Introduction to IT Assignment 2

Group GitHub URL: [https://github.com/a2g8/a2g8.github.io]

Group Website: [https://a2g8.github.io]

Name	Assignment 1 website link
Haidar	https://g3971.github.io
Nasya	https://s3843092.github.io/mahnoor-sohail-profile.github.io/
Nebojsa	https://neb-lab.github.io/Assignment-1/
Derek	https://derekgray91.github.io/MyIntroToIT-A1/
Donny Yang	https://wizardofoztralia.github.io/Intro_to_IT_Assignment1/

Team Profile

Team Name:

Great Ocean Gurus

Personal Information

Haidar Alsalih

Haidar (Student Number 3971035) grew up in Melbourne, Australia and completed high school there. He has no IT experience, and his IT interest lies in AR/VR and A.I. It is his hope that he can grow his experience through this assignment and thus be able to contribute better to Great Ocean Gurus. In his spare time, Haidar likes to go fishing, hiking, reading, and eat good food.

Mahnoor Anasyabila Sohail (Nasya)

Nasya Sohail (Student Number s3843092) was born and raised in Melbourne her whole life, she comes from a Pakistani/Indonesian background. She completed high school and recently changed degrees to IT, prior before studying IT she was studying Landscape Architecture at RMIT. Nasya has some experience in IT as she works in Business Services as an IT Consultant for the University of Melbourne. She hopes she grows her experience in IT thru this degree and excels her knowledge in Information Technology. In her free time she loves watching horror movies and spending time on the golf course. Other than doing those two, she makes a lot of time for her cat Moon as she means the whole world to her!

Nebojsa Radic

Nebojsa Radic (Student Number s3976018). Is an Australian with a Serbian background. He lives in Geelong and grew up there. Nebojsa has mainly worked in construction doing carpentry and concreting. In Last 5 years he has been doing energy ratings which is a requirement for new homes (6 stars). He works 100% remotely and likes to travel and spend time with his wife and family.

Donny Yaang

Donny Yang (Student Number s3974581) is an Australian. He Completed high school in Sydney and is now a CPA qualified. He works as an accountant for a US company based in Australia. He prides himself in being an accountant and seeks to increase his effectiveness by studying IT. He hopes that one day he could use the IT skills to increase his salary and for better career opportunities either by combining IT and accounting skills, or start a new career altogether. On weekends he enjoys socialising with new friends. He has used Microsoft Excel to automate daily accounting tasks and also used SQL early in his career.

Derek Gray

Derek Gray (Student Number s3813417). I am Australian with an Italian background. I'm currently living in Leichhardt, Sydney. I spent 10 years working in the Royal Australian Navy and for the last 2 years have been contracting with the defence on deployable IT and communication solutions. This has been my first major exposure to IT, and I have found it to be extremely interesting and engaging. My hobbies include painting and playing Warhammer with my friends, travelling with my wife and eating food at great restaurants around Sydney and on my travels.

Team Profile

Name	MBTI	Learning Style	Other test
Donny	ISTJ-A	Visual	**Big-Five** Neuroticism: 80% Extraversion: 56% Openness to Experience: 69% Agreeableness: 77% Conscientiousness: 94%
Mahnoor (Nasya)	ESFP-T	Visual/Aural	**Big Five** Openness: 73% Conscientiousness: 22% Extraversion: 49% Agreeableness: 69% Neuroticism: 88%
Nebojsa	INTJ-A	Auditory/Visual	**Big Five** Openness: 96% Conscientiousness: 58% Extraversion: 46% Agreeableness: 71% Neuroticism: 10%
Derek	ISFP-A	Tactile/Auditory	**Big Five** Openness: 58% Conscientiousness: 56% Extraversion: 38% Agreeableness: 56% Neuroticism: 38%
Haidar	INFJ-A	Visual	**IPIP Big-Five** Extroversion: 25% Emotional Stability: 89% Agreeableness: 62% Conscientiousness: 92% Intellect/Imagination: 52%

Knowing about each other's personality types, learning style and - and as we all did the big five - other personality traits helps us know where our strengths and weaknesses lie for each person and as a group. This information helps us know to whom to assign certain tasks, and know which tasks to put more attention to as a group.

Here are some examples of how we will use this information:

- Donny Yaang and Nebojsa Radic work well with well-defined responsibilities and tasks, whereas Derek Gray prefers a more ‘big idea’ or open-ended task for him to explore and satisfy the task requirements. After knowing this, tasks that are more open-ended will be assigned to Derek Gray, and more defined tasks will be given to Donny Yaang and Nebojsa Radic to complete.
- Haidar Alsalih, Donny Yaang, and Mahnoor Sohail are all primarily visual learners. This makes it more efficient to assign tasks which involve more visual elements to them. On the other hand Nebojsa Radic, and Derek Gray are all primarily auditory learners. This makes it more efficient to assign tasks involving auditory elements (such as taking notes in the IT Work interview) to them.
- As a team, no one especially excels in leadership, meaning we need to watch out for problems involving lack of leadership. Being aware is the first step, but proactive steps such as ensuring we all know what we’re doing, and that there’s always a leadership presence in meetings (i.e. someone chairing the meetings).
- As a team, we excel in making sure the work assigned gets done. We can use this strength to push forward and finish the assignment sooner than later. This would give us more time later to proofread and look for mistakes that may have resulted from our weaknesses.

All in all, the information on our personalities and learning styles helps to assign tasks to the right person. It also helps us know our strengths and weaknesses as a team, which allows us to know the weak links in the chain of our team traits, and thus know where to watch out for problems and also where to focus our time and work.

Ideal Jobs

Haidar's choice of a VR/XR Developer closely matches in some instances with Derek's desire to be a Game Design Director. The link here is that XR/VR is currently very popular in the gaming sector. However, this is the only cross over in general for Derek's desired profession. Nebojsa and Donny are all interested in Software Engineering/Software Design.

Donny is interested in the salary of DevOps or other career paths that have a high-income range. He is exploring career paths to combine IT skill and accounting. However, he is open to roles that have high income. In this assignment, Donny chose DevOps as an ideal career. The role focuses on successful software development and implementation. Devops engineers need to be able to use scripting codes, writing codes for infrastructure, understand cloud technologies, be able to communicate professionally with other teams, and have knowledge of continuous integration and delivery.

Nasya wants to be a Cyber Security Analyst and depending on how your current project is formatting, means that you can lean heavily into both DevOps and Software Engineering to provide inbuilt Cyber Security options from the beginning of a programs life or provides options to overhaul currently implemented systems and programs to provide a greater security. Depending on the role, and current experience of each person, these roles could be achieved in as little as 3 to 6 months, up to and potentially in excess of 4 to 5 years. The information that can be found online for DevOps indicates that you're able to pick up the skills required in about 6 months. This however doesn't take into account any time taken to conduct a Bachelor degree in relevant areas. Cyber Security Analyst, and Software Engineers have a reasonably similar path, both of which highly recommend completing a Bachelor in either Computer Science, or Software Engineering, both then appear to need some time in more junior roles, such as a Software Developer. Game Design Directors and VR/XR Developers both have a somewhat shorter entry requirement.

While looking at the skills required for these roles, there are a few standouts that appear multiple times. Things such as experience in Unity or Unreal Engine, great communication skills and experience in one or more programming languages appear multiple times. Good communication skills are never a bad thing to have, and the ability to manage projects also appears to be a desired skill.

In conclusion, it would appear that many in our group are hoping to end up in similar areas of IT, with a heavy emphasis towards software engineering. The two outliers of VR/XR Developer and Game Design Director still hold many of the same principles of software engineering.

No.	Name	Ideal Job Title	Job Description
1	Haidar	VR/XR Developer	Develop VR/XR Solutions
2	Nasya	Cyber Security Analyst	Cybersecurity analysts protect computer networks from cyberattacks and unauthorised access.
4	Nebojsa	Java Software Engineer	Work on greenfield projects experimenting with new practices and technologies.
5	Derek	Game Design Director	Leading teams of game designers from conceptualisation to completion.
6	Donny	DevOps	Responsible for successful software development and implementation function

Reminder: More info for ideal jobs can be found in each other's websites under that section.

Tools

Link to our group's website - Assignment 2 (https://a2g8.github.io)

Link to our group's Git repository - https://github.com/a2g8/a2g8.github.io

Comment Audit Trail

When we started this process, we misunderstood the assignment requirements for the document history, so instead of running a single word document under our GitHub repository, we controlled our work document via Google Docs. The link for this is below and Google Docs does have quite a comprehensive version history to allow review. Unfortunately the version history does not show who made individual changes, but the entire group had their own individual contributions over the whole task, which can be seen in our MS Teams chat history and meeting recordings.

Link to Google Doc:
https://docs.google.com/document/d/15zaDzmq47RvIhJCWES6El4AKnVrtv8a8bDB7DSu7vwM/edit?usp=sharing

For this assignment we formed a group of 6 on canvas. Then after Vincent left, we became a group of 5. We met every Tuesday and Saturday and discussed the assignment and split up the work for everyone to do.

For our GitHub repository and more specifically our website we had a plan to ensure everyone had a chance to complete portions of the HTML code. Nasya was chosen to complete the CSS/styling portion of our website after a review of our individual websites concluded that hers was the best. The other 4 members of the group split out portions of the assignment to input into the HTML files to ensure everyone was committing changes and also conducting editing runs on the files to ensure grammar and punctuation were correct. We believe that everyone participated and contributed their fair share of the input and upload process for our website.

Industry Data

Haidar's ideal job title is VR/XR Developer. Not much could be found specifically for VR/XR, however many similar titles such as Software Engineer were found to be especially high ranking. Software Engineer is number 11 in the top I.T. jobs in Burning Glass Technologies.

Nasya's ideal job title of Cyber Security Analyst was in the middle of the pack in the Burning Glass Top occupations, and seems to be doing well with 2,914 job postings.

Nebojsa's ideal job is Java Software Engineer. I could not find Java Software Engineer exactly in the top I.T jobs in Burning Glass Technologies but similar ones include:

- Java Developer – No. 7
- Senior Java Developer – No. 13

Donny's ideal job is DevOps. A google search showed that DevOps is a software engineer which would make it number 11 in the top I.T job titles in burning glass technologies.

Derek's ideal job is Game Design Director. I could not find this job title in the top I.T jobs in Burning Glass but a graphic designer is Number 2 in the top I.T job titles in Burning Glass Technologies

According Burning Glass Technologies the skills in greatest demand (baseline skills) are:

No. 1 – Communication skills

No. 2 – Problem Solving

No. 3 – Organisational Skills

No. 4 – Writing

No. 5 – Teamwork/Collaboration

According to Burning Glass Technologies the skills in greatest demand (specialised skills) are:

No. 1- SQL

No. 2 – JavaScript

No. 3 – JAVA

No. 4 – Microsoft Windows

No. 5 – Project Management

After looking at the Burning Glass and other data, our group's opinions of our ideal jobs remains the same. All our jobs or variations could be found to be doing well in the data, and helped us reinforce that our choices have a good variety of skills involved and good potential for future job security and availability.

IT Work

IT Professional: Charles

Job Title: Professional Services Manager

Company Background

The company that Charles works for is a company that provides end-to-end implementation of point of sale systems for supermarkets, as well as providing continuing support after implementation to ensure fixes are implemented for issues that may arise. The segments of the sales system includes scanning of items, barcode generation, inventory management, receipt printing, EFTPOS terminal, which is not an exhaustive list. The company also performs tests to ensure the system is operating successfully prior to implementation.

Customer base: **large and small supermarket**

Job Description

Charles started IT career in 2003 working in banking. Over the years, he has had various roles from IT support, operation, data analysis, as well as a leadership role of a team who performs accounts payable. He joined his current company as an ERP consultant, and has been recently promoted as a professional services manager.

ERP consultant job description: Customers raise tickets of issues they face in which an ERP consultant then trouble shoots the problem. The issues are very much ad-hoc and vary which includes self-check out, point of sale terminal issue, virtual machine in cloud, and so on. Issues are also prioritised into levels and as Charles mentioned, he manages level 2 and 3 IT issues. He also needs to log the time that he spends on the issue in the ticket. As part of his work, Charles also provides implementation and setting up end-to-end point of sale for a new supermarket.

Professional services manager description: Charles engages and deals with clients to understand clients needs and issues (addressing questions such as why this issue arises, what resources need to be allocated to address the issue, how fast to fix the issue i.e., how long it takes to create and launch the patch (or codes) to fix the issue), manages internal teams (such as development team, testing team), assigns internal resources/team to be allocated to address client issues. Charles is also responsible for system upgrades and rolling them out to the clients. He is to ensure that the operations of the clients are not impacted, and should issues arise impacting on operational of sales he needs to ensure these are addressed fast and ensure minimum downtime as it affects sales and revenues of clients.

Tools Used Within The Company

Autotask version 6 for ticketing system which allows invoicing and billing clients. A project can be generated, tasks to keep track of project and deliverables.

JIRA is used by development teams to address bugs, implementing code changes, fixes and patches. JIRA is also linked to an auto task ticketing system which allows transparency in terms of the progress of the fix and what is being done to provide the fix.

The work deals with data that comes with different forms including Microsoft Excel, notepad, csv file. Knowing the basics of excel comes useful including conditional formatting, filtering and chart.

Other tools used include: database, SQL Server, batch files, command line scripts, phyton, in-house software with 20 years development behind it, confluence for documentation.

Interaction With Other People

Charles interacts with clients in two ways. The first to implement an end-to-end point of sale system. This includes speaking with clients to understand clients' requirements for hardware and software. The second is maintaining relationships with clients to ensure smooth operations of the sales system. This includes ensuring that when clients raise issues, that they are addressed quickly especially when it impacts the operation. Charles also communicates with internal teams to ensure appropriate teams with the right skill to resolve the issues are allocated to the tickets raised, and appropriate feedback and communication are provided back to the clients in terms of how and the timeline of when issues will be fixed. Good and clear communication with both external and internal teams are crucial in the role of professional services manager.

Skills Required for IT Graduates

The question asked was, what the top three skills for ERP consultants are. However Charles did not provide the top skill required to be an ERP consultant. He emphasised that our career interest in the future may not specifically be an ERP consultant, but that we would most likely be interested in other areas. As each IT area requires different set of technical skills, he recommends that we equip ourselves to have under our belt the following technical skills:

• Database.

Learn SQL server

Charles mentioned that we could learn Oracle and SQL server but emphasised that in general SQL server is preferred. This is because most organisations use Microsoft and SQL server. Oracle on the other hand is mostly used for much larger and bigger organisations. Having said this, Oracle is also used by smaller organisations.

• Programming language

Learn both object oriented programming and functional programming.

By knowing how to program with these two, we would be able to easily learn other programming languages. Even though each programming language has different syntax, the fundamental programming logic is similar.

To start learning programming Charles suggested that we start with HTML, CSS, Javascript to give the web application know how.

Phyton is the best programming language to learn. Python is widely used and will enable us to program anything. This is because Python has a wide range of libraries that includes building web apps, artificial intelligence, data analytics amongst other things. PHP allows you to build web apps. C Sharp and Dot Net.

Are Soft Skills as Important as Hard Skills?

Charles advises that soft skills are as important as technical skills and that you cannot undermine the power of soft skills. Even though the jobs of programmer such as in DevOps that spends a lot of time coding, the programmer has to be able to convey the program that he/she has written, what has gone right or wrong, fixes that the programmer has applied to fix the issue - all of which require extremely good communication skills and being able to interact with others well.

When Charles recruits, he always looks for those with good strong soft skills.

In terms of technical skills, Charles prefers a candidate who has completed a project on the side and can showcase that the person is not only interested in working only from 9 am to 5 pm, but someone who will take pride in his/her professional development and wanting to excel at his/her work.

Work Life Balances

Work and life balance will depend on the company that we would be working for. In his company, Charles works 9:30 am to 6:00 pm with 1 hour break. There is a trend of hybrid work where people work from home, continuing the work from home habit since covid restrictions forced people to work from home. Charles personally would work Monday and Friday from home. His preference is to work in the office as he feels that he is more productive in the office.

He keeps his work life balanced by exploring the outdoors and seeing greenery.

How to Keep Up with Professional Development

The question you need to ask in IT is “How do you make things better than they are at the moment.” Questions such as “how can we automate tasks, how can we make things more efficient, etc.” Professional development depends on the fields of IT. However it is crucial that we spend time outside work to develop our professional development as IT is an ever evolving area which means the professional need to keep updating their knowledge. As an example: if JIRA is one of the tools that we use, Charles recommends that we learn a part of JIRA every day so that we would know JIRA inside out. Even though we may not know everything in detail, we would at least know what JIRA can do and which area we may need to upskill in the future to meet business needs.

As a second example: if we were learning databases, we may want to study a segment of the database in more detail such as back-up and recovery. Or we may want to study on how to improve processes such as database performance tuning. For example: if it takes 5 minutes to run a query, we could find out how we could improve the performance so that it runs the query within a few

seconds. These attitude to keep improving ourselves will go a long way as we each will go and work in our selected fields in the future.

Challenges at work

On the second interview with Charles, we were able to pinpoint the challenges he faced at his work. Charles informed that the main challenge at work comes from ever-increasing customer demand. Customer demand is not static but ever changing and evolving. The demand comes from firstly resolving issues that affect operations, and secondly from providing solutions to meet customers ever changing operational requirements.

The first source of challenge comes from resolving issues affecting operation. These issues are resolved within the guideline provided by the Service Level Agreement (SLA). The SLA is client-tailored and client-specific. For example: issues that impact production or point of sale need to be looked at within 1 hour by the technical team and has to have a turn around of resolving the issues within a few hours to 24 hours. The reasons for downtime come from many different aspects but for confidentiality reasons they are not disclosed.

The second challenge at work comes from the need to tailor the system to meet ever changing operational requirements. Customers require the system to be adaptable and flexible in terms of being able to provide promotion, discounts, Christmas program, loyal program and so on. All of these require creation of projects that involve technical team to perform work to be completed in the system, as well as timeline for rolling out the project. The pressure is on when the deadline is tight as delivery becomes critical. The team always need to balance customers needs, as well as creating plausible delivery.

Note: We have designed a list of questions as a guide for the interview. However, mindful of the time going above 30 minutes, we were not able to ask some of the questions nor dig further on the information that Charles provided. However, we were able to engage Charles to provide what we thought were in-depth answers about his company and his work. In addition we thought that Charles was extremely helpful and supportive in providing tips in guiding us on how we should keep upgrading our professional IT knowledge and on what technical skills to develop along the way. There were golds and jewels to be learned from the interview and we sincerely thank Charles for his support in the interview.

IT Interview Questions

1. What is your job title? How long have you been in the role? What made you interested to study in IT in the first place?

2. What made you interested in specialising in the role that you do?

3. What are the potential demands for this role?

4. Can you tell us, give us a job description of the tasks that you do? And possibly explain what each task is in layman terms?

5. What studies and practical skills are required for someone to be able to apply and work?

6. How do you think your education helped you prepare for this job?

7. What are the working hours like? What would be the 3 largest % of time that you spend on work?

8. In terms of interacting with other people, can you tell us what group of people you interact with on a daily basis whether this be investors, clients, colleagues, and so on?

9. Is working and life balance important in the IT industry? How does the company ensure you have a work life balance? How do you ensure you have a work life balance yourself?

10. Can you give the 3 most top challenges in this role? And can you give specific examples?

11. What are hard skills or technical skills required for this role?

12. What are the soft skills required for this role?

13. What tools (SQL, etc.) required for this role? Can you explain what they are?

If someone is interested in the role, how can they start learning these tools?

14. Tell me about the project you are most proud of, and what your contribution was?

15. What did you do to ensure quality in your deliverables?

16. How would you rate the importance of the soft skill versus the hard skills? Which is more important? Let's say if you are looking for a new graduate, would you look for someone that has some of the soft skills but can be groomed, or would you look for someone with the technical skills but lacking in the soft skills? Or are both equally important?

17. If you face challenges, how do you solve them? Are there resources you can use? Someone to ask? Can you ask your manager, colleagues, read a book, community forum, etc?

18. Do you need to update yourself regularly for IT knowledge? How do you keep abreast of the latest developments in your field?

19. If you can list other roles that we could potentially explore, what would they be and why?

20. Can you give us some tips on what we need to do as students so that we could succeed in getting a good paying job in the future?

IT Technologies

Cloud Technology

Section 1

Definition of Cloud Technology

Cloud computing means users can access the applications, software, database, networking, analytics, and artificial intelligence via the internet which leverages on cloud technology**.** (Cloudflare, no date)

State of the Art of Cloud

The applications and services offered by cloud, add value hugely to the person or organisation using it. (IBM Cloud Education, 2021)

They include:

· Software as a Service (SaaS)

Users can access the applications or software hosted by the cloud-provider-server via the internet.

· Platform as a Services (PaaS) provides infrastructure, operating system, development tools required to develop applications.

PaaS allows customers to focus on the core functions of building an app such as build, test, deploy run, update and scale applications without having to build their own platform.

· Infrastructure as a Services (IaaS) provides IT infrastructure including providing users access to servers, storage and networking or access to the back-end of IT infrastructure.

Technology that Makes Cloud Technology Possible

Virtualisation is possible because of hypervisor technology. Hypervisor technology is the backbone of virtualisation. Hypervisor technology allows the creation of multiple virtual machines on top of the virtualisation layer. A virtual machine is operating independent of the physical server, and other virtual machines. As such if the virtual machine is corrupt, infected with a virus, or hacked, it will not have any effect on the host or other virtual machines. Thus allows for the physical data centre resources to be provisioned amongst the many users.

Benefits of Cloud Computing

In the past, servers were used and maintained on-the-premise. A company has to invest in both physical space, hardware, network and people to create and maintain their own servers which are expensive and time consuming to build. Cloud computing reduces these costs and can be provisioned (increased or decreased) quickly.

In general on-premise servers are often idle as such is a waste. Cloud computing reduces this cost drastically.

With the advancement of cloud computing, third-party providers build and manage their own servers and then charge fees in providing cloud services (SaaS, PaaS and IaaS). This enables companies to focus on the main core functions of their business and innovate faster. The I.T infrastructure requirements can be provisioned (increased or decreased) very quickly and paid on a needs basis (pay as you go). There is no up-front cost and no ongoing commitment.

Data Centre

Cloud technology requires state-of-art data centres. Google Data Centre is one of them.

Google's data centre is a building with powerful computers used to run its services. It allows data to be stored, managed, and disseminated. Its data centre has customised infrastructure such as power stations, cooling systems, physical security and a support team that works 24/7 to resolve any issues. One building can house 75,000 machines which can provide a bandwidth of one petabit per second (which is more than the entire internet) to allow high performance and low latency. The private network is growing at a faster rate than the internet-facing network as to allow connectivity between data centres which allows efficient access to resources at its different location. (Google Cloud Tech, 2016; Google Workspace, 2014)

Future cloud technology will revolutionise the usage of the following technologies:

• **Artificial Intelligence and Machine Learning**

AI and ML require large investments in infrastructure and expert programmers. Cloud technology makes the technology cost effective and economically viable. (Madhugiri, D., 2022)

• **Serverless Cloud**

The term "serverless" which still uses servers refers to when the cloud dynamically allocates resources and charges only for computing and storage needed to execute the piece of code. The team that writes and deploys the code does not have to manage nor provision the servers as this is taken care entirely by the provider. By combining the execution of codes to a larger processing pipeline such as an application that is running on conventional servers, cost is reduced. The technology that makes this possible is containers with Kubernetes being the popular choice for a platform to manage serverless infrastructure. (Fruhlinger, J., 2019)

• **Cloud Virtual and Augmented reality**

Virtual reality is defined as a replacement of a real-life environment with a simulated one whereas **augmented reality** is defined as adding digital elements to real life. (Splunk, no date)

Both VR and AR require costly resources such as powerful graphic hardware and compute resources.

Installing the required resources in the servers & using cloud technology via the internet, users can now use VR and AR at a fraction of the cost where they were required to purchase these resources themselves. This made the technology economically viable.

Latency is an issue and the technology requires 5G technology for stable streaming. (Tech Target, no date)

• **Internet of Things**

IDC survey predicted that there will be 80 billion connected devices by 2025. IoT will become interconnected to cloud technology.

Impacts

AI and ML

Machine learning algorithms are now made available on clouds. They are available from computing platforms such as AWS, Microsoft Azure, Google Cloud or IBM Cloud will be important.

Serverless Cloud

The real benefit that comes from using serverless clouds is the cost savings. Instead of having the application sitting on a server which would be idle most of the time, the serverless cloud that executes codes are event-triggered that can be combined within a larger app that sits on a server. This will reduce overheads and costs. Therefore, future jobs will require professionals to understand serverless cloud, its benefits and disadvantages, and being able to integrate serverless cloud as part of a wider application or pipeline.

Internet of Things

Future IT professionals will need to understand how to implement cloud technology with the internet of things so as to ensure high performance and low latency associated with processing information in distant servers instead of locally.

VR and AR

VR and AR can be used for gaming, providing 3D representations on how furniture would look like in a given space, providing a “how-to-repair-guideline” to technicians, architectural virtual

home design, providing fire fighters with training simulations. As such there is a widespread use of the technology. Professionals that want to specialise in this technology will need to understand both VR, AR and cloud technology as a whole.

Overall new technology will reduce and make older traditional jobs redundant and create new jobs that are creating value in the marketplace. Traditional jobs that involve maintaining on-premise servers will diminish. Jobs that can utilise the latest cloud technology will increase and grow in demand.

How Technology Will Affect You?

Most of us are already cloud technology users without realising it. Like anything else, cloud technology and its applications are tools which can bring positive or negative outcomes.

We use social media to connect with friends such as Telegram, Whatsapp, Instagram, facebook and many more. It can bring a positive outcome where I am more than ever connected to family overseas. However, it can also bring negative outcomes such as social disengagement. For example: A student has seen two people sitting at a table inside a café or restaurant. Instead of having a meaningful conversation they were both texting, glued to their mobile phones, and were in their own world.

Studying a Bachelor of IT at RMIT via Open Uni that is conducted online makes learning possible especially for those who cannot attend a classroom because of work or family commitments. This will undoubtedly enhance both knowledge and productivity of the student in the future.

Cloud technologies can also be leveraged with mobile apps to make payments or if someone is running a business they can collect payments from customers using a mobile phone and a card reader.

As new technologies are created, the older generation may not keep up to date and fall behind. They may find technology difficult and this can create a sense of frustration. For example: An elderly man who had difficulty understanding the internet, but with vigorous determination, the person was able to now use the internet for browsing and various things and he now loves viewing videos on Tik Tok. It is just like anything else that with a determined effort, a barrier to an obstacle such as using and understanding technology can be overcome.

References:

1. Cloudflare (no date) *What is the cloud? | cloud definition | cloudflare*, *What is the cloud? | Cloud definition*. Cloudflare. Available at: https://www.cloudflare.com/learning/cloud/what-is-the-cloud/ (Accessed: 8 October 2022).

2. By: IBM Cloud Education, I.B.M. (2021) *Iaas-paas-saas*, *IBM*. Available at: https://www.ibm.com/cloud/learn/iaas-paas-saas#toc-paas-zUewploH (Accessed: 8 October 2022).

3. Google Cloud Tech (2016) *Google Data Center 360° tour*, *YouTube*. Available at: https://youtu.be/zDAYZU4A3w0 (Accessed: 8 October 2022).

4. Google Workspace (2014) *Inside a google data center*, *YouTube*. Available at: https://youtu.be/XZmGGAbHqa0 (Accessed: 8 October 2022).

5. Madhugiri, D. (2022) *Introduction to cloud computing for Machine Learning Beginners*, *Analytics Vidhya*. Available at: https://www.analyticsvidhya.com/blog/2022/01/introduction-to-cloud-computing-for-machine-learning-beginners/ (Accessed: 8 October 2022).

6. Fruhlinger, J. (2019) What is serverless? Serverless Computing explained, InfoWorld. InfoWorld. Available at: https://www.infoworld.com/article/3406501/what-is-serverless-serverless-computing-explained.html l (Accessed: 8 October 2022).

7. Splunk (no date) *Augmented reality (AR) vs virtual reality (VR)*, *Splunk*. Available at: https://www.splunk.com/en_us/data-insider/what-are-augmented-reality-and-virtual-reality.html (Accessed: 8 October 2022).

8. Tech Target. (no date) *What is virtual reality cloud (VR cloud)? - definition from whatis.com*, *WhatIs.com*. TechTarget. Available at: https://www.techtarget.com/whatis/definition/virtual-reality-cloud#:~:text=Virtual%20reality%20cloud%20is,end%20user's%20virtual%20reality%20headset (Accessed: 8 October 2022).

Cyber Security

The term "Cyber Security" refers to a group of techniques, tools, and procedures that work together to defend computer systems, networks, and data from hacker assaults and illegal access. Protecting all organisational assets against external and internal threats as well as interruptions brought on by natural catastrophes is the primary goal of Cyber Security.

The “State of the Art” in Cyber Security basically means the latest and most powerful software we have for services to protect companies from cyber harms and threats. It assists in avoiding financial loss, defends against ransomware, other forms of malware and virus threats. It prevents data from being stolen, hacked or otherwise compromised. Cyber Security avoids hardware damage that can reduce productivity.

There are many different streams in Cyber Security and here is the list of them:

- Critical Infrastructure Security
- Application Security
- Network Security
- Cloud Security
- Internet of Things (IoT) Security

In order to keep the systems strong, organisations must use more than three of the Cyber Security streams up above to protect the organisation itself.

The "State of the Art" in IT security offers specific guidance and suggestions for taking action. With the help of these recommendations, businesses and providers will do better to determine what is "state of the art" in terms of IT security regulations.

The “Art of Cyber Security” is that it’s just going to get better day by day. There is always space to fill something out, and in the world of Cyber Security it can be advanced and improved. Here are some things on what to do now in Cyber Security:

- Enforcing Password Rules - Rules like creating your password with more than ten words including special characters (!,?,$,&,@), using a mix of capital letters, fusing numbers and finally making a rule where you cannot use your last 10 previous passwords as your password.

- Using VPN - Your online data transmission is concealed by a VPN connection, which also shields it from snoopers. Anyone with network access and the desire to examine it can access unencrypted data. Hackers and online criminals are unable to decode this data when using a VPN.

- Update System Regularly - Updates can enhance compatibility and programme functionality while preventing security flaws. Software updates are necessary to maintain the functionality of computers, mobile devices, and tablets. They also may reduce security vulnerabilities. Identity theft, hacking, and data breaches have all made the news recently.

Cloud encryption is a fantastic cybersecurity tool for protecting data, according to experts. Cloud encryption can stop unauthorised users from accessing data that is useful. Additionally, cloud encryption can increase consumer confidence in cloud services and make it simpler for businesses to adhere to legal requirements.

In the field of cyber security it is very hard to predict what is going to happen in the next couple years. It will be depending on the type of threats we receive in the IT world. In the coming years we will see very similar cyber attacks that we have seen in the past. As study's show, the Cyber Security field is unlikely to slow down within the next couple years as it's still in demand.

Impacts

With the technology evolution and the digital revolution around people, all businesses, corporations, organisations and governments are relying on computerised systems to manage their day-to-day activities through the internet. Cyber security impacts us globally through cyber-attacks and threats because we share important information online and through its impact, private and important information and data might easily get leaked.

In this situation, the impacts vary. People would suffer personal and financial information losses due to cyber-attacks through emails and texts or websites. As for the governments, the important and classified information would be exposed and cause catastrophic consequences. As for businesses, there are four common impacts that should be considered when suffering from a data breach.

Financial losses-

- Loss of money: small businesses can go bankrupt by paying a ransom against a cyber-attack; for large corporations, the ransom may run into the millions. Extra and extended costs are needed in terms of operational disruption.
- Leaking of corporate information.
- Leaking financial information may include information related to your bank and payment card.
- Operation and trading can go disrupted.
- The loss in business or losing contracts

Theft- While cyber attackers may threaten large corporations for a good ransom, smaller businesses are typically less sophisticated and easier to penetrate. Although attackers can make money from cyber fraud, stolen data can be worth more especially when sold on the Dark Web.

Reputational damage-

- Loss of trust from customers
- Loss of sales
- Reduction in profits

Fines- If the data is accidentally or deliberately compromised and breached and if it is against data protection and privacy laws, and you may face fines and regulatory sanctions because you have failed to use the security measures.

Cyber threats never stop. There are millions being created every year and continue to grow and evolve more complicated which poses a growing number of trends and potential threats that should be monitored, regardless of individual or size or industry of businesses.

- Remote working cybersecurity Risks
- The Internet of Things (IoT) Risks
- The rise of Ransomware
- Increase in Cloud Services and Cloud Security threats
- Social Engineering Attacks
- Multi-Factor Authentication risks
- Rise of Automotive Hacking
- Potential of Artificial Intelligence (AI)
- Mobile devices risks
- Data Breaches
- Human Error

Cyber security is a fast-moving sector, and especially during the Covid-19 pandemic, it has accelerated the digitalisation of many organisations, coped with remote working and created more and more potential risks in terms of cyber threats. Along with the development of technology and the increasing importance of cyber security to an organisation's critical infrastructure, the demand for talent in this is at an all-time high and likely to remain unfilled.

How will this affect you?

In today's digital age we are constantly dependent on the internet and technology by using various electronic devices and the internet to share and exchange information in our daily lives. It has made our life easier than before. However, it also leaves us vulnerable to risk because all our data relating to security, health, personal, and financial information can be stored online which is a necessary component of our life. Therefore, cyber security is a top priority and affects our daily/working lives greatly.

The threats of cyber-attacks or cyber crimes affect our lives day by day. Here are some cybercrimes:

1. Email and internet Fraud
2. Identity Fraud (where personal information is stolen and used)
3. Theft of financial or card payment data
4. Theft and sale of corporate information
5. Cyber extraction (demanding money to prevent threatening attacks)
6. Ransomware Attack (a kind of cyber extraction)
7. Hacking a computer or device
8. Data loss by entering the system illegally
9. Data theft
10. Various other malicious attacks and network hacking etc.

People who are attacked or fall into a trap by malicious hackers then not only do you suffer financial loss but their personal important and sensitive information will be breached and exposed online or sold to others. Furthermore, people's lives would be endangered.

Personal information and data breaches are the most annoying to our daily lives. You often get anonymous calls and text messages from familiar corporations day by day that you think are reliable and then you actually fall for it and it is already too late before you even realise it.

Moreover, your friends' and family's personal contact information would be at risk of being exposed if your personal information is breached. Aside from this, the mental issues such as stress and anxiety and fear would increase greatly.

Machine Learning

What is it?

"Machine Learning is a branch of Artificial Intelligence (AI) and computer science which focuses on the use of data and algorithms to imitate the way that humans learn, gradually improving its accuracy." (What is Machine Learning?, 2022). The term 'machine learning' has its roots in a game of checkers in 1962 between Robert Nealey and a computer, in which the computer won.

Machine learning uses algorithms to predict data, which is then used to make decisions for IT based applications. A subgenre of machine learning is *deep learning*. Deep learning removes

human input and extrapolation out of the process of its learning, which allows it to be utilised on extremely large data sets.

The current state of the art when it comes to machine learning is *Deep Neural Networks*. These neural networks are algorithms based on the human brain and its ability to recognise patterns. These neural networks are able to recognise patterns of real word data, such as images, sound, and text which are converted into numerical patterns contained in vectors. (Nicholson, 2022)

Current examples of deep neural networks include a face recognition system to identify criminals in real-time using live cameras. Another example is an algorithm which allows AI-enhanced cars to recognise signs, other cars, humans and inanimate objects (such as traffic lights, walls, etc.) in its surroundings. (Kyrykovych, 2022) Furthermore, deep neural networks are used to assist virtual assistants like Siri and Alexa, where they are used to tailor the algorithms for determining what ads Facebook shows you. (Moolayil, 2019) These algorithms take the input from everything we interact with on a daily basis, whether it be from what we search online, the videos we watch and the ads we click on. This data is taken in and the deep learning algorithm decides the best things to show us.

At this stage, the next generation of machine learning leans towards *tensors*. Tensors are described as multi-dimensional arrays, which allows data to be represented with variable dimensions as needed. This then requires specialised programs in order to read, interpret and extrapolate the data contained within these tensors. (How Is Machine Learning Evolving In 2021?, 2021)

Deep learning researchers are turning their eyes towards *hyper automation*, that is speeding up and simplifying processes with little to no human input. Additionally, with the popularity of smart devices everywhere, such as smart watches, home assistants like google home, and augmented reality, it looks like these devices will be the next opportunity for automation. Things like automatically turning your air-conditioning on because your google home indicates that the temperatures are rising, or waking you up depending on what stage of the sleep cycle you are in, are all included in this next opportunity.

Easy and cheap access to computer power to enable many researchers worldwide to access adequate computing power was achieved in the 2000’s along with the democratisation of distributed computing. This gives researchers the ability to conduct experiments on large or complex datasets by having cheap and easy access to hundreds of computers. (Lawton, 2020)

Deep learning on this level has been made possible by the explosion and expansion of cheap but powerful computing options, whereas previously researchers would have been limited in their datasets or required to hire time in expensive computing options. This access, and the capabilities provided by everyday computing options are only going to increase with the current pace of advancements in computing hardware.

What is the likely impact?

When we hear about artificial intelligence and more specifically about self-learning artificial intelligence, many people understandably become worried that we may have a Skynet situation as depicted in Terminator. While this seems somewhat fantastical to consider, it is worth noting that the machines' intelligence and morality correlates directly to the data that is input into it. There is a chain of thought that, depending on the input data, machines may diverge from human interests. Some researchers believe that a failure to erase or limit bias from machine algorithms may lead to this future, others believe that by developing these machines to mimic human brains they will be able to build and learn morals more in line with ours. (Artificial Intelligence: The Effects of Machine Learning | Protiviti - Australia, 2022)

Machine learning is providing AI the opportunity to learn in similar methods to humans. It is very likely as we look to the future that job roles which include a heavy emphasis on data reading and entry, especially where that entry needs to be accurate, will be taken over by AI. This will likely include roles such as accountants, advertising, and data entry roles. It is also however moving into areas that can cause the concern previously mentioned. AI taking over roles within security or within a military capacity are becoming more and more likely and viable.

On the other hand, machine learning will also provide opportunities in other areas just by simply existing. Roles such as machine learning engineer, robotics engineer and natural language processing scientist were either not required or were extremely limited in their scope before the advent and explosion of true machine learning. Additionally, requirements for software developers and engineers, data scientists and cyber security analysts are only going to be needed in greater numbers because of this. There is also potential of AI taking over roles with are considered dangerous jobs, think things like bomb disposal on one extreme to things as simple as welding both of which require extreme precision in which we can program machines to learn from their experiences conducting these procedures.

How will Machine Learning affect you?

As has previously been stated, machine learning is already affecting your life, and the lives of everyone else you know. Machine learning assists in the tailoring of algorithms which determine what content you are being shown on social media or determines what videos you'll see when browsing YouTube. It also is prevalent in ways that you may not see or may not affect you on a day-to-day basis with things like facial recognition being implemented and advanced. In 2022 Tesla is currently in what appears to be the final development phases of their self-driving cars, which would not be possible without machine learning.

In the near future the extent to how much machine learning will affect you likely depends largely on how much you desire to interact with it. Will you buy a self-driving car as soon as they become more mass produced, or will you wait until they have matured some more? Social media provides us a nearly unmitigated access which allows us to communicate with people all over the globe, but at the same time is beholden to machine learning in content and advertisement we are exposed to as a result, and as such means to avoid that one needs to decide whether they withdraw from social media entirely.

The effect on our family may soon be very entwined with machine learning noting the advancements currently being made in the areas to improve elder care and enhanced health care. It is likely that in the not-too-distant future, there could be robots whose sole job is to be in-home carers for the elderly or disabled, which would take an immense pressure off families who may currently be struggling with that. (15 Ways Machine Learning Will Impact Your Everyday Life, 2022)

Overall, machine learning is only going to continue to become more prevalent in our lives and likely at a more accelerated rate as it matures more and more. Whether this provides humanity more benefits is something that each person will have to decide for themselves, however the opportunities are endless in the application of machine learning and AI as a whole.

References for the machine learning:

Ibm.com. 2022. *What is Machine Learning?*. [online] Available at: <https://www.ibm.com/au-en/cloud/learn/machine-learning> [Accessed 29 September 2022].

Nicholson, C., 2022. *A Beginner's Guide to Neural Networks*. [online] Pathmind. Available at: <https://wiki.pathmind.com/neural-network> [Accessed 29 September 2022].

Kyrykovych, A., 2022. *Deep Neural Networks - KDnuggets*. [online] KDnuggets. Available at: <https://www.kdnuggets.com/2020/02/deep-neural-networks.html> [Accessed 29 September 2022].

Lawton, G., 2020. *Deep learning's role in the evolution of machine learning*. [online] SearchEnterpriseAI. Available at: <https://www.techtarget.com/searchenterpriseai/feature/Deep-learnings-role-in-the-evolution-of-machine-learning> [Accessed 29 September 2022].

MobileAppAaily. 2021. *How Is Machine Learning Evolving In 2021?*. [online] Available at: <https://www.mobileappdaily.com/evolution-of-machine-learning> [Accessed 29 September 2022].

Moolayil, J., 2019. *A Layman's Guide to Deep Neural Networks*. [online] Medium. Available at: <https://towardsdatascience.com/a-laymans-guide-to-deep-neural-networks-ddcea24847fb> [Accessed 29 September 2022].

Protiviti.com. 2022. *Artificial Intelligence: The Effects of Machine Learning | Protiviti - Australia*. [online] Available at: <https://www.protiviti.com/AU-en/insights/effects-machine-learning> [Accessed 30 September 2022].

EliteDataScience. 2022. *15 Ways Machine Learning Will Impact Your Everyday Life*. [online] Available at: <https://elitedatascience.com/machine-learning-impact> [Accessed 30 September 2022].

Raspberry Pis, Arduinos, Makey Makeys and Other Small Computing Devices

Introduction

As computers see more widespread use and interest, the number of uses for these computers increases. Whilst when we think of a computer, we usually think of a desktop computer on a desk, or a laptop – both very powerful computers capable of doing a myriad things such as calculating simple weather data, streaming high-definition video, editing images and video, and much more, we often don't think of the kind of computers used to do smaller tasks, like detecting and recording changes in weather in a small locality, or automatically taking photos of the night sky every hour for astronomical research, or recording the level of water in a reserve. For these tasks, a full-fledged desktop or laptop computer would be too much, and most of its resources and parts may remain unused. It would be inefficient to use them for the smaller tasks described above.

Introduce smaller computers/computing devices. These include a tiny computer called the Raspberry Pi, and a hardware and software platform called Arduino. The Raspberry Pi is a small computer which can be configured in a large number of ways. For example, it can be connected to a screen/monitor and used to display something on it, such as a menu at a restaurant, or it can be made into an interface for a robot, powering it and its functions.

Whilst the Raspberry Pi and Arduino are for more serious projects and use cases, there are also some less serious devices/kits such as the Makey Makey – an invention kit which allows for the connection of everyday things such as food items (e.g. bananas, stairs, etc.), table, stairs, and more to computer keys (i.e. makes them interact with a computer, by imitating mouse clicks and keys on a keyboard). This interaction is done when the user touches said things (e.g. touch the banana, step on a stair, etc.) while connected to the Makey Makey and computer through cables and alligator clips included with the Makey Makey.

The following link to a 2-minute video by the creators of the Makey Makey may help to better understand it: https://www.youtube.com/watch?v=rfQqh7iCcOU

Since these technologies were released, there has been much improvement and development on them, and many new features have been added. As a result, there are countless new applications with these computers and devices. Some of the current state-of-the-art applications include:

- Data collection. For example:
    - Wind Data in a forest (wind speed, wind frequency, etc.)
    - Sound Data in a neighbourhood or city (sound frequency, volume, etc.)
    - Pollution Data in a scalable area (what types of pollution, amount, etc.)
- A cheap, small desktop computer can be made with the Raspberry Pi and Arduino , along with a display and any other required addons.
- IoT home systems using a Raspberry Pi and/or Arduino as part of their central control hub.
- Creating an AI Assistant. For example:
    - Raspberry Pi partnered with Google to create a Raspberry Pi based Google Assistant in issue 57 of their MagPi magazine.
- Server hosting. Raspberry Pi and Arduino can both be used to create a functional server computer.

In the next few years, it is expected that these developments continue and more applications become feasible as a result. Some of these include:

- An even more affordable computer for poorer societies around the world.
    - It would allow these societies to access much greater resources for education, lifestyle, and more.
- Arduino being used more and more for cutting-edge state-of-the-art robotics.
    - This is because Arduino is a very cheap and efficient option for this use-case.
- All these applications are possible because of new technologies and developments such as:
    - Better CPU's
    - Faster Memory
    - More affordable parts
    - Improved I/O systems
    - New display connection technologies
    - Improved Wifi speeds

These small computing devices (Raspberry Pi, Arduino, etc.) allow for an affordable and accessible option in many fields where such computers may have been more expensive. Some example fields include data collection, computing, and robotics. In the future, it is expected that these developments continue and more applications are discovered and made into reality.

Impact

The biggest impact of these small computing devices is undoubtedly **accessibility**. These computers and devices made the entry into – and exploration of – computing and computer hardware much more accessible. Along with this, a handful of other fields such as data collection, IoT, and robotics also had their obstacles to entry greatly reduced. The future potential for these devices is only limited by their users' imagination. These computers can function in limitless ways, connect to wifi and each other, and connect to almost all cable types.

The further impacts of the ease of accessibility aspect of these computers were that students in primary and high schools could now also get involved and introduced to the field of computer science, robotics, and computer engineering. This indeed was the Raspberry Pi's main mission. This accessibility was not limited to developed countries; developing countries were also making use of this new development. In addition to students and people in developing countries, scientists have also benefited from these small devices to collect data in the field – to be used for later research.

This accessibility has also meant that more people have gotten interested in computer science and technology, and have made it their career. This development has meant more jobs in the technology sector have been filled. It is possible that some workers in the science and data collection fields have lost their jobs because the small computers have automated large parts of the data collection procedure, however, not much evidence suggests that this is the case, and these workers could simply be put to work in areas other than data collection.

Effect on the everyday person

In most of our lives, the direct effects of these technologies are limited to the ads you see when going out at a mall or public transport bus stop/train station, but the indirect – or secondary – effects these small computers have is huge:

- Weather data is more accurate than ever thanks to the data collection technologies these computers have empowered and made possible.
- More and more people are deciding to study computer science and its related fields after interacting with and exploring these small computers.
- Many websites are using these small computers to host their servers and provide services to customers.
- Restaurants and other service-based establishments such as salons and barbers are using these computers for displays and interactive devices (e.g. screen with a menu at a restaurant).

The differences these effects make in our everyday lives, although not life-changing, is immense in its own right. Ordering terminals at food service establishments like McDonalds, made possible by these computers, is making ordering easier than ever. Weather prediction is more

accurate than ever and we get the most accurate weekly weather forecasts in history – these are all at least partly only made possible because of these small computing devices.

Our friends' and families' lives are similarly made easier by these developments by the small computer technologies. Some other developments may include more accessible and affordable robots, more affordable electronic toys for kids, as well as for family and friends in developing areas of the world, access to computers and technology, and the ability to access a greater range of resources such as Google searches, online libraries, and more.

These small computing devices have a big effect on the everyday person and their friends' and family's lives through the accessibility and affordability they allow for many fields and services.

References

The Arduino Team, "What is Arduino?: Arduino documentation," *Arduino Documentation | Arduino Documentation*, 10-May-2022. [Online]. Available: https://docs.arduino.cc/learn/starting-guide/whats-arduino. [Accessed: 20-Oct-2022].

D. F. Ravn, "Impact Stories: Raspberry Pi," *🎥 impact stories: Raspberry Pi - The Index Project*, 16-Nov-2021. [Online]. Available: https://theindexproject.org/community/impact-stories-raspberry-pi. [Accessed: 20-Oct-2022].

R. Zwetsloot, "Get a free AIY projects voice kit with the magpi 57!," *Raspberry Pi*, 19-Sep-2021. [Online]. Available: https://www.raspberrypi.com/news/free-aiy-projects-voice-kit-magpi-57/. [Accessed: 20-Oct-2022].

Raspberry Pi Foundation, "What is a Raspberry Pi?," *Raspberry Pi*, 20-Aug-2015. [Online]. Available: https://www.raspberrypi.org/help/what-%20is-a-raspberry-pi/. [Accessed: 20-Oct-2022].

Unknown, "Makey Makey," *Wikipedia*, 19-Oct-2022. [Online]. Available: https://en.wikipedia.org/wiki/Makey_Makey. [Accessed: 20-Oct-2022].

Project Ideas

Overview

The Guru's Guide to The Great Ocean Road will initially be a web-based directory of some of the wonderful things that this beautiful part of the world has to offer. Some of the things that will be displayed on the website will be some of the great scenery that can be seen, amazing hike or bike riding trails in the area, some of the amazing places to eat great food, and some of the fantastic cultural locations that the area has to provide.

This guide will then be evolved from a web-based solution to an application, which will be provided to both iOS and Android users. The application version will give users the option, based on their current location, to search for any of the amazing things that the Great Ocean Road has to offer.

Motivation

The Great Ocean Guru's absolutely love this part of Eastern Australia and would love to be able to share this passion with the world, especially those looking to travel in this area of our beautiful country. Being able to quickly look at a map and choose an amazing hiking trail or decide to visit a fantastic art exhibit being held nearby would be such an amazing tool for anyone in the area.
Whilst we do acknowledge that websites like Trip Advisor already currently exist, we feel that our website, and eventually app, differs because we do not feel that every location needs to be allocated a spot on our list based on a rating. Rather than only showing the top 3 hiking trails through this area, we want to show users all the hiking trails available, limited only by the area on the map they are searching.

Our motivation is not just to share some great locations from this beautiful part of our country, however. We also want to use this as a great chance to expand on our current skill sets and branch out into new skill sets, such as app design, as a group.

Description

The Guru's Guide to the Great Ocean Road is a website, which will have categories, to highlight some of the most beautiful locations of the area surrounding the titular Great Ocean Road. The most basic form that this will take is a website that has a list of locations that we believe are being missed by the vast majority of people who travel through this region of Victoria.
The broad categories that will be highlighted will include nature trails for hiking or riding on including some amazing scenery which can be viewed along. Cultural exhibits such as art galleries, museums, and natural cultural icons provide fantastic places to explore. Fantastic

places to eat, whether its local cafes or restaurants, small patisseries and local go to spots will be available for the foodies travelling.

For the nature lovers, the plan is to highlight some of the fantastic trails that are available to walkers. These will be highlighted by showing users the starting location of the trails, and the general route that will be taken. Alongside information based on the length of the walk, and the general difficulty involved to ensure that all users can find a trail that suits both their tastes but also their abilities. There will also be information about some of the amazing places to stop and rest to admire the beauty, such as hidden lakes or rock formations and look out points to give the avid photographers some great spots to provide some inspiration.

The Great Ocean Road has some fantastic cultural locations along it. Museum lovers will be overjoyed at the range of options available to them. Locations such as the Australian National Surfing Museum, The Great Ocean Road Story and George Taylor's Vintage and Rare Motorcycle Collection are but a handful of the options available to explore. Art lovers will not be disappointed either with locations such as the Warrnambool Art Gallery or spots like the Ngatanwarr Mural there to excite and inspire them. There also exists some natural focused locations like the Volcanoes Discovery Centre in Penshurst, which visitors can visit for interactive displays that show the geology and history of volcanoes in the Greater Hamilton Area.

Food is something that everyone needs, great food is something that everyone loves. The Guru's guide will provide a rundown of all the food locations in town, from little hole in the wall coffee shops, all the way up to the fine dining restaurants which can be found all over the Great Ocean Road. To ensure you do not get lost on your way to these locations, there will also be a map to show you where it is.

The application is the second iteration of the website, and as such is the end goal for this project. All the above will be included on the app, however instead of being a web-based list, we hope for this to be an interactive map. By opening the application, you can search in the area around you if your phone's location is turned on. Once you have selected the location you wish to visit it will then also provide you directions to get you there. Alternatively, you can search along the route you are taking to see what amazing places you can visit during your travels.

Tools and Technology

The first piece of technology that we intend to use during this project is GitHub. GitHub provides such a fantastic platform for all the creators to interact with, and work on the project at a time and place that is convenient to them. It allows all the creators to conduct all their individual work, without needing to continuously synchronise at regular intervals, and helps ensure that everyone is working off the most up to date version.

The second most important tool needed will be a html editing program. Examples of these include Atom, Notepad ++, Visual Studio Code (VSC) and Sublime Text. The creators are not

picking a particular application to use, as everyone has their own preferences and it seemed counter-productive to enforce that choice.

The final tool required, specifically for the second iteration of this project, will be an application creation tool. Examples of these include MIT Application Inventor, Quixy, AppyPie or iBuild App. We have not yet settled on which application we plan to utilise yet, as we plan to create and launch the website prior to beginning the work on the application iteration of this project.

Skills required

The first skill that will be required is a level of proficiency with HTML code writing. This will make up the bulk of the work needed for the first iteration of our project. HTML writing will be used throughout this project to ensure all the content is present on the page, and additional pages are set up correctly.

Secondly, HTML CSS skills will be utilised in conjunction with the standard HTML writing to ensure that the website is visually appealing, because whilst ensuring that all the content is available on our site, if it is not visually appealing, users may decide against utilising our service. Communication is an important skill when in any group project. Many people overlook soft skills, however being able to effectively communicate and collaborate on this project will be essential in ensuring deadlines are met or ensuring that the content is set out in a consistent manner.

App design is an entirely different skill set when compared to HTML based web design. As such, depending on the software we decide to use to begin the application will then direct which skill sets will need to be learnt to complete the second iteration of this project. It will however revolve around things such as being proficient in a programming language, some form of User Interface (UI) design and back-end computer.

Outcome

There are two levels of success for this project. The first level is the successful completion of a website which will house a list of some fantastic areas around the Great Ocean Road that tourists and locals alike use to search for some of the fantastic trails, views, eateries, cultural exhibits, and other exciting attractions that this beautiful area has to offer.
The second level of success would be the successful creation, and distribution, of an application which will allow users to view these locations on an interactive map, which will allow them to filter what they are searching for and then provide them directions from their current location.
There is no major problem that this website and application is solving, it is not here to revolutionise the way in which humanity will live its life or anything grand. This website and application will be here to hopefully bring to light some of the beautiful places that exist around The Great Ocean Road and expose it to more people around the country and around the world.

Group Reflection

Nebojsa Radic

I think that everything went well and ran smoothly. Being the least IT knowledgeable in the group, it was great to work with such a good bunch of guys that took on a lot of the framework type stuff, chairing off meetings etc and delegated what other tasks needed doing to myself.

In my opinion there was not much that could be improved. The finished website looks great and professional, in fact, I was surprised when I saw the finished website and how good it looked. Google docs also surprised me when we started using it because the changes one person makes appear on my document in real time.

I've never worked in a group remotely before. I have learned to do that using Microsoft teams, google docs and Github and I think it's great. It's great that you can collaborate together, work remotely to get work done. I like that the whole group can work at their own pace and when it suits them.

Donny Yaang

What has gone well is everyone is willing to share their knowledge/know-how to others. We are also maintaining a healthy working relationship despite the stress coming from the assignment.

Had we used git and github from the start to collaborate instead of using google doc, we would have familiarised ourselves with the usage of git and github even more. I also would have liked to redo my report on the IT project. Whilst the ideas are in the report, I should be able to convey my message in a more compelling manner. I also feel that I should have gone through each segment of the assignment in depth to ensure we have exceeded the expectation.

It surprises me that everyone has different levels of motivation. I feel that I could have done a lot more to the assignment. My goals in studying IT is to gain the knowledge and skills that will increase my salary in the future. The only way to do this is to be a sponge to absorb the material.

What I learnt is that working in a group setting is more challenging as there are a lot of factors that are outside of my control.

Derek Gray

One of the great things I learnt working with the other members of the Great Ocean Guru's is that mixing and matching everyone's skills enabled us to come together to put together what I think is a great looking website with some excellent content.

I think that one thing we could improve on is communication. This is not to say that we didn't communicate at all, or even that it wasn't effective. But we did have a few moments in which information was communicated via our video calls wasn't necessarily provided to the members who missed the call, in one instance led a member to believe that they were completing the website entirely on their own, rather than completing the template while the rest of us would fill in all of our details.

I think the thing that surprised me most is the range of different people who make up our group in a very good way. It makes me excited to see such a great range of individuals who are learning a new skill or developing their skills in the IT space.

Working in groups is a double edge sword. On one side the mixing of skills can lead to an amazing outcome, in which the output becomes greater than it would be with only the single input. The other side however is that with so many input's there is a certain amount of compromise required in order to come to an output that all persons involved agree on.

Haidar Alsalih

(redact this name in website code)

When we first started work on this group, we had a great start, and I thought we all did the work we were assigned really well, to a great standard. Everyone used this great start to position the group in a great spot both work-wise and also in terms of team chemistry. Although we slowed a bit later on, especially when one of our group members left, that start really helped us keep up to date and on track with things.

In terms of improvement, I felt I could have communicated better with everyone on meetings that I chaired. I could have relayed the agenda and other information in a more concise manner. However, there are always improvements to be made, such as this one and others, and the important point is to improve for the next time. Thus, it is my aim that next time, I will plan meetings I chair better and try to communicate information more concisely to my group members.

Everyone worked well and where there were differences in opinions, the different options were discussed and an option was chosen after much thought and discussion. Through this assignment, I also learnt that when working with groups, as opposed to alone, a better result is

reached, because so many different perspectives are offered by everyone, and so there are always more options to choose from when compared to working alone.

Mahnoor Sohail (Nasya)

Surprisingly, as a person who prefers to do her assignment on her own, this group assignment has really changed my perspective of working as a team. There was a lot of understanding within the team itself, allowing me to give me time to do my part at my own pace without the whole group stressing. Whenever somebody from the team needed help another person was there to help them.

There wasn't much improvement except organising our meetings a little better. The next time we come as a group we'll have to discuss how to organise the meetings we have better. Using MS Teams better will let us identify key areas we will work on, on our next assignment together.

Being in a group has taught me how to work as a team on how to cooperate with one another with the art of communication. We are like different components that form as one strong team. Each of us had different and special skills that created us as a whole. Better results were achieved when working in a group rather than working individually. That's because you don't have as much load that you need to carry as working individually which I enjoy the most.

Group's Reflection

As a group, we felt that most things went well. These things included communication, -- our group was able to communicate really well from early on, thanks to everyone's efforts -- work ethic, – everyone worked hard to ensure their parts and the project as a whole were complete to a high standard – and team spirit – everyone was understanding of each other and tried their best to accommodate each other and talk about each others' views related to IT in a constructive manner.

We also found that while working as a team, many surprises can often show themselves unexpectedly. Our biggest surprise was seeing the website upon its completion – it looked much better than we had initially thought. This was due to the CSS styles/template done by Nasya. Another surprise was that there was not a single case of bad conflict between group members. We had come together with the expectation that conflict can arise in groups and sometimes it can end badly, but situations can of course always be salvaged. However, in this group assignment, not a single conflict ended badly; issues and conflicts were always dealt with reasonably and elegantly.

What could be improved

Our group has the diversity element where our different backgrounds implies greater experience as a collective thus enabling us to produce better results. This is in contrast to a group whose members come from the same/similar backgrounds (Peter Dizikes,2014). Having said this, there are obstacles we need to overcome. We thought the number one obstacle that if improved would significantly increase our productivity is **communication**.

Communication needs to be conducted in such a way to ensure collaboration is supported in order to create a successful website for assignment 3 to achieve a high distinction.

We reviewed how we communicated: multiple channels were used including bi-weekly video conference calls, teams chat, whatsapp chat, text messages, phone calls, using excel to keep track of the progress.

Ineffective Methods

We find that using chats via Microsoft Teams is ineffective. It created a long trail of messages that are difficult to follow. At one stage it confused the members as to who is responsible to complete the tasks. Going forward we will not be using Teams messages/chat to discuss the assignment in depth.

Bi-weekly meetings are thought to be not agile and adaptable enough to ensure collaboration. If someone has questions or encounters difficulty, or has great ideas to share, this will not be addressed/communicated until the next meeting. This slow approach of communication stalls the progress of the assignment. We need to be more agile in responding and collaborating with each other.

Effective Methods

We find using video conferences using Microsoft Teams to be an effective tool to discuss things. We will use excel to keep track on assignment progress (creating items to complete, who is responsible, the deadline, and the list is not exhaustive).

We should still use Whatsapp chat not to discuss the assignment in depth, but as a precursor to invite members for a video call meeting in Teams.

We will use Microsoft teams video conference as first preference to discuss things in detail. We will have to be more adaptable and agile. Whilst we can still have the bi-weekly meeting as a point of formal meeting, however we should not stick to this rigid form of meeting. Instead a member should be able to raise a concern/ideas quickly and organise a meeting via teams quickly with available members so that things can progress quickly.

Collectively, through working together for this assignment, the lessons we learnt about groups are that: (1) Working in a group can be more difficult than working alone, as there are more variables and factors at play. (2) Communication is one of, if not the most important thing to ensure that a group can work together successfully. Lastly (3) working in a team has many advantages, and one of the biggest of these advantages is that working in a team involves the ideas and brainpower of multiple people, rather than just one person. We felt that this assignment as well as these lessons gave us a new appreciation of working in groups.

Reference:

Peter Dizikes | MIT News Office, M.I.of T. (2014) *Study: Workplace diversity can help the bottom line*, *MIT News | Massachusetts Institute of Technology*. Available at: https://news.mit.edu/2014/workplace-diversity-can-help-bottom-line-1007 (Accessed: October 22, 2022).