification or security SMS) to complete the log on process.

Communication controls secure the digital movement of information across networks. Encryption and cryptographic protocols sit within this control as arguably the most relevant topics over the last decade. Indeed, multiple security issues have been publicised over the last decade affecting cryptographics. Perhaps the most infamous of these is the HeartBleed vulnerability discovered in the OpenSSL library in April 2014, which allowed a malicious TLS heartbeat request to return large amounts of buffer memory, potentially containing sensitive user information and passwords (Synopsys Inc, 2014). Of particular concern is that the patch for this vulnerability largely resulted in a net line change of only 2 lines of code, putting the vulnerability itself down to a simple logic error (Harris, 2018).

The recent and ongoing implementation of Transport Layer Security (TLS) 1.3 brings massive changes to the protocol as it widely implements a concept known as Perfect Forward Secrecy (PFS) (Rescorla, 2018). The use of PFS ensures that if a user’s encryption key is compromised,

a malicious outsider is unable to access and decrypt further information from the webserver, whether it relates to the compromised user or not.

The ongoing development within the cybersecurity field is a boon for system administrators, businesses and end users alike. With the supercession of legacy and weaker methods of security, such as single factor authentication, and vulnerable cryptographic protocols, private and proprietary data is likely to be more secure from malicious outside access. Of course, any protocol is only as strong as its implementation, so the need for highly skilled security engineers is likely to continue long into the future. In turn, this is likely to change the vectors of attack by malicious outsiders from intrusion type attacks, as these will be easier to detect and defeat in the future. This has already been seen within the banking industry, where increased detection and monitoring capabilities have seen a shift from malicious attacks toward social engineered and scam-related compromise vectors. According to the latest scam statistics (Australian Competition and Consumer Commission, 2019), monetary loss relating to scams and phishing is on trend to grow in 2019 by up to 25%, far outstripping the grow rate in previous years. It is difficult to detect such events as they are primarily established users exhibiting an unexpected behaviour in their authorised access rather than a malicious outsider attempting to force access to a resource or data. As such, the importance of training of employees and the wider public to the danger of such events is key, and is likely to be of huge importance moving forward. Organisations are increasingly turning to phishing simulation emails, where a company, or an outside firm acting on behalf of the company, sends an email which appears to be a phishing email to a large number of users. If a user clicks on such an email, they are taken to a page which advises them they have clicked a phishing email, and data is captured on who has responded to the phishing email. Despite this increase in training and awareness, data suggests up to 20% of employees are still responding to phishing emails, simulated or real (Williams et al., 2018), which shows there is a long way to go on this.

As for everyday users and consumers, technological developments, if implemented correctly, may see them less at risk of their data being accessed through an organisation’s servers or databases without their or the organisation’s knowledge or consent. However, as mentioned above, the onus may fall more on the consumer to ensure they are securing their own data. Regardless of their intention, when user responds to a phishing email, or provides a payment due to a false invoice they have received, they are actively participating in the compromise of their own data or finances. As such it is more important than ever for users to be mindful of where and with who they are sharing their personal details and security credentials, and to also make sure they are engaging in independent research before making a financial or data commitment.

Cloud/Server Services

What does it do?

The state of the art newest technologies in the Server side the rapid improvement with in regards to Virtualisation & utilizing the Cloud. With traditional physical servers & typical server

setups, physical servers require space, power and cooling, requires extensive lifecycle management, some servers may have older operating systems no longer supported or reaching EOL (end of life) which means a big hassle with migrating to a new server and time consuming, enter virtualisation. What can be done with virtualization in regards to servers is that with tools such as Microsoft Hyper-V, Oracle VM Server or VMware Workstation we can have multiple server instances on the same hardware, taking better advantage of resources and reducing the amount of cooling and power needed with less physical hardware, so as physical hardware shrinks, this allows for a more efficient usage of energy saving costs in energy and better for the environment. Now with better refined Virtual Software, instead of paying for costly servers to provision, virtual servers can be deployed thus saving on time, money and physical space as well as minimised downtime, faster deployment of applications and resources and better disaster recovery (you can create “snapshots” of servers where if a virus corrupted a server, you can revert back in time to an earlier version on the spot and continue running).

The state of the art with newest technologies with Cloud services is the introduction of products such as Microsoft Azure and alternatives to Microsoft Office with the introduction of Office 365. The “Cloud” can now be divided up into three different categories with different services offered depending on the type of cloud allowing for many flexible types of Cloud: Public, Private and Hybrid Cloud. Public clouds are owned and operated by a third-party cloud service provider, which delivers hardware, software and other supporting infrastructure such as servers and storage over the Internet with said services managed and accessed using a web browser. A private cloud is where computing resources are used exclusively by a single business or organisation. Typically located physically located on the company’s on-site data centre and mainante on a private network, otherwise companies may pay third-party service providers to host their private cloud. Hybrid clouds combine public and private clouds, bound together by technology that allows data and applications to be shared between them. giving businesses greater flexibility and more deployment options. Many businesses are migrating over to Office 365 as it allows users to access Outlook, Excel , Word and other services on the internet without having to install it onto your computer (that is an option however), with everything stored in the Cloud and most administration managed by Microsoft. Finally, Microsoft Azure is one of the big drivers of the newest developments in Cloud Technology, offering services to businesses such as AI & Machine learning, file storage, virtual servers, SQL databases and more, so now businesses will not only have to physically manage less hardware, but are able to expand their business through the use of tools provided by Cloud services like Azure.

What is likely to be done and developments made possible in the next few years is the way we see typical business network layouts and the way employees would interact with a radically different infrastructure. Through the use of desktop virtualisation ,deploying desktops as a service (Virtual Desktop Infrastructure or VDI) will enable IT organizations to deploy virtualized desktops and applications faster and easily delivered to branch offices, outsourced and offshore employees as well as mobile workers using iPad and Android tablets, we could see business allow the use of BYOD (Bring Your Own Device) where they login through an online portal with a login where all their applications needed are ready to go, it would eliminate the need of relying on physical hardware at a business. To elaborate further, with more and more businesses

storing their server needs in a datacenter or the cloud, such as storing files on Microsoft Azure, we will likely see entire businesses without a physical server located on-site that doesn't need to be managed by an IT company and the company hosting a company's data/server setup in the cloud is responsible for maintenance, support and management with the main factor determining everything being costs.

What is the likely impact?

There's a lot of potential for the current progress in the fields of the Cloud and how they relate to servers. The standard method of having on-site, physical storage with physical backups stored off-site in the event of hardware failure/natural disaster is now seen as an archaic way of backups in contrast to storing your information on the cloud and backing up data there. You can pay for a set amount of storage, no need to worry about hardware failure or lost data (since it's another company's problem and not yours). Greater strides have been made in Virtual Computing, RMIT have myDesktop where it allows students to access free software and save files to the school's network where you can deploy virtual computers in seconds. We may see the day where companies use BYO (Bring Your Own) devices and use services similar to myDesktop for staff to do their work on, saving the need for purchasing and maintaining computers. As listed above, the changes in the Cloud doesn't just affect IT Staff, it affects the day to day of general users and impacts everyone.

With new strides in Cloud Computing & Servers it won't necessarily make jobs redundant but instead create new jobs and make pre-existing jobs easier. For example, why host your Mail server on-site when you can just migrate over to the Cloud on Office 365, saving the need for untimely manual setups of Outlook, or if you're facing licensing problems just use Office 365 to manage who gets Microsoft Office and who doesn't? With more companies going towards the cloud, or using applications such as ESXI or vSphere it means that there are more jobs out there but more things for future IT Systems Administrators to learn. There will always be a need for on-site storage needs and servers, but if your company has the budget (and internet speeds!) they can benefit from the Cloud.

How will this affect you?

The way of the Cloud affects me quite radically from my day to day life in terms of my employment though I very much doubt my family or friends will notice unless they are more intertwined with what the cloud is and what actually uses cloud services. My first job at my former high school five years ago all our e-mail setups were done locally on the Exchange, with storage backuped locally on backup drives and the idea of utilizing the "Cloud" was largely non-existent beyond the odd Dropbox or Google Drive for personal use and my university courses in 2015 had very little focus on clouds & servers being all on-site. Now in 2019 I'm seeing workplaces and university embrace the cloud with services such as Microsoft Azure, Office 365 and off-site storage in the Cloud, with my workplace intending to have all our servers stored in a datacenter in a virtual server with all our storage in the cloud/virtual datacenter server. With all these changes, I have to learn about new technologies and consider that the days of on-site servers & storage may become a thing of the past and if I really want to work with them,

considering working at a company that have data centers on-site. Family and friends more often than not where unless they are intending to directly participate in the management and maintenance of the day to day Cloud usage, are more often than not may find themselves using applications through a web portal more and more instead of the traditional method of installing a program on their computer or require a piece of hardware like a laptop or computer to be given to them by an IT Department.

Blockchain and Cryptocurrencies

What Does it do?

What is blockchain and cryptocurrency technologies? Let's start at the roots of cryptocurrencies to get a better understanding. Bitcoin (BTC), was the first and the leading online currency currently holding a 67.5% market share out of the thousands of cryptocurrencies that are out there. Bitcoin was first founded in 2008 by an anonymous person with the pseudonym Satoshi Nakamoto and later in 2009 the software was made publicly available. Now, how does Bitcoin work? As stated by the creator themselves in the abstract of their white paper, "Bitcoin: A Peer to Peer Electronic Cash System", "A purely peer-to-peer version of electronic cash would allow online payments to be sent directly from one party to another without going through a financial institution." So, in layman terms, you are sending "X" dollars or I should say "X" Bitcoins from person 1 to person 2 over the internet without a middleman. So how does it work? In most cryptocurrencies cases, particularly Bitcoin, it utilises the blockchain technology. What is a blockchain? As defined by mediuim.com "A block in a blockchain is a collection of data. The data is added to the block in blockchain, by connecting it with other blocks in chronological others creating a chain of blocks linked together. The first block in the Blockchain is called Genesis Block". The blockchain is also a distributed ledger, that is open to anyone in the network. In Bitcoin's case the block chain is comprised of 3 different parts (shown in figure 1). The first part of the block is the data, which in Bitcoin's case, it shows the sender, the receiver and the amount of coins. The second part is the hash. The hash identifies a block and all of its contents, making it unique much like a fingerprint. The third part of the block is the hash of the previous block. This makes the blockchain what it is, a chain of blocks which makes the network secure.

In terms of blockchain technology, particularly with Bitcoin, is the huge benefit without having a middleman to process the transaction. It has no transaction fees and allows both the sender and the receiver to remain anonymous. The only fee's that are charged is the mining fee, a reward for a miner completing work to process the transaction. This is known as proof of work (PoW) (also mentioned in Satoshi's whitepaper) which is a part of the blockchain technology. After a transaction is completed, the blockchain records the transaction which is then recorded onto the blockchains public leger. As proof of work is completed, the blockchain network cannot be changed, ensuring the security of the network and unable to be manipulated.

The Future of blockchain Tech:

In the following years, blockchain and cryptocurrencies technologies is going to become more abundant. One area that I think will be a huge focus on, is the use of smart contracts. Smart contracts as define by BlockGeeks.com, “A smart contract is a computer protocol intended to digitally facilitate, verify, or enforce the negotiation or performance of a contract. Smart contracts allow the performance of credible transactions without third parties.”. In layman terms, it essentiality facilities the use of a contract without the use of a middleman such as a lawyer, real estate agent or a bank to fulfil the terms of the contract. A huge benefit of this, much like Bitcoin, is lower costs for both parties of a contract and because it’s ran on the blockchain it has the same security features as any blockchain technology. An example of this of a real-world application could be used on intellectual property rights. If there is a photographer, an artist or even a software engineer, they could use a smart contract. In a photographers case, the photographer could upload a photo with a smart contracts with conditions such as; the nature of how the photo will be used, the price of the photo and if the photographer receives acknowledgements for their work. Once these conditions are met, the photo is released and monies or cryptocurrencies are transacted to the opposite parties.

The likely impact:

The likely impact of blockchain as a whole will probably for the best in the IT world. As stated above, the level of security and the convenience of a decentralised system (i.e. no middleman) would be almost enough to adapt the blockchain technology in every aspect of the IT industry. Already, the banking industry has already started utilising the blockchain technology for both domestic and international transfers. One technology firm named Ripple that offers a similar system to Bitcoin but much faster, has partnered with India’s federal bank for the use of cross-border transactions. The blockchain technology offered by Ripple is an open source system and one of its latest creations from the open source community is RippleNet. RippleNet is the foundation of the cross-border transactions based on the Blockchain technology. Traditionally, cross-border transaction is high cost and can take up to 5 business days to process. RippleNet offers a faster solution taking a maximum of 3 minutes to complete a transaction and costing only a fraction of traditional banking methods.

Machine Learning

Arthur Samuel coined the term Machine Learning as the “*field of study that gives computers the ability to learn without being explicitly programmed*”(Amin, S. 2018). From then to now there have been drastic improvements in what Machine Learning is capable of. Machine Learning is providing huge insights into many industries. It has applications in almost every part of society from healthcare to retail. Being able to find trends in a variety of source materials is allowing many professions to execute strategies and find results that previously would have taken much longer if done by a human. Healthcare, Retail and Autonomous cars were 3 areas I found Machine Learning's impact on to be particularly interesting.

Medical

In this field, the application is downright astonishing. Machine Learning is creating opportunities for everyone to get better healthcare. Google's Deepmind has made some interesting breakthroughs for the medical industry through the use of Machine Learning. In conjunction with Moorfield Eye Hospital, they have developed a method of analysing Eye scans to detect 50 Eye disease conditions with a 94.5% accuracy(DeepMind 2016). A blog post on Deepmind's website on 31/07/2019 also details how after working with the US Department of Veteran Affairs they created an algorithm to detect Acute Kidney Injury. It correctly identified 9 out of 10 people which if implemented at scale in combination with the communication platform streams, could put a huge dent in the UK's yearly NHS expenditure of one billion dollars on this condition(Suleyman, M. and King, D. 2019).

With so many different companies trying to find the next breakthrough it's hard to say which breakthrough will be next. One possibility is the compiling of all medical records to analyse trends around common occurrences before certain diseases emerge. Another interesting paper published in 2019 is how machine learning may help to highlight the early stages of Alzheimer's Disease by monitoring the language a person is using(Kong, W., Jang, H., Carenini, G. and Field, T. 2019).

Retail

In the retail space, Machine Learning has created a more targeted environment by analysing trends across a variety of retail businesses and giving suggestions on ways to improve operational metrics.

Fashion is an ever-changing market and Machine Learning is helping companies get on trends sooner. They are doing this by using Machine learning to create algorithms that analyse social media posts for increased use of certain words. This gives clothing brands an idea that a piece of apparel is increasing in popularity and allows them to tailor their inventory faster (Johnson, T. 2019).

In fashion and other businesses, the ability to input large amounts of data based on previous purchases and comparing to other people who bought similar things, is drastically increasing the effectiveness of marketing and saving money by creating targeted offers. Not to mention being able to, with relative accuracy, predict sales this is also minimising inventory and logistics issues. This is saving the retail sector millions.

Autonomous Cars

Machine Learning for Autonomous vehicles has become crucial to these becoming a regular part of society. Machine Learning allows real-world data and simulation data to create a set of rules for what will happen in an environment. For example, if a person steps off the pavement will the car stop or swerve around them. After the Uber incident where a woman was tragically killed, Autonomous are now tasked with making sure they are equipped to deal with almost anything. Two companies who are at the forefront of this technology are Waymo and Tesla.

Waymo has run 10 million miles in the real world and 10 billion miles in simulation. The reason they have been able to achieve this is machine learning has helped them to allow the project to teach itself about ideal outcomes. They currently operate in Phoenix and are planning to roll out to many more locations shortly (Waymo Team 2019).

Uber has taken the approach of using their five hundred thousand cars on the road to gather their data. This will allow them to utilise real-world probabilities and gain a more real-world algorithm. This potentially could be a massive advantage on Waymo as it would accumulate 5.4 billion miles of data yearly (Eady, T. 2019).

What will the Impact Be?

Medical

We are likely to see more breakthroughs that find trends and create a better understanding of how certain diseases occur. This will result in better care all round for every patient that enters a hospital. We won't see a reduction in doctors just a more efficient health industry, as they can make better decisions faster with the implementation of Machine Learning algorithms put into practice.

Retail

In the retail space, the intended result is people spend more money. When you're able to tailor your services to what's happening in your retail space the ability to make money becomes easier. Analysing trends will only get better and eventually, this will offer suggestions for new products or potentially come up with one that hasn't been thought of. Bottom line is making more money with less risk and better inventory controls.

Autonomous Cars

In the next few years, we will potentially see a bigger presence in the US market, however, it's hard to think it will make a massive impact just yet. There will be a lot of testing from here. Should the testing all go according to plan we will see more cars hit the road and some time in the not too distant future we will likely see a drastic reduction in Taxis and Long Haul trucking. Short-haul trucks will still be required to navigate complex tasks and offload small amounts of stock.

What is the impact to me?

Medical

Going forward having all of my data in one place and being able to see a medical professional who is being double-checked by an algorithm designed by machine learning will greatly improve

the chances of an accurate diagnosis. I'll be able to have my records checked against other people in similar lifestyles and be told about the potential problems I should avoid.

Retail

As I currently work in retail, the better the data we have the easier it is to sell. With targeted marketing becoming so big as a retailer you have to appreciate the impact this has had on the way we do things. From a personal standpoint, I see my recommendations getting better the longer the algorithms run. I'll be offered things I need more closely to when I need them. Systems will figure out when I'm window shopping and when I'm ready to make a purchase, instead of bombarding me all of the time.

Self Driving Cars

Self Driving cars are out of my price range currently. In the next few years, we are yet to see if one will make it to market in Australia. The idea of safer commutes is something I look forward too, however it's a wait and see. I do have a visually impaired friend who can see up close but not far away. The ability for her to own a vehicle and go where she wants when she wants would be a huge advantage for her.

These are just a few examples of what we're able to achieve and the impacts they'll have on our society. We're yet to even scratch the surface of the unbelievable potential Machine Learning will have for society. I look forward to seeing how my life will improve and change from the breakthroughs Machine Learning makes.

Project Idea

Introduction

With how fast today's technology progresses and language evolves it's hard for anyone to keep up, let alone parents trying to understand the activities their children are engaged in. With mental health in children becoming more and more of a prominent issue, quite often we're missing the signs that could not only prevent adverse mental health issues but also teen suicide. With this in mind we want to create an application that monitors the things occurring on a child's computer and detects warning signs and dangerous behaviours.

Body

With children of all ages, mental health complications come from an array of causes. Such causes and problems that children experience; relationship problems (for example family, peers), eating or body-image issues, bullying (including cyberbullying), abuse (physical, emotional or sexual), feeling sad or depressed, worry or anxiety and self-harm or suicide (source; healthdirect). Another abuse that children face is domestic violence, which can alienate them from their classmates and family. When children experience these issues, they are most vulnerable between the ages of 12 and 16 years (source; health direct). With the ages in mind, children really start to engage in the online world well before they are 12. Research conducted by esafety have discovered that 81% of parents with preschoolers say their children use the internet and 94% of the same parents report that their child was using the internet by the age of 4. Further to that, giant online social companies like Facebook or Instagram are aware of this and try to limit their services to children that are 13 years and older.

At this age, social media sites are vital to a child's social and creative life (source; raisingchildren). While these sites can have a great benefit for a child's social life or learning adventures, they also have their drawbacks. One drawback is the unlimited content that they can or already have access to, which can say a lot in their digital footprint. In one instance highlighted by "The Independent" is of a girl named Molly. Molly unfortunately ended her own life at just the age of 14. She was heavily engaged on a social media platform known as Pinterest, and online scrapbook. It was revealed a month after her death that she had a confronting digital footprint. Pinterest sent her email showing her images of self-harm and a quote "I can't tell you how many times I wish I was dead." Here at OpenMinds, we have a project that would monitor the online use of children and develop a digital mental health profile (DMHP) and provide a platform where children could chat to a bot designed specifically for them and relate to them without any fear of judgement. For concerned parents, it can provide peace of mind that their children have another platform to express themselves.

Discussion

The primary function of the application is to cache information and compare it against a database of predetermined warning signs. The secondary function would be a chatbot that activates when certain parameters were met. Machine Learning would be used to help craft algorithms for both parts of the system to fine tune an understanding of the risk factors. The information collected from each computer that has this application installed would be used to further evolve the algorithms or notice changing trends including slang and new websites that become more frequented when a decline in behaviour begins.

This application would be designed with child psychologists involved at the start to help determine and understand common language and behaviour amongst children at risk or engaging in dangerous online behaviour. Using a combination of a Naive Bayes algorithm and a Support Vector Machine, the information obtained from the professionals, browsing history of at risk children and any other reputable source would be filtered to create a set of values that would activate part two of the application.

Should the parameters for intervention be met, the chat bot, that is the second part of this application would be designed to check on the child by asking a series of questions that wouldn't be simple yes or no questions. I.e." What did you do today?" or "Who is your best friend?" These questions would be designed by the child psychologists once again and would aim at having the child open up to them. The chatbot would more than likely run on the Microsoft Azure platform as it seems to be customisable enough to handle such a complex chatbot. Once the child has finished the bot interaction the bot would once again cross reference with a secondary system looking for a trend and from there it would decide the most appropriate course of action.

The courses of action range from making a note to check back with the child about an event, checking in a second time in a few days or where the bot identifies it necessary it may offer to connect the child to external help. Should the app meet a highly stringent set of values it may email the parents with a report that they need to follow up. This application is set up to do a mental health triage and decide the best course of action. It will take a large amount of data to get it's values right, however even if it sheds some light on how the behaviours start, it may go a long way to improving the understanding of when the issues actually begin.

Some potential drawbacks are definitely making a child interact with a bot and feeling like that bot is impartial. There is also a privacy aspect, children are the specific target of this app as they are the ones at risk and also their parents have legal guardianship. The application is unsuitable to be installed on a person over the age of 18s computer as there are some problematic issues around privacy laws. It would have to be voluntarily installed and a user agreement accepted. The user agreement will have to be written to let parents know that this is not a fix for online behaviours but a tool for helping them to monitor their child. We would not be advertising this application as a one stop shop for policing their child. We believe in a level freedom where browsing history won't be released (unless it's for extreme cases) and private conversations will never be recorded by us.

In terms of revenue, we will be taking a non-for-profit approach to this scenario. Here at OpenMinds we want to be engaged and open within all communities and other organisations specialising in mental health. We will be focusing on donations from parents, organisations that believe in our cause and government funding. Another revenue that we would like to expand is to be contracted by the government to conduct seminars at public schools. These seminars will show children, teachers and parents how this project will work and help give everyone a better understanding on their Digital Mental Health Footprint.

Conclusion

This application wouldn't solve all of the current issues facing children and their online behaviour, although we would hope we're able to put a severe dent in it using Machine Learning and some guidance from professionals.

Group reflection

After working together collectively for several weeks, the group gathered to evaluate the outcome and inner mechanisms of the group as a whole during the production of the assignment for ‘Group 23/OpenMinds.’ The aim of the group was to establish a strong framework of which to develop clear planning, effective problem solving, shared productivity and inclusive decision-making within a creative and supportive network. After considering the contributions and participation of each member there was a unanimous consensus that the group experience was a highly successful one, with each member agreeing that it had been a highly positive and beneficial collaboration. It was agreed that this was achieved by each member’s dedication and implementation of the following:

- Good work ethic and strong desire to contribute
- Active participation from every member
- Generous and supportive attitude of each member
- Effective planning
- Clearly defined deadlines
- Appropriate delegation and recognition of each member’s complementary strengths
- Respectful communication
- Creative collaboration

The group as a whole agreed that they communicated and gelled exceptionally well, and appreciated the effectiveness of the group to accommodate to individual requests and schedules, and provision of support when needed all attributed to the shared success of the project. No-one felt that the group experienced any deficiencies and therefore struggled to form any criticisms regarding any particular area of the assignment or individual team-member. Due to the efficiency of which the group worked, the team was collectively surprised at how productive and positive the overall experience had been for every member. Thus, the team had learnt that group work can in fact be a constructive and rewarding experience on a multitude of levels primarily through good communication and collaboration. As a result the team feels that the workload was fairly and evenly distributed, with each member being assigned an appropriate task complementary to their individual strengths, and should be somewhat reflected within the GitHub log of activity.

Individual Team Reflections

Aaron B:

In the few groups I have participated in, OpenMinds has by far been the best. The group performance in participation, contribution, and communication has been astounding. We all met

our designated deadlines and contributed equally. The one thing I liked the most with the OpenMinds team, is the willingness for everyone to help each other. There were a few times where one team member needed help and everyone flooded in with support. There is not a lot to improve on, apart from myself, were I work odd hours and sometimes I cannot attend the online meetings on discord. I think the GitHub trail will show that everyone contributed equally.

Andrew B:

Upon reflecting on the overall conduct of the group, I found that the group worked really well with keeping in regular contact with each other, delegating tasks among each other and constructing deadlines for our individual tasks as well as how everyone was participating fully with no people slacking off. What surprised me the most was that despite the fact the group members were all over the place in terms of geographical locations, different work schedules and time commitments, we were always able to meet up for regular meetings and complete our tasks on time. I don't really have any constructive criticism in regards to improving the group because I honestly have no complaints and having worked in groups for schooling life, this was probably the best group I've worked in so far, everything was well organised, flowed, we all knew what we were doing with our assigned tasks and kept in constant communication through Discord, which in my perspective made everything flow easily despite the various circumstances people were in with their personal strengths, weaknesses and time availability.

Carla J:

Prior to starting this project, I was apprehensive about group work as I've had several group tasks in the past that were not highly productive, leaving me with the bulk of the work and a negative view of group activities. However, this group assignment has far surpassed my expectations and completely changed my outlook on group collaboration. This group communicated and gelled exceptionally well, making it easy to facilitate meetings and delegate tasks. Each member's individual strengths and interests were easily identified and therefore appropriated a complementary task which I believe added to the efficiency and productivity of the group. The most surprising element to me of this experience was how well the group progressed and the ease at which the assignment was completed because of this natural collaboration. There have been multiple things I've learnt from this group setting, particularly how important good communication and clear delegation can be but most importantly I learnt that group work can actually be a highly successful and positive experience if you're fortunate enough to be assigned with effective and talented members. I believe this will be fairly accurately reflected within the groups GitHub activity log, thus will be apparent in the overall quality of our assignment as a whole.

Lachlan S:

Having participated in a few groups in my time across different disciplines, this group is by far the easiest to work with and most diligent group I've been involved in. All group members brought their own strengths and weaknesses with them and there was a general understanding

from all members that we needed to work within these capabilities. All group members put in effort and kept in regular communication, supporting each other when we had any issues and encouraged each other when we were down over anything assignment related. I can not single out any one group member that put in any less effort or pulled any less weight than anyone else, and I think my main learnings were that if communication is established early and is kept regular, all group members maintain transparency and clarity on what they need to do and are able to reach out should they need.

Sean M:

Upon joining OpenMinds I was greeted with an incredibly warm and intelligent group of people ready to get on with the job. I was apprehensive about group work as I'd heard all the stories but surprisingly this group gelled straight away. Through circumstances out of her control, Adrianna joined late in the piece. She was immediately welcomed and the group found a way to utilise her and make her feel included even though we had designated most of the assignment already. At all times ideas and suggestions were treated with respect, appraised fairly and discussed openly and honestly without fear of criticism. I have learnt what a good group can achieve with relative ease if everyone participates.

The Github commit log should show who was responsible for different parts of the assignment, as will Carla's Minutes. Overall though everyone worked to a high standard and when anyone asked for help everyone offered. This was a rewarding experience and provided an excellent understanding of how a group should function.

Adrianna M:

As a team we invested a lot of time and worked hard to make sure that all the details have been discussed, the content and final effect of the GitHub page is exceptionally good. Our team is communicating exceptionally well and we're supportive and offered each other help if there were any doubts. Moreover, Carmen's meeting minutes were clearly presented. All the topic covered during regular Discord group chats and voice meetings were detailed described. We're skilled, dedicated and hard-working group with a positive attitude and there were no things that could be done better to improve our performance. Due to IT problems between OUA and RMIT, my login ability has been disabled for over a week and I wasn't able to participate in the group activity until resolving the issue. I wish to be an active member since the group has been established, allowing to work on assigned tasks with more time. Lachlan has been nominated to be a GitHub administrator and decided the other members will commit to GitHub Repository with completed documents. Github log of activity doesn't necessarily reflects our group's work and represents personal input to the assignment. Delegation of tasks have been carefully discussed, tailored to IT experience and based on personal assessment of each team member's skills and capabilities.

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