

# COSC2196

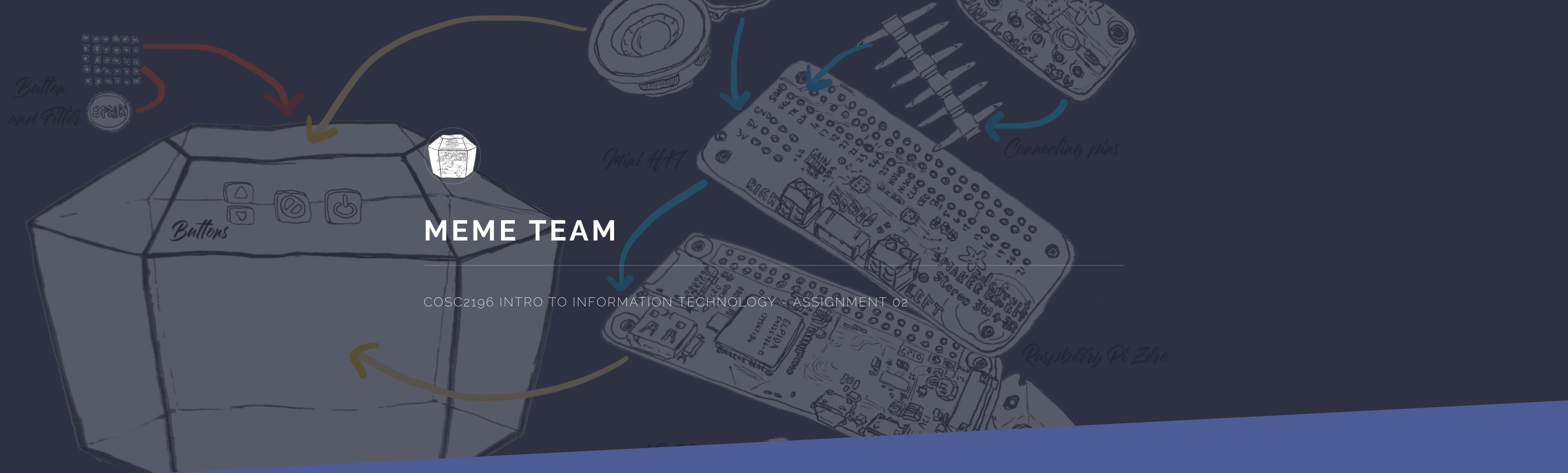
## INTRO TO INFORMATION TECHNOLOGY

## ASSIGNMENT 02

By  
Meme Team

Brent Kimm - S3873880  
Leonard McDonald - S3879586  
Lochlann Keenan Kelli- S23872026  
Michael Heaney - S3875107  
Steven Holman - S3514124  
Thomas Lewis - S3879008

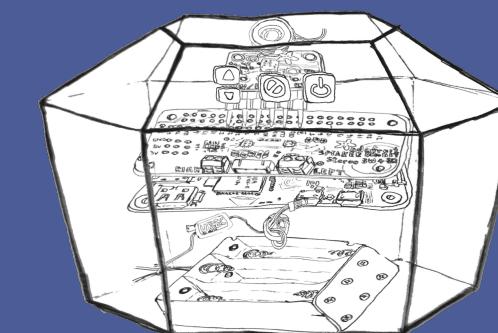
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## PROJECT

The Meme Teams project was focused on improving and supporting social interaction through the creation of a modern party game the Mimi-box, in which the player whom can imitate their friends or family the best is the winner of a casual and friendly to all ages game mode. More can be learnt about the function in terms of design and software & hardware involved.

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## INDUSTRY DATA



The Industry Data is sectioned around our skill sets based on provided Burning Glass Data that will aid us in the future individually, as well the description of the role we intend on fulfilling. In addition, you can find our group data, a comparison of how those roles interplay and how we collectively collaborate as units of the Meme Team.

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## IT WORK

Whilst under research, the Meme Team performed an interview with an associate of one of our members and the following is the transcript. Said transcript describes his role as a professional in the IT industry and demonstrates various issues and common tasks to working with technology. This is provided in both a service and structure prospective as to elaborate upon the way in which working with computers impacts an individual.



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## IT TECHNOLOGIES

An extension of our research is four reports that covered the fields of Autonomous Vehicles, Block-chain's and cryptocurrencies, Cloud Services & Cyber security as an expansion of what direction IT is going to investigate how they function and their impacts on the user, as a singular and people as a whole, to accurately depict how technology is evolving and the future of IT as it is now.



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## REFLECTIONS

A logged section of how we each feel about the group as a functional unit and think about how beneficial our group practice was, as well as a consensus on the group as a whole and how we feel about our collaborative achievements and our success at the roles we were assigned.



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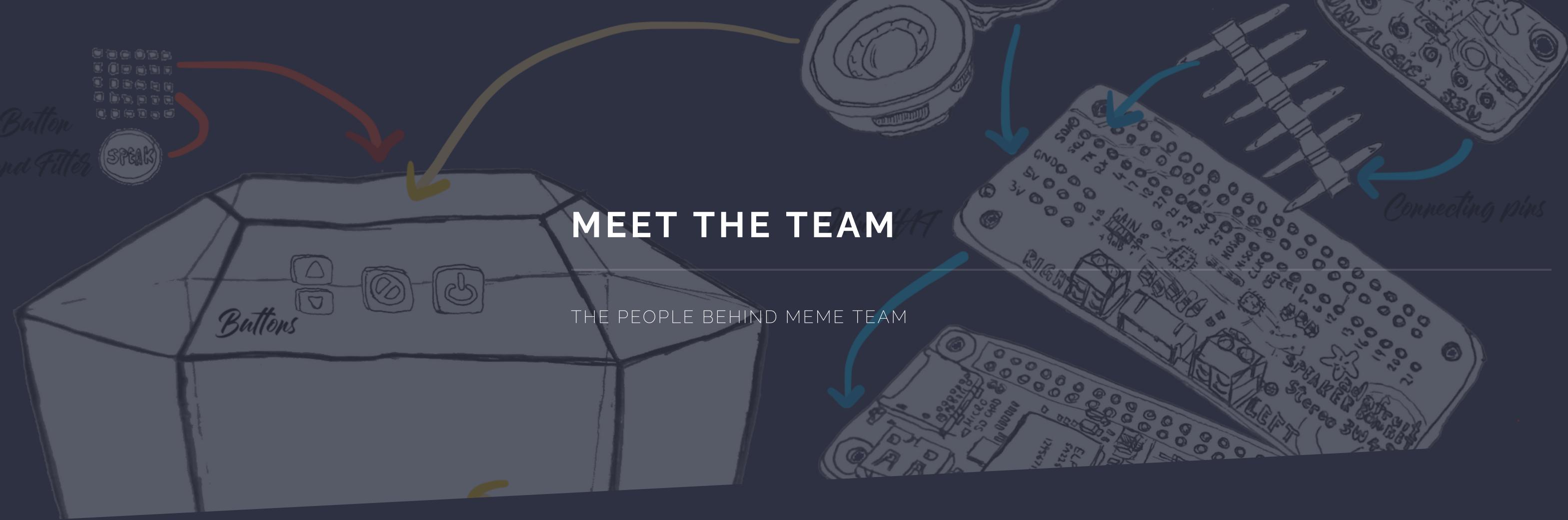
## MEET THE TEAM

The area dedicated to the individuals of the Meme Team with photos, description's, links to our original pages, as well as a description of our team with contacts for each of us.

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### IMAGE SOURCES

- [1] **Emsi.** 2020. What Is Industry Data? Emsi's Industry Data And How We Use It - Emsi. [online] Available at: <<https://www.economicmodeling.com/2020/06/05/industry-data/>> [Accessed 21 October 2020].
- [2] **Roberthalf.ca.** 2020. 7 Must-Ask Tech Interview Questions. [online] Available at: <<https://www.roberthalf.ca/en/blog/how-to-interview-candidates/7-must-ask-tech-interview-questions>> [Accessed 21 October 2020].
- [3] 2020. [online] Available at: <<https://gesatech.com/is-it-marketing-or-is-it-technology-well-its-both/>> [Accessed 21 October 2020].
- [4] **Now, M., Illustrations, S. and Instrument, O..** 2020. Magnify Icon. Modern Flat Pictogram. Magnifying Glass Sign. Search.... [online] iStock. Available at: <<https://www.istockphoto.com/vector/magnify-icon-magnifying-glass-sign-search-icon-gm907579860-250019889>> [Accessed 21 October 2020].



## MEET THE TEAM

### THE PEOPLE BEHIND MEME TEAM

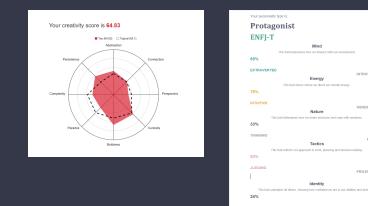
#### ABOUT MEME TEAM

We are a team of 6 guys who simply just love memes, hence the "Meme-Team"! We enjoy talking in "meme language" in various different I.T chats and that's how we found each other. While we understand we occasionally tend to irritate others with the way we talk, this passion for memeing brings us enjoyment and creates team chemistry for us.

Meme-team requirements? Always meme.



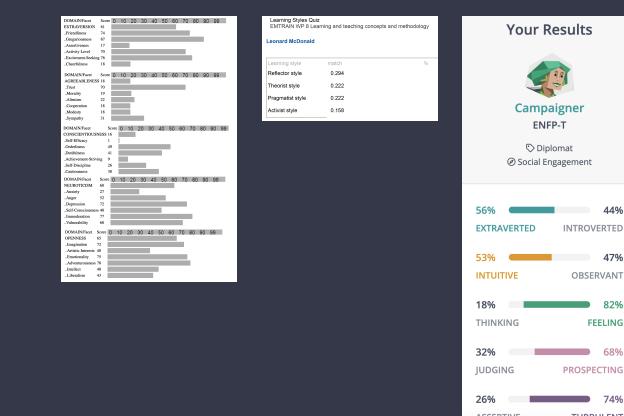
BRENT KIMM - S3873880



I am a 30-year-old male from Melbourne, Australia. I completed VCE in 2008 and have since worked in various roles within the Railway and Civil industries.



LEONARD MCDONALD - S3879586



When I was 5 years old, I received a NES for Christmas with the Super Mario Bros. 1 and 2. From there on, I played a wide array of games before eventually deciding to build my own computer many years later. This is where my interest in the field of Information Technology began...

I am extremely passionate about Football and Basketball, being a major Saints and Celtics fan respectively outside of gaming and computers. I also love fishing, camping, and escaping the hustle and bustle of the city to explore our beautiful country.

[Contact Me](#)

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**LOCHLANN KEENAN KELLI - S23872026**

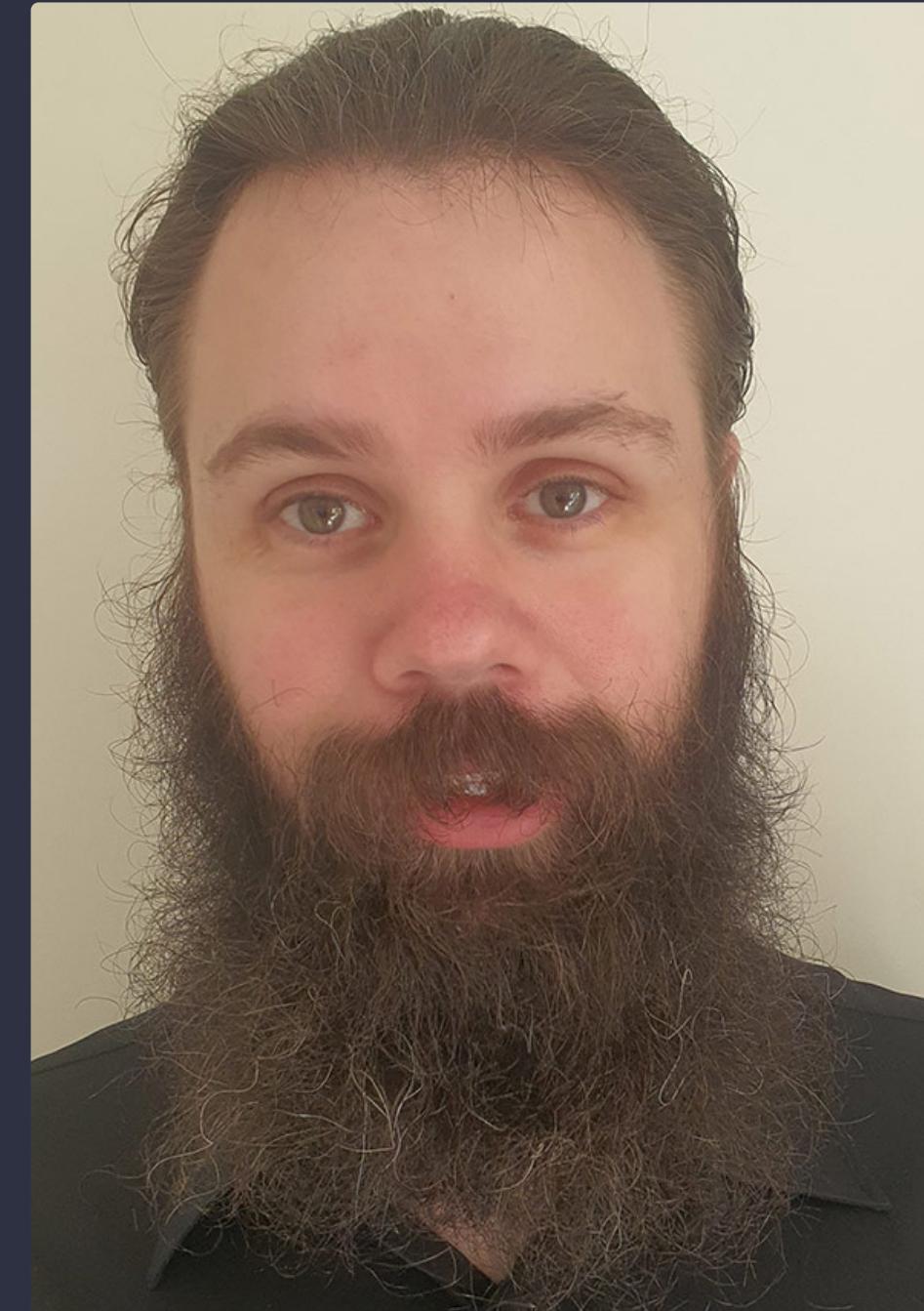


My nickname is Lo and I live in Queensland with my fiancee. I spend a lot of my free time gaming, and

I am a 28 Male Australian. When I was in primary school, I had no idea why my brother's friend could play NES roms on his computer while they wouldn't work on our Macintosh, from this starting point my interest in IT and all its workings would manifest. Classmates in my country side high-school were impressed by the small scripts I could write, and as I moved forward my interest developed my skills in problem solving, video editing, and just enough of everything else to play around with at beginner level. I'd like to work on game mechanics, design and video editing in my spare time, and I believe that the skills I learn from working with our group 'Meme Team' will benefit me both in the course and my hobbies

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**MICHEAL HEANEY - S3875107**



Hello there. I'll start with a little about myself. I have a background in warehousing and I'm moving to IT for a

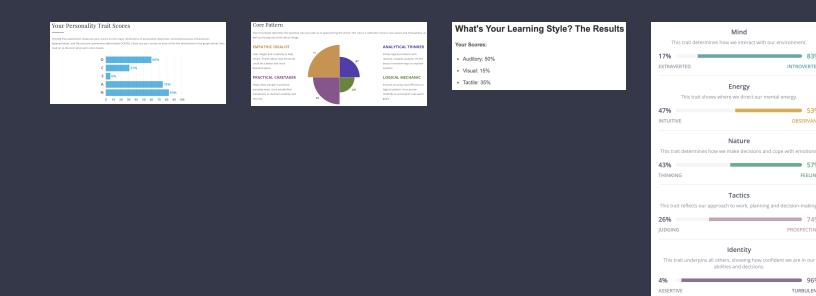
chilling out. I used to have a dream of setting up an American styled 50's diner. But this dream got crushed when I realised I do not like working in Hospitality. So I decided to change my dream to something involving my hobbies; IT. I have been mucking around with computers ever since I was a very young child, I was always getting new technology, breaking it, troubleshooting what I did, and then fixing it all up again.

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**STEVEN HOLMAN - S3514124**



I am 32 years old male currently living in Victoria, Australia and am working with Meme Team. Computers has been a passion of mine since I was a child, from growing up watching my brother build a 486 and playing strategy games on it such as Civilization and UFO Enemy Unknown. Programming has since become a passion of mine of which I wish to expand into a future career. My younger self use to have many hobbies including playing the guitar, music and skateboard but I currently spend most of my current time focusing on computers.

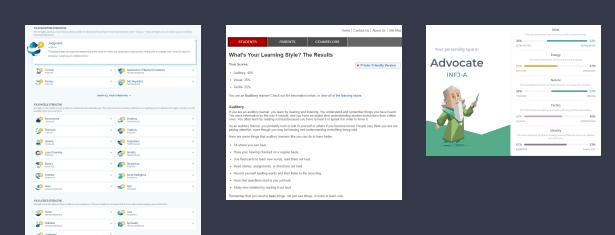
career change, I am half German and half Australian, I only speak English. My education to date is finishing year 12 in 2005 I studied IT and Multimedia throughout my college life but finishing year 12 I pursued a career in warehousing and driving forklifts. Hobbies I enjoy are four-wheel driving and off-roading with camping overnight in the bush near a river. I also play the guitar and did so in a band for roughly 4 years touring the East Coast of Australia. Other pass times I enjoy playing video games with my 3 children.

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**THOMAS LEWIS - S3879008**



I am a male Australian, 19-year-old high school graduate studing at RMIT, I have been gaming as long as I remember with a keen love for Fighters and FPS, That developed into a love for computers and furthermore programing for entertainment, hence i am a member of the Meme team whom's focus is security & entertainment.

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# PROJECT IDEA

THE VOICE MIMICKING PARTY GAME MIMI-BOX.

## OVERVIEW

The Mimi-box is a 'party friendly' casual party game with game design focused on user interactivity through voice input. This 'fun for all ages' game device has the players speak to the box to try and imitate their fellow players voice playback, it then scores the players based on how closely they have mimicked their fellow player all within given turn-based rule sets and game modes, points are awarded for most modes so players will try their best to be the top mimic each round. The Mimi-box also utilises pre-recorded pre-stored voice lines from a 'game host' that will guide players and interchange between various situations to maintain entertainment. This game encourages spontaneity and creativity of player's using their voice while utilizing accents, tongue twisters and any assortment of sounds the player can muster to throw the opponent off, with the primary intention of inducing unique, ridiculous game play with high replay ability.

## MOTIVATION

The motivation behind the gameplay aspects and decisions made into the design of the Mimi-box are inspired by the normalization of household party games during the COVID-19 pandemic. We want family and friends to have a new interactive form of entertainment to enjoy due to the given circumstances that Australia and the rest of the world is in.

At the current time with "Social distancing" in place throughout Australia, people have been unable to meet each other, let alone interact in forms of entertainment outside of online media, gaming, or movies. From the 2006 study that showed "the average 15 to 34-year-olds spends just under 3 hours with friends and 10 hours with their family each weekend" we have simple statistics we can draw upon along with the given situation of COVID-19 that brings our project a clear aim, to facilitate the popularity of interactive party games, fulfilling the human need for social interaction. The Mimi-box is all inclusive, with voice recognition technology not requiring accurate pronunciation (or even the same language), having a low base skill level requirement, and the game design encouraging fast paced interactions in social groups. Therefore, the Mimi-box project will be able to fulfill these aforementioned social interaction needs and become a game product people can use to feel closer together.

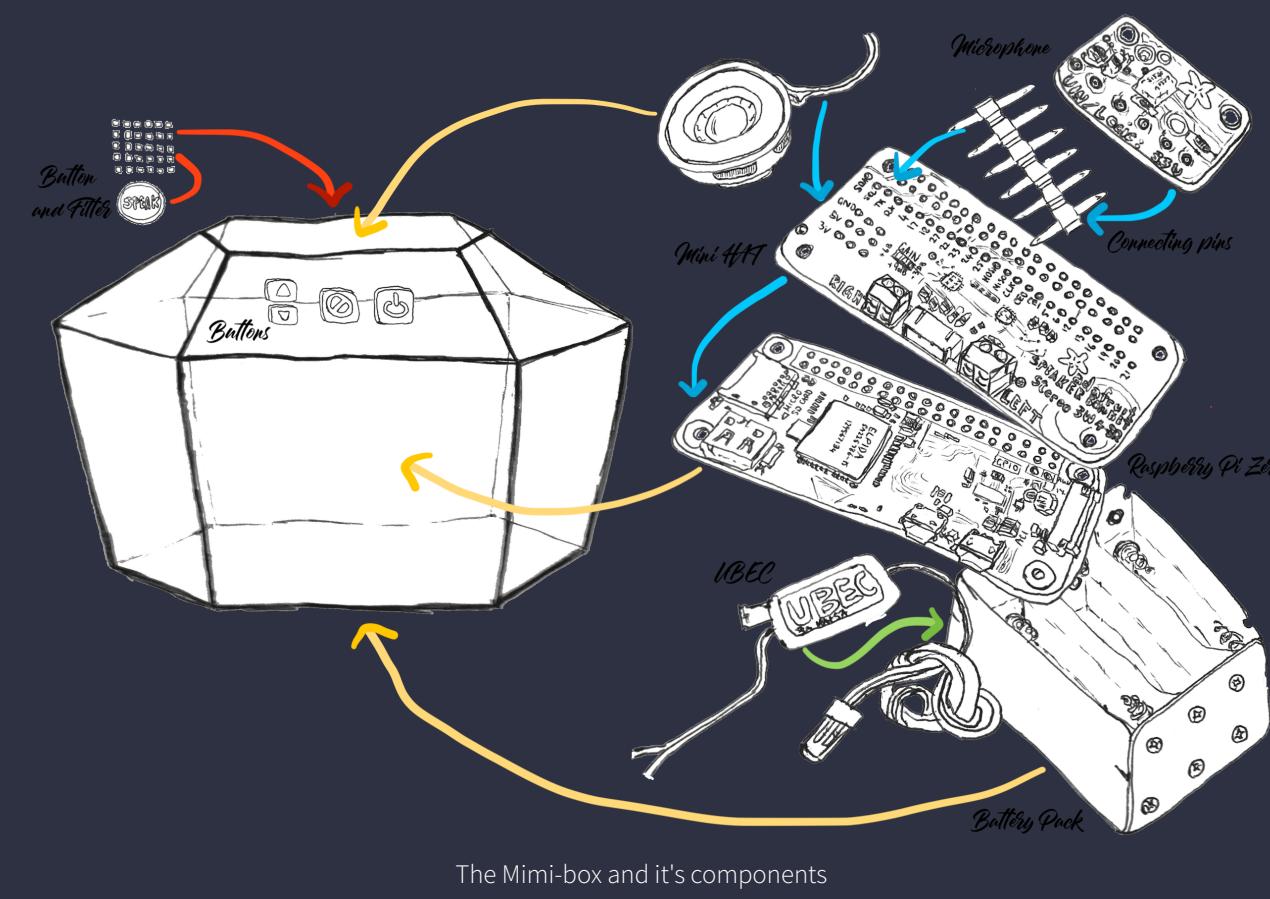
## DESCRIPTION

The concept for a basic run of the game doesn't involve too much, after starting the game with 2 or more players, the first user will input the number of players and then record a sound / message when prompted by the Mimi-box. Prior to the first input, each of the players will need to input their name so each user input can be identified. When ready the player can press 'speak', this button will allow the user to record their input to be stored by the Mimi-box, then pressing skip will start the game which will first instruct the player of how the game works, with the emphasis on recording a voice that is difficult for other players to repeat. After which the next and or all player/s will

attempt to imitate what the first player sounded like and the individual with the highest accuracy will be considered the winner of the game/ round.

A secondary game mode of the box called funny mode will pull from a pre-stored library of sound effects and sentences, which when played-back asks the players to imitate the sound collectively in turn, whomever is the closest wins said round, or moves on without elimination. These voice recorded inputs by players will have a timer to have the inputs be properly comparable, this means you as a player are on the clock to provide your statement, joke or accented sentence or whatever the player is capable of choosing within the frame of ten seconds.

The physical device is a raspberry pi that utilizes java and frontier series to compare the MEL-Frequency spectrum of a user input determined by contrasting the difference in frequency/ pitch between the inputs which will determine the most efficient match. This is how a given winner of a set game of Mimi-Box is decided, without any player input the game will pause and using the skip button is how to have the game continue between turns.



The physical design of the box is a 10cm x 10 cm case that closely resembles a hexagonal prism that can be seen (as seen above, holds the interior mechanisms audio and power within the casing with the boxes centre of mass being focused around the base, the device itself is generally expected to be utilized by children and or youth or perhaps adults that are inebriated, therefore, the device needs to be shock absorbent and liquid resistant to reduce direct damage to the functional hardware. The powering of the device will require 6xAA batteries that are found underneath the device in a screw bound compartment, the box has majority of its user inputs taken on the faces at the top of the case consisting of five buttons, one button for 'power', two buttons for 'volume'(up/down) control, a button for 'skip' which also acts as a user's continue button located on one side, while on the other side hosts the last button 'speak'. Under the speak button and behind the case there are small grated holes, when the speak button is held the microphone behind the grated holes will record clear and concise audio inputs, and on the top an output speaker for the device to communicate the directions and next instruction.

#### TOOLS AND TECHNOLOGY

The technology at hand is a Raspberry Pi Zero set up to run the game through a java code program. That program will take the users voice inputs as a measurement in Hz, then make an excerpt of the given audio signal from this user's voice input, then the users input, and take the frontier transform (a composition of a signal over time given as a function that is subsequently broken into its constituent expressions of frequencies). From there you have to map the powers of given powers in correlation to the Mel spectrum specifically utilizing Triangular overlapping windows which provides the pitch of the speech given decibels/ amplitude of a dictation.

This can be used to compare the users pitch of input, to do as said the program needs to take the log of the each of the recorded Mel frequency's, there after performing a discrete cosine transform with the list of Mel frequency logged powers.

That has become the resulting signal that the other players are intending to match with, this is a MFCC's, in order to have the box perform a comparison it will be necessary to compare each of the recorded Mel frequency's as matrices with identical vector signal size. Hence 10 seconds each is chosen to be consistent per turn to have each matrix line up for this comparison more dynamically for the Frontier transformations, where taking the two inputs as A & B and the proposed distance between them being C which would function as  $(CxA) = X$  and  $(CxB) = Y$ ,  $(X/Y) = \text{the distance between the two frequency MFCC's}$ . This is called speaker adaptation, notably the first coefficient provided by the MFCC is an expression of loudness and should be disregarded when the intention of the device is the comparison of utterances.

The physical components of the case that are found primarily within the box are a Adafruit 12S MEMS Microphone for sound input as well an mini HAT, the Adafruit 12S 3W Stereo Speaker Bonnet mini Kit, using 12S digital sound to create clear crisp audio, with the intention of efficiency and Saving power, the Mimi-box uses 1 mono 40mm diameter 4 Ohm 3-watt speaker. The power is provided by a 6xAA battery pack connected via a universal battery eliminator circuit that is within the aforementioned bottom skew compartment for ease of battery change and safe use.

#### SKILLS REQUIRED

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Given the Raspberry Pi is Linux base operating software, this particular case will need to install and set-up the device to be running java using Open-JDK as this is one of the most efficient ways to achieve development of variable loops and comparisons. Furthermore, this program requires methods to be called by taking inputs of the user as a discrete function which can then be compared against each other, we do this comparison to determine the winner of a round or game. After this, we instigate various while loops as well as actively declare the user's inputs as variables that can be correlated to integer values to then be evaluated and compared based on intensity/amplitude to see how accurate the repeat of a given sequence is. With that in mind array values will need to temporarily store the variables of the inputs we are matching and the recordings that are being compared against within a margin of error and loop back turn by turn.

The hardware challenges require the Mimi-box to have the microphone, pins and heads of each component individually soldered to the raspberry Pi. Thankfully the components themselves can be purchased from Adafruit and Pi hardware as an available direct bulk purchase and distribution batches, yet individual assembly is still required per unit production as well as development and implementation of java code to function for the game. This can be implemented in FFT to capture the input and have an active and a copy as to store one array, then to compare each active player against the first input and log each player's score to display at the end of a round/game.

#### OUTCOME

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Our projects intended proposed idea is a feasible and fun game for friends or family to enjoy on a causal basis. Mimi-box is intentionally creating gameplay that fulfills the social needs of the individual with the game design choice that invites inclusivity. It is designed to expand upon the voice recognition industry under the guides of creating an entertainment system that promotes creative social interaction as a standard of household party games. With a purpose to draw attention to our needs as people in a modern society and revitalize the party game category, using the innovation of the dynamic raspberry pi and supporting hardware and software to present to you the Mimi-Box.

#### REFERENCES

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- [1] **Australian Bureau of Statistics.** 2020.  
How Australians Use Their Time, 2006. [online]  
Available at: <<https://www.abs.gov.au/statistics/people/people-and-communities/how-australians-use-their-time/latest-release>>  
[Accessed 21 October 2020].
- [2] **Deepblue.lib.umich.edu.** 2020.  
[online]  
Available at: <[https://deepblue.lib.umich.edu/bitstream/handle/2027.42/94069/elpanek\\_1.pdf](https://deepblue.lib.umich.edu/bitstream/handle/2027.42/94069/elpanek_1.pdf)>  
[Accessed 21 October 2020].
- [3] **DevTeam.Space.** 2020.  
How To Make A Speech Recognition System - Devteam.Space. [online]  
Available at: <<https://www.devteam.space/blog/how-to-make-a-speech-recognition-system/>>  
[Accessed 21 October 2020].
- [4] **Docs.nvidia.com.** 2020.  
Audio Spectrogram — NVIDIA DALI 0.26.0 Documentation. [online]

- Available at: <[https://docs.nvidia.com/deeplearning/dali/user-guide/docs/examples/audio\\_processing/spectrogram.html](https://docs.nvidia.com/deeplearning/dali/user-guide/docs/examples/audio_processing/spectrogram.html)>  
[Accessed 21 October 2020].
- [5] **En.wikipedia.org.** 2020.  
Fourier Transform. [online]  
Available at: <[https://en.wikipedia.org/wiki/Fourier\\_transform](https://en.wikipedia.org/wiki/Fourier_transform)>  
[Accessed 21 October 2020].
- [6] **En.wikipedia.org.** 2020.  
Window Function. [online]  
Available at: <[https://en.wikipedia.org/wiki/Window\\_function#Triangular\\_window](https://en.wikipedia.org/wiki/Window_function#Triangular_window)>  
[Accessed 21 October 2020].
- [7] **Linuxize.com.** 2020.  
How To Install Java On Raspberry Pi. [online]  
Available at: <<https://linuxize.com/post/install-java-on-raspberry-pi/>>  
[Accessed 21 October 2020].
- [8] **Melbourneinstitute.unimelb.edu.au.** 2020.  
[online]  
Available at: <[https://melbourneinstitute.unimelb.edu.au/\\_data/assets/pdf\\_file/0007/3376879/ri2020n08.pdf](https://melbourneinstitute.unimelb.edu.au/_data/assets/pdf_file/0007/3376879/ri2020n08.pdf)>  
[Accessed 21 October 2020].
- [9] **Research, M. and Trends, C..** 2020.  
Board Games Market - Global Outlook And Forecast 2019-2024. [online] Reportlinker.com.  
Available at: <<https://www.reportlinker.com/p05482343/Board-Games-Market-Global-Outlook-and-Forecast.html>>  
[Accessed 21 October 2020].
- [10] **Seattle Times.** 2020.  
Join The Party: Board Game Popularity Just Keeps Growing. [online]  
Available at: <<https://www.seattletimes.com/explore/shop-northwest/join-the-party-board-game-popularity-just-keeps-growing/>>  
[Accessed 21 October 2020].
- [11] **similarities, S..** 2020.  
Speech Comparison Algorithm For Rating On Similarities. [online] Signal Processing Stack Exchange.  
Available at: <<https://dsp.stackexchange.com/questions/7581/speech-comparison-algorithm-for-rating-on-similarities>>  
[Accessed 21 October 2020].
- [12] **Web.archive.org.** 2020.  
Java Implementation Of The FFT Algorithm — CMD-C && CMD-V. [online]  
Available at: <<https://web.archive.org/web/20120312201547/http://blog.datasingularity.com/?p=53>>  
[Accessed 21 October 2020].

## HARDWARE

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- [13] **Industries, A..** 2020.  
Adafruit I2S 3W Stereo Speaker Bonnet For Raspberry Pi. [online] Adafruit.com.  
Available at: <<https://www.adafruit.com/product/3346>>  
[Accessed 21 October 2020].
- [14] **Industries, A..** 2020.  
Adafruit I2S MEMS Microphone Breakout - SPH0645LM4H. [online] Adafruit.com.  
Available at: <<https://www.adafruit.com/product/3421>>  
[Accessed 21 October 2020].
- [15] **Industries, A..** 2020.  
Speaker - 40Mm Diameter - 4 Ohm 3 Watt. [online] Adafruit.com.  
Available at: <<https://www.adafruit.com/product/3968>>  
[Accessed 21 October 2020].
- [16] **MakeUseOf.** 2020.  
3 Raspberry Pi Battery Packs For Portable Projects.  
[online] Available at: <<https://www.makeuseof.com/tag/pi-go-x-ways-powering-raspberry-pi-portable-projects/>>  
[Accessed 21 October 2020].
- [17] **Raspberrypi.org.** 2020.  
[online]  
Available at: <<https://www.raspberrypi.org/products/raspberry-pi-zero-w/>>  
[Accessed 21 October 2020].



## INDUSTRY DATA

OUR TEAMS IDEAL JOBS AND REQUIRED SKILLS.

### INDIVIDUAL DATA

#### IT SKILLS REQUIRED

Name	Skills		
Brent Kimm	JavaScript	JAVA	.NET Programming
Thomas Lewis	Graphic Design	Microsoft C#	.NET Programming
Leonard McDonald	JavaScript	Graphic Design	Microsoft C#
Lochlann Keenan Kelli	Building Relationships	Tech Support	Customer Service
Michael Heaney	SQL	JAVA	JavaScript
Steven Holman	Microsoft C#	.NET Programming	GIT

#### GENERAL SKILLS REQUIRED

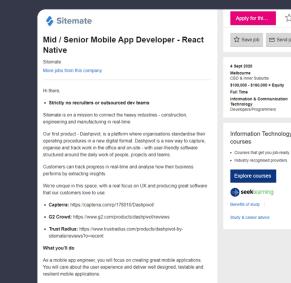
Name	Skills		
Brent Kimm	Problem Solving	Troubleshooting	Creativity
Thomas Lewis	Teamwork/Collaboration	Troubleshooting	Analytical Skills
Leonard McDonald	Communication	Problem Solving	Teamwork/Collaboration
Lochlann Keenan Kelli	Communication	Problem Solving	Teamwork/Collaboration
Michael Heaney	Communication	Organisational Skills	Teamwork/Collaboration
Steven Holman	Communication	Problem Solving	Writing

**IT SKILLS NON-REQUIRED**

Name	Skills		
Brent Kimm	Project Management	SAP	Business Management
Thomas Lewis	SQL	JavaScript	JAVA
Leonard McDonald	SQL	JavaScript	JAVA
Lochlann Keenan Kelli	Graphic Design	.NET Programming	Website Production
Michael Heaney	Microsoft Office	.NET Programming	Systems Engineering
Steven Holman	JavaScript	Graphic Design	JAVA

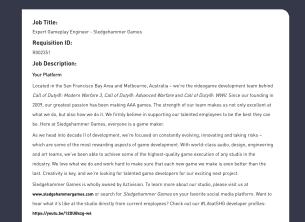
**GENERAL SKILLS NON-REQUIRED**

Name	Skills		
Brent Kimm	Writing	Mentoring	Team Building
Thomas Lewis	Communication	Organisational Skills	Writing
Leonard McDonald	Organisational Skills	Writing	Mentoring
Lochlann Keenan Kelli	Presentation Skills	Mentoring	Quality Assurance/Control
Michael Heaney	Leadership	Team Building	Mentoring
Steven Holman	Management	Mentoring	Presentation Skills

**BRENT KIMM**

My ideal job is in Application Development with React Native, and I would be classified as a .NET Developer. According to the Burning Glass data, the demand for this role is high as it is ranked

at #3, this has reinforced my desire to explore this role to a greater extent. I feel as though I already possess the general skills required for this role. I am very interested in my brief studies with IT-related skills and I think a career in this field would be a good fit for me.

**LEONARD MCDONALD**

My ideal job requires IT skills that I hadn't considered before researching the burning glass technologies data and talking among my team members, some of these skills require only the basic use and understanding, i.e. SQL. I had originally researched a career which would maintain my interest and allow consistent learning and creativity, this ideal job has not changed but with the burning glass data I have gained an idea of the technologies businesses find useful and I will use this experience to continue to look towards IT predictions.

**LOCHLANN KEENAN KELLI****MICHAEL HEANEY**

**Self-employed Field Technicians**

**About Geeks2U**

Geeks2U® Australia's leading on-site technology support provider has been acquired by Officeworks and is looking to engage additional independent contractors to keep up with customer demand. We offer self-employed contractors the opportunity to work for no less than same-day services to customers in both metropolitan and regional areas right across Australia.

Services include repair of hardware and software, wireless and wired network set-ups, virus and spyware removal and remote device setup (from Smart TVs to tablets and smartphones) data backup and recovery services. You can also apply for any type of technology support customer role at either home or office.

**About the opportunity**

We are looking to engage additional independent contractors right across the Sunshine Coast area to help keep up with demand. We carry out same-day IT support services to customers across South East Queensland, Australia, fitting the gaps in our weekly Geeks2U appointments. Contracting to us is also a great way for IT business owners to fill any gaps in their employee schedules.

**How you work**

You will receive the software you wish to cover (as many or as few as you like), your availability (no minimum), change it anytime and as often as you like (you can even add or remove services like Microsoft Office, Mac, Servers, etc.) and the bookings come via SMS and email. We will set up any additional technicians working in your business exactly the same way. You will receive via web login to our proprietary web-based platform and smartphone app (SMS, Apple or Windows).

**What you'll need**

- Diagnostic troubleshooting and resolve each customer's issues using your knowledge, experience and judgment as the best approach
- Ability to demonstrate customer satisfaction so that you do with your own direct clients
- Using the app, finalize each job on-site including invoice and payment (either cash or via bank transfer) collection of data
- Provide follow-up support if required

**What you'll need**

- A strong history of providing on-site technical support in both home and office environments, over a variety of platforms (e.g. PC, Mac, Android, iPhone, etc.)
- Great customer service skills, the ability to explain technical issues in plain English and good communication skills
- Own reliable, well-maintained vehicle
- Your usual toolkit, troubleshooting equipment and parts inventory (spare parts not included)
- Australian Business Number (ABN) and ability to issue invoices electronically in PDF format
- Smart phone

**What's in it for you:**

- A generous share of the service charge to the customer
- The bulk of the margin on what you supply (at prices you determine separately)
- Additional commission on any Geeks2U products you sell
- Invoiced payments via bank transfer
- The chance to work with a dedicated Geeks2U team - 1 day a week

If you like the sound of this business opportunity, please email your company or professional profile to [contact\\_im@geeks2u.com.au](mailto:contact_im@geeks2u.com.au)

stages. A quick search of Field Technician Jobs on Seek.com shows 3,582 jobs availabilities (17th Oct 2020)

STEVEN HOLMAN

**Senior Games Developer**

**About Us**

Senior Games Developer required for a fun and vibrant organisation, working on mobile, console and PC. This organisation has a range of benefits from strong career development plans, flexible working arrangements and competitive leave. We are looking for a Senior Developer, who is highly experienced on either Unreal or Unity Engine.

**Responsibilities:**

- Developing mobile game applications in C# within the Unity3D engine
- Collaborating and communicating with game designers/artists on implementing features
- Accurate timeline estimation and task breakdowns
- Setting up projects from an early stage

**Requirements:**

- A strong understanding of Game Development
- Working on projects from concept to finish
- Able to work independently and autonomously
- Strong experience with Unreal or Unity Engine
- Experience working on either Mobile, PC or Console games.

I do not believe that my ideal job has changed at all. Being a .NET developer has been a goal of mine for a long time and is a field that I already have experience with. I previously understood the skills required to perform this job and am trying to gain as much knowledge about it to start my career in this field.

# GROUP DATA

The ‘Meme Team’s Brent Kimm’s ideal job is in application development using the open-source mobile application framework ‘React Native’ as a .NET developer. This Ideal Job overlaps with team member Steve Holman who has experience in .NET programming, While Brent will require JavaScript and JAVA, Steve has purposefully focused on Microsoft C# and Git.

These ‘Meme Team’ team members have similar ideal jobs titles with varying skill requirements, in a similar situation to Thomas Lewis and Leonard McDonald who are both aiming for test analyst. With Thomas focusing on metagames system programmer and Leonard with the goal of gameplay engineer, the differences between these job roles are unambiguity and Leonard leans towards a project management skillset. While Michael Heaney has two ideal jobs in mind working concurrently towards them to learn the top three IT skills employers look for, somewhat similar to Bre

So far, my ideal job has not changed. This is because I am currently focusing on a job which I feel is achievable within my skill sets. As I start to progress through the course my ideal job will most likely change but right now, I would like to aim for what I feel most comfortable with and along the way find whether or not I change my goal. I would like to take my IT career in different of Field Technician jobs on

There are two ideal jobs that take my interest. First is in web development which ranks at #15 in the burning glass technologies data, and the second is graphic design ranking at #2. Both of these jobs have similar skill requirements yet don't directly link or overlap. As it stands after more research, I will need to expand my current skillset to make these ideal jobs more achievable, but my ideal jobs have not changed.

**dilate**  
Front End Web Developer  
Dilate Digital  
More jobs from this company  
  
**Who is Dilate?**  
Dilate Digital is a fast-growing, fast-moving and fast-evolving digital marketing and web design agency in New York, with a focus for growth, innovation and cool accounts. We're a team of highly skilled web developers and women who get a girl's humor inside 'em. But we're also legends short and neddy and couple of nerd hands. There's kind of a mucketeers thing going on, for we all and for one. It's a tight crew, and we're all mates, looking for a couple more mates.  
We're just a bunch of brilliant, bold, creative, and innovative people. Dilate is a team of like-minded, driven and capable marketers, designers, developers and website-builders telling incredible stories and driving growth for our partner-clients. We're in the business of building business, and boy, is business booming!  
If you're hungry, driven, motivated and ready to grow- read on!  
**The Role:** Front End Web Developer ([CSS Wizard](#))  
Critical to great digital marketing is a great landing page on a great website. Well built websites are also super important for SEO. So here at Dilate, we build a development environment full of brilliant devs, designers and project managers to support landing pages, websites, and other front-end needs. We are also offer comprehensive server hosting, management, and maintenance.  
Most of our websites are built on WordPress and Shopify as a first preference, but we also deal with a range of other CMS. We are also launching projects utilizing GatsbyJS a headless content management system which allows our team to have a blazing fast React front end with an easy to use WordPress backend system.  
We are looking for a opportunities and tools to help you to learn and grow and get paid doing what you're really good at. You must be an expert in HTML, CSS, PHP, and JavaScript with a super solid handle on things WordPress and Shopify. Or maybe, you're a back end developer looking to be a part of something rad and hungry to grow. Convince us that's a better option.  
More than anything though, we want someone that works well in a team, is organized and gets shit done. Driven, accountable and innovative are your words to live by.  
**What you'll [ideally] need to succeed in the role:**

- WordPress Experience (Essential)
- Brilliant CSS Skills
- Experience in a similar role
- Innovative problem-solving skills and agile thinking
- Intermediate proficiency in MySQL skills
- **BONUS:** ReactJS, GatsbyJS and Headless CMS experience
- **BONUS:** Shopify theme development, DNS management, [Drupal](#) and Apache web server, CentOS or other Linux server admin experience.

**ate**  
**d Web Developer**

This company

Fast-growing, fast-moving digital marketing and PR firm with a rep for growing businesses and bank accounts. We train with a crew of madmen and women who've got a fire. But we're a few legends short and need a couple of new hands. The musketeers thing going on, or one for all and one for one. It's a tight-knit team, but we're looking for someone who can fit in.

business, but we're not a wrench cut either. Data is a team of leaders and capable managers, designers, developers and wizards charged with creating and driving growth for our partner-clients. We're in the business end, you're business boom!

driven, motivated and ready to grow- read on!

**End Web Developer [CS3 Wizard]**

digital marketing is a great landing page on a great website. Well it's also super important for SEO. So, at Oblique, we built a range of tools for website owners and project managers to help with functional and bespoke tools that convert. We also offer hosting, management and maintenance.

sites are built on WordPress and Squarespace as a first preference, but we have a range of other CMS. We are also launching projects utilising React.js and Node.js. We have a range of clients who have a front end with an easy to use WordPress system.

a capable, effective and proactive front end web developer to get involved in building functional websites, ideally: you'll be an expert in CSS, PHP and JavaScript, a super solid handle on all things design, and a passion for UX. Or maybe, you're a bit more laid back, but still rad and hungry to learn. Convince us that you're a better option than us.

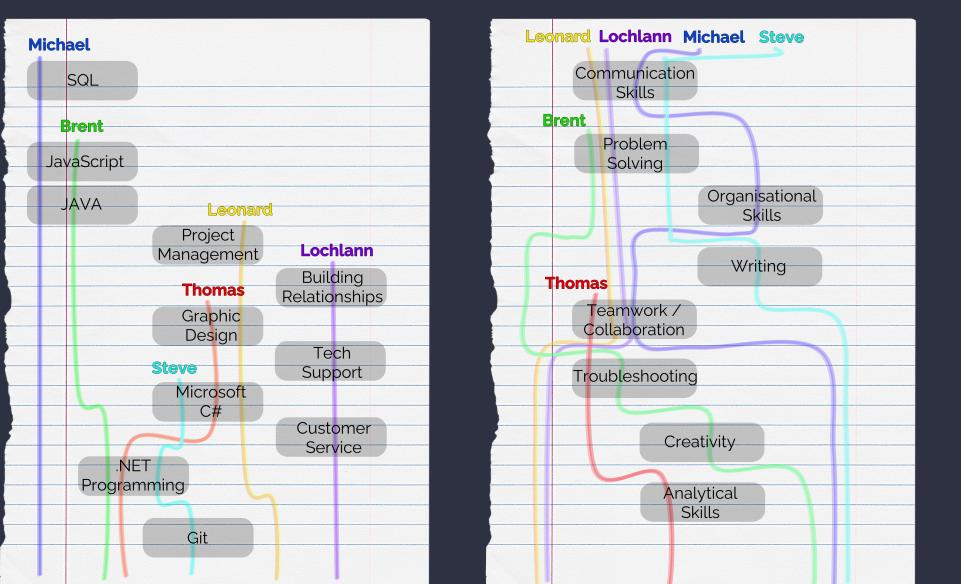
thing, we want someone that works well in a team, is bold and gets stuff done. Driven, innovative and innovative are your best qualities.

**Finally need to succeed in the role:**

- Experience (Essential)
- Skills
  - in a similar role
  - problem-solving skills and a love for learning
  - PHP, Javascript and MySQL skills
  - Good CMS knowledge, especially experience with Squarespace theme development, DNS management, WHM, cPanel and server. CentOS or other Linux server admin experience.

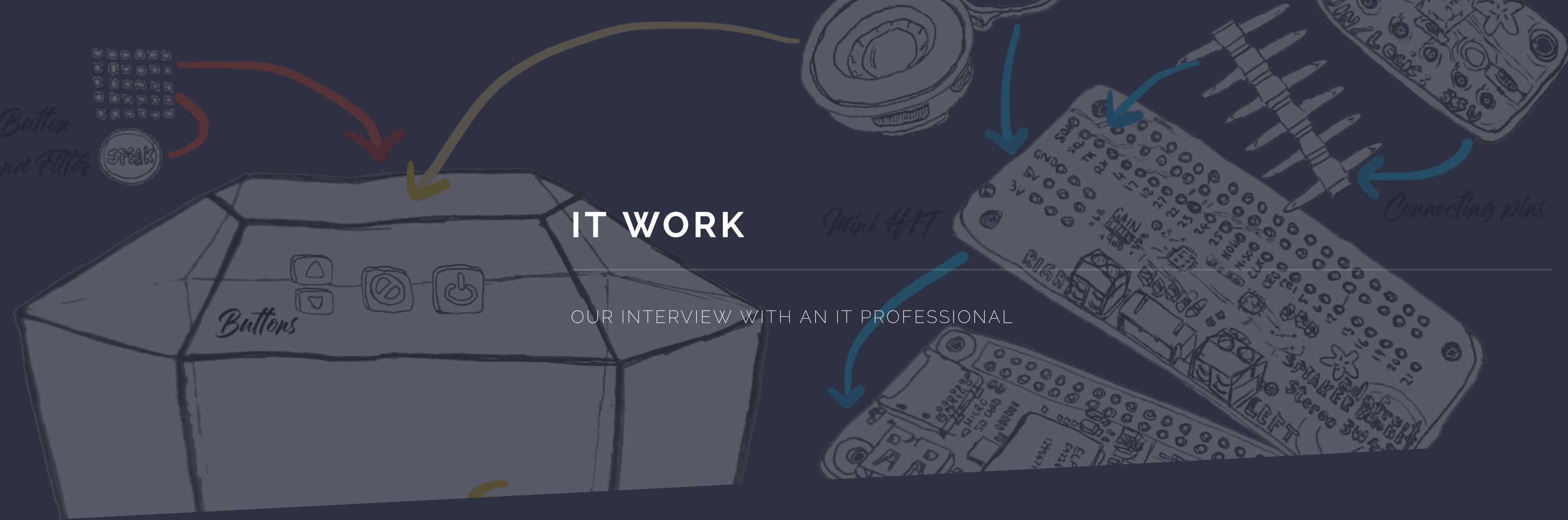
# THOMAS LEWIS

My Ideal Job is the role of  
(Metagames system programmer)  
test analysis, or in other words,  
quality assurance in the video  
game industry. Having  
considered the presented Burning Glass  
data my consideration of an ideal job has  
reconsidered. I reason that I will require  
some higher demand skills primarily con-  
cerning further exploration of JavaScript.



ole is closer to  
e systems,  
quires Michael

With his own skill tree aiming towards a career as an IT field technician, a true asset to 'Meme Team' is Lochlann Keenan Keli who brings his goal of hands-on tech support and interpersonal skills helping to create a well-rounded foundation.



The Meme Team had an interview with a Junior Systems Admin for a US based company, who gave us a useful insight into his daily life and the technology around him, from cloud services, servers and how he started his career in the IT field.

Below is the full transcript from that interview.

#### INTERVIEW TRANSCRIPT

**BRENT**

Alright John, welcome mate, we are the Meme Team, we're studying at RMIT university. Thanks for joining us and thanks for being an interviewee candidate.

First off, do you want to introduce yourself mate, tell us who you are, where you're from, what you do?

**JOHN**

Yeah, no problem. So, my name is John, been working as a junior systems admin for a little over a year and a half now. So basically, the company I work for is an MSP, a managed service provider so companies contract my company to basically be their hands-on IT company. So, whether it's you know software is not working something like hardware wise isn't working or what have you, they call us up and we basically kind of go to bat for them so yeah.

**BRENT**

What are some of the most common problems within your field?

**JOHN**

User error. I would say 90% of the stuff is going to be user error, No. Honestly it's gonna be big patches, like when Windows, Microsoft, when somebody does patching through OS or software. I know like right away I think like right when I started they were trying to make Microsoft was making the transition from Skype for business to Teams and like, nobody, Teams were so bad like, in its early form so a lot of people are having issues with that. So, I would say day to day it's going to be typically like you know. Basically, from the customer's point of view, it's going to be, you know, yesterday it was working, but today it's not. Why? What is that? So, it's lot of troubleshooting, a lot of repetition. I do a lot of server work, server maintenances, deployment, stuff like that. Do network migration, like a company will move into a new office, so move their entire server and their entire network, all the workstations, everything. Yeah, UAP's, wireless access

point. Stuff like that, and we move it all to a new building. So it really keeps me busy. there's a lot of different stuff to do so no two days are the same for sure.

**BRENT**

Yeah for sure. What's the most rewarding part about your job?

**JOHN**

Probably closing a ticket and saying I'm done with something. Most rewarding I, honestly, I like helping people like you know when someone comes in like hey like we got this crazy problem like, and you have to find a way to get from whatever their problem is you have to find a way to get to a solution. So you know it's it might take you know 1/2 hour. It might take a couple days, might be a long \*\*\* project. Sorry. it might be a long project that goes, you know it starts off is one thing and all of a sudden like OK, well then, we're going to get this, had to buy one of these you know. Not to get too specific but things can evolve and it's like at the end it's just like that sense of accomplishment like you help somebody, you know, and especially when it's like, even like a small team you know they're just trying to do their jobs and you help make people get paid to do their jobs. It's good stuff.

**BRENT**

That's what you want. Thanks for that mate. So, Michael?

**MICHAEL**

Good day John, how you going? Is it working now?

**JOHN**

Yeah

**MICHAEL**

Cool. Obviously just got a few questions of me to ask here, but, during your studies, did you find a particular field that grabbed your attention more than one of the others, say like game development, web development, or IT solutions moving forward in that field of study.

**JOHN**

So full transparency, I did not go to school for IT. I started as like an intern basically. So it was kind of a who you know, kind of thing. My fiancé was working and that actually the company that hired me was their IT people, so they found out what I had been doing. Just you know what I what I've been doing. I've built a lot of computers. I've done a lot of networking stuff for my parents in my own home. You know, I did a couple skills tests and they were really impressed. They brought me on as an intern, so I started out just doing answering phones and just fixing computers that people brought into the shop and a year and a half later, I'm doing a bunch of service stuff, I'm working with like gold managed customers for whatever issues they have. So Full disclosure, no schooling man. It just kind of seeing where the path takes me, but right now it's like, you know, now it's handling like the higher tier customers and their daily needs, and also onboarding new clients too. and that's my favourite part actually, 'cause you know you inherit some people's crappy network and then you have to make it work for them, You know, so that's kind of that's kind of fulfilling.

**MICHAEL**

Sounds fun, sounds fun. So in the current field, obviously you said your favourite parts, obviously, making people's networks work, but what would be the most challenging along the path you've gone in relation to daily basis and having to learn new stuff?

**JOHN**

The hardest part is probably that initial email or phone call or whatever, like the hardest, is probably on site like hey, why doesn't this work? You don't have time to Google, you don't have time to ask, they're asking you straight up face to face like why is this not working? That's probably one of the most challenging things, but like day to day it's probably you fixing something and the client breaking it again. Swear to God it happens weekly man. I just spent hours fixing this and you guys broke it again. I don't know how, but it's, you know, it's a lot of repetition. Eventually down the road it's like oh actually I remember doing this and this, so it makes it a lot easier. But yeah, user error and operator error is definitely, probably the most taxing annoying thing for sure.

**MICHAEL**

I can understand that. In your current line, do you use any cloud services? And if you do, what cloud services do you use?

**JOHN**

Um, so actually our company as it is, we don't, I mean, we have our own cloud backups, but the only thing that really worry about is Azure probably and just mostly, it's just troubleshooting it for other people like a lot of people their switching. Drop box is huge, ever since everyone started working remote. You know, Dropbox, One Drive, Google Drive all that kind of stuff is huge now so a lot of people they just kind of said here, figure this out and so we had to kind of walk them through it. I mean I've used Google Drive but I had to learn Dropbox, One Drive, Azure, all that kind of stuff. You can learn on the fly, but it takes a little bit for sure.

**MICHAEL**

That probably it for me. I had one more question, but it was more going down where you feel cloud services would be going, but as you said, you don't really use them in your current field at the moment, so I'll pass it over to Leo.

**LEONARD**

Hi, hey John. You said you didn't go to school, but my question was about if you had an IT goal, career goal and I was thinking more in line of if you're in school what you're aiming towards but say when you first started in the IT field, what would you say was your career goal if you had one?

**JOHN**

I think it would definitely be along the lines of like the network migration and set up, a server deployment. That kind of thing because that's like the nuts and bolts of a network to be able to lay the groundwork for that and starting literally with just like a blank server, and making, it's basically just the canvas like you can make everything in like filling out a whole Active Directory, getting all the raids setup for backups and everything like, just starting from scratch and literally just building from the ground up, I really enjoy doing that. The network migration, like it's very tedious and you actually have to obviously make sure everything is right as it was before so that everything is working once they get to the new office location. But that's probably my favourite, It's probably the server deployment and network migration and setups.

**LEONARD**

Is that like the physical part of it?

**JOHN**

Yeah, that's literally like, you have the wire rack and everything you know you got all the different switches and it's like well you got all these computers how you going to get Internet so you have to work with the different people as the buildings being constructed. Like the electricians and networking guys, cable guys, you're working with everybody and you're making you know that whole office building have their network. So it's definitely not for everybody, but it's pretty interesting to me, Yeah.

**LEONARD**

And just my other question was, have you found yourself moving into different IT fields than you had originally set as your goal? But I think you've kind of stayed in kind of the same field, right?

**JOHN**

Yeah, I think the only thing that's really changed that I really wasn't expecting is, just because everyone was working from home and I'm in the US, which I didn't say that, so we are coronavirus ground zero. So everyone is working from home, so we had to do all this on site work but we weren't allowed to go onto sites for a long time so we had to learn how to do things that we did in person remotely with people who didn't know how to do that, which was really, really difficult. But so we've actually switched to where we are about probably 50/50 now between remote work and physical on site, so that's a little bit different, because you know, it's easy just to go in and do something for somebody, you know. But having to walk them through something like, if you don't have Internet how are you supposed to remote in. So, you literally have to walk them through something like on the phone, and that was, yeah.

**LEONARD**

Oh wow, difficult, right. Yeah, OK that was my questions thanks. I'll pass it on to Steven now.

**STEVEN**

Hi John, nice to meet you. So my questions are more based around the future of your career. First one would be is there any technologies, they may be ones that are in development or ones that you could foresee that you think could help enhance your job currently?

**JOHN**

Yeah, and actually this is something that we just went through. So, we just onboarded a very, very large client, I think they have about 120 workstations, 2 servers and just tons and tons of other fun things. They have a lot of people that travel a lot, so they have tablets that are part of the network and all that kind of crap. So basically, they were with another IT company and they switched over to us and you would think that a lot of this stuff is pretty easy to transition but for some reason or another there's no easy way to switch. Even like pulling antivirus's off, like you have to run like PowerShell commands and \*\*\*\* like that. Sorry. And it's just, removing software from one company and transitioning to another, which it happens a lot like you know what like, times are tough, people can't afford one company, or they can't afford us, so they're going to somebody else. So people are trying to actively find, you know, room for IT in their budget because you have to have it. People can't work remotely without IT support. But when we were on boarding this client like it was just so difficult to kind of just get everybody's software from the other company off and getting everything from our company on there at least as far as like remote access, antivirus, stuff like that. The different software that we have just attracts like, OK, this computer hasn't been online like what's going on with it, it has diagnostics, it has all the hardware stats and stuff like that. It sounds really boring, I know that some of the IT stuff is not as exciting as I know you guys will think about like app development, software development, but yeah. That's just something that if we could find a nice way to transition all that stuff, that would be that would be the dream for me.

**STEVEN**

Yeah, well it sounds tough. So, this is a sort of typical job interview question I guess, but I'll go there anyway. Do you see yourself in the same career path in five years? Same line of work.

**JOHN**

Uh, I'd stay in IT, but at the same time, like, I know that just because people's needs are evolving too, like companies, I think, probably 80% of our clients right now are still working remotely. I mean 'cause still a lot of the US is still shut down, I don't know how much you guys pay attention in the news, but I mean it's still a lot of people that are still working from home. But I think just because more people are relying on their computers, now more than ever, I think ideally in 5 years, I would probably want to be more into like the client acquisition kind of thing like getting more people to sign up with our company like you know that's kind of the, maybe the people person in me, like I enjoy working and helping people so that would probably be something that's more tailored towards my own personality and my own interests.

**STEVEN**

Well, thank you for your answers. I'll pass you off to Thomas.

**THOMAS**

Hello John.

**JOHN**

Hey Tom.

**THOMAS**

Generalized questions, as everyone else has thrown at you. Did you have a type of technology or a person within your field of IT that inspired you towards it? Or is it simply something that you felt the need to do? Is it like, yeah, how are you driven by this?

**JOHN**

I think it's just, it starts out really simple like the first few computers I built, maybe about 10 years ago. It just starts as something simple, something basic and just seeing, kind of, you know, everyone's like, oh, how did you do that? It's like it's really not that hard like it's

actually kind of fun. I enjoyed it, just troubleshooting. I've always liked the critical thinking, problem solving, and stuff and it actually was one of my high school teachers, actually, we wrote our own website in HTML code, like by hand. And just doing that and that is actually the same, coincidentally the same time when they built the computer, I think from then I was always kind of interested. And then I got an opportunity with this company and I've just kind of honed it sense. But yeah, I think we're writing that first website with the, back like I think in my Senior High School, it was really exciting. I mean I never ended up going into coding, but that's kind of the first. I was like, wow, I like this. This is real stuff, this is going to be big.

**THOMAS**

Yeah, that's really cool dude. Beyond that, is there any specified skills, you mentioned coding and critical thinking and that, do you find any specific skills of prevalent within your day-to-day work that you would find a necessity to IT work.

**JOHN**

Patience. Patience, number 1 hands down. I think just being able to think objectively, because you're going to be presented with problems, you're going to be handed info that may be incomplete or incorrect. People might say like hey, I don't think my motherboards working, it's like no you just unseated your RAM dumb, dumb. You have to take everything people say with a grain of salt that it's going to be, basically, one of my bosses actually even said, like when someone calls and gives you an issue, just assume that they're lying. Just try to figure it out, think objectively and just try to start with your point A and just kind of troubleshoot and working through that. And then, I mean, once you do that kind of stuff for a while, I mean it's just, you start, your mind just starts like the person still describing the issue, or like describing the problem and you're already kind of working through it. It's like, OK, well, it can't be the router, you know your kind of working through, OK, OK, well maybe you know, you just keep kind of thinking of different scenarios and I mean that honestly, just constantly being patient and understanding people and then also just you know, being willing to troubleshoot and be wrong.

**THOMAS**

Really, that's awesome. Yeah, I found that really insightful. Thank you. I'm gonna pass you over to Lochie now. Thank you for your time.

**LOCHLANN**

Hey man, so what I want to know, do you have any IT projects which you want to work towards? Whether it's like for a career or for personal reasons that you've kind of been able to work towards in your current job? Sorry if that doesn't make any sense.

**JOHN**

Ah, like projects within, like that I'm doing for companies or stuff that I'm doing personally or what are you thinking here?

**LOCHLANN**

Well, either way, like for companies or just personally like, say if, like I don't know you're setting up like a personal server for yourself or something like that, like at home, or anything like that, that has helped your career.

**JOHN**

So, the owner of my company and the manager I report to, they both have their own media servers at home, so they each have their own dedicated Plex server. So, they have their own network, and they have like, simply to say, that's probably one of the perks. Like I think this was one of Brent's questions that he was kind of showing me. It's like one of the perks. You have access to software; you have access to hardware. You've got access to things that most people probably don't, and I mean it's obviously, for most of us, either really cheap or for free. So, I actually did pick up a server about a week ago and I've been kind of working it just to just to kind of customize it for my own house. So yeah, that's weird that you ask that.

**LOCHLANN**

And also, what was the hardest point in your career and how did you overcome it?

**JOHN**

Hardest point, hardest point. OK, so this, I don't know how much you guys work with like servers and live networks, but we had one of our bigger clients right downtown here in the city and we basically, long story short, we had to unplug their server. And we had about like 40 seconds to do what we needed to do before we had to plug it back in and just knowing that their whole network, while they're still

working, we had to make this switch over from the old server to the new server. And then just not having this amount of time like, it was just a lot of pressure. And you know that it's like everything is kind of riding on that, and I was by myself. So, I mean, yeah, there's situations like that where you know, like you're working with somebody, especially if it's a larger company, there's a lot at stake, whether it be time being a factor or if you break their stuff, like you are held accountable. So, it's just kind of having those kind of pressure situations and I mean, it would be cliche to say don't let it get to you, but it's gonna get you. But just get the job done and do it right.

**LOCHLANN**

Sounds rough. That was the only two that I had. I'll pass it back to Brent

**BRENT**

Yeah, well on behalf of the Meme Team. We would like to thank you for joining us. Even just in joining us, you obviously displayed your position as a systems admin pretty well by troubleshooting our call problem.

**JOHN**

If you want one piece of advice, no matter what field you're in, if something is not working, turn it off and turn it back on. It sounds so stupid, it's so cliche. I'm telling it will solve like 70% of your problems.

**BRENT**

Yeah, well, we'll take that on advice on board. And yeah, we appreciate your time with us. It's been good mate. It's been really insightful and yeah, hopefully it will go a long way to helping us learn and do well in this uni course. So, thank you very much. We appreciate it.

**JOHN**

Goodluck guys, take it easy.

# IT TECHNOLOGIES

OUR RESEARCH ON MULTIPLE TECHNOLOGIES USED IN THE IT FIELD.

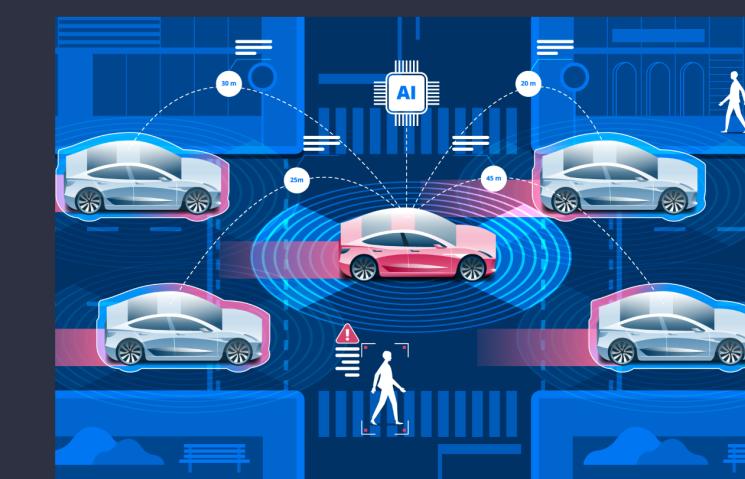
## AUTONOMOUS VEHICLES

Autonomous vehicles are essentially driverless cars; in summation, these vehicles can completely and safely navigate their way around the environment with little to no human input.

The concept of self-driving cars is simple; however, the complex technologies, potential safety issues, and ethical concerns are what is stopping it from becoming a mainstream technology in the present state. For Australia's current technological climate, our latest road vehicles have automated features, such as self-parking, lane-keep assistance, and distance assist; however, this only aids with driving. A licensed human still needs to have full control over the car. It is estimated that over the next 20 years <sup>[1]</sup>, vehicles in Australia will not need human drivers at all while vehicles increasingly become fully automated.

Regulations play a massive part in the complete autonomy of vehicles. There are 5 vehicle automation levels following the United Nations Economic Commission for Europe (UNECE) World Forum for Harmonization of Vehicle Regulations <sup>[2]</sup>. Level 1 is the current driver-assist features, as mentioned earlier. Level 2 is Tesla's Autopilot system, where drivers are expected to keep attention on traffic. Level 3, the driver can do other various things such as use phones and watch movies. Level 4 is the stage where drivers no longer have to be ready to intervene if necessary, and Level 5 is complete automation.

Sensor technology is an integral system in autonomous vehicle development. These essentially allow the vehicle to see the environment around them, such as surrounding vehicles, pedestrians, weather, and other general traffic hazards. One such sensor technology system that has already been developed is called 'Advanced Driver Assistance Systems' <sup>[3]</sup>, which are commonly implemented in most modern car's safety systems. For the modern car, these are not operable directly by the driver but assist in crash prevention and parking. By and large, visual sensors are the predominant technology implemented by ADAS, in addition to lidar (light detection and ranging) and radar (radio detection and ranging). The hardware and software of ADAS used in modern cars are now being targeted towards autonomous vehicles and the future of driverless cars, becoming one of the many parts that make up an autonomous vehicle. The growth in this field of technology will help fast track the implementation of automated services.



Another area of technological advancements required for autonomous vehicles is machine learning. Autonomous vehicles will use both AI and Machine learning to process data collected from its sensors and then decide what it will do with the information from

there<sup>[4]</sup>. Machine Learning will calculate algorithms to identify certain objects and hazards that the sensors detect to determine what course of action the vehicle needs to take moving forward. Machine learning by its very design improves reactions and the decision making of autonomous vehicles with every additional set of data; this allows the 'car' to make decisions and perform actions that are far safer and quicker than the everyday human can react. Furthermore, machine learning technology<sup>[5]</sup> will identify risks, human error, and potential hazards on the road from subtle signs most humans will not notice. This allows the machine learning system to 'learn,' collect data and share this data with all other autonomous cars in the system. As technology progresses, machine learning will make autonomous vehicles more efficient than a human driver can.

This development's obvious impact allows road users to spend more time doing things they would rather be doing within their vehicle's confines, such as playing with their phones, watching movies, studying, or even catching up on sleep. If automation technology is perfected, it also eliminates human error in car accidents, making it a very effective safety measure. According to the Pennsylvania Department of Transportation, driver actions account for over 90% of motor vehicle accidents in the United States of America. Eliminating human error will result in a significant decline in crashes and fatalities. Not only does this have a significant impact on safety concerns, but many positive environmental factors come into play with self-driving vehicles. It is predicted that eventually, automated driving efficiency will reduce road traffic, leading to reduced fuel consumption and, in turn, reduce Carbon dioxide emissions. According to placesjournal.org, "analysts predict that by 2050 self-driving cars will save 59,000 lives and 250 million commuting hours annually and support a new "passenger economy" worth USD 7 trillion."<sup>[6]</sup>

While this does have a significant positive impression on daily commuters, it severely impacts our transport industries, such as Taxis, Uber, Bus companies, and government-funded rail networks, while also affecting the logistical networks like Truck drivers and Couriers. Without human drivers, businesses can potentially save hundreds of thousands in staff salaries by automating vehicle services. In the mining and agriculture industries, we have already seen how automated machines can eliminate the need for human operation and have made operating roles redundant. Mining Company Roy Hill, which is majority-owned by mining magnate Gina Rinehart's company Hancock Prospecting has agreed to convert 77 of their haul trucks from manned to completely autonomous by 2021<sup>[6]</sup>, effectively putting 77 truck drivers out of a job. This is following the lead of other mining giants such as Rio Tinto and BHP. This will leave a huge footprint on the mining industry, no longer needing to hire people in this position ever again whilst beneficially lining the investors' pockets. According to the Australia Taxi Industry Association<sup>[7]</sup>, as of December 2014, there were 21,344 total Taxis owned and operated in Australia. Not if, but when self-driving vehicles come into full automation, one would surmise this will conclusively lead to an end to the need for human-operated Taxi's, thus putting 21,344 Australians in the search for other jobs.

For me, personally, this has a significant positive effect on my life. As a Welder for V/Line, I am required to drive a truck for the daily purposes within my job description - however, it is not the sole reason I am employed as the duties of working as a welder fulfill my primary role. If truck automation became a mainstay, it would allow so much extra time to cover other daily tasks such as paperwork and organizing orders, optimizing the time it takes traveling to and from job sites while still performing my primary welding task. On the contrary, my father is a locomotive driver with V/Line. Although it is not car automation, Australia's train driving industry's growing concern is complete train automation, which would render his employment redundant. Australian federal parliamentary research into automated trains showed increases in efficiency, reliability, and safety while significantly saving labour costs. There are currently 42 cities worldwide<sup>[8]</sup> that enjoy the reliable service of automated public railway transport, with more than an outstanding 50 percent of them belonging to Asia. While this is extremely positive for traffic reduction, pollution, and cost-effectiveness, the repercussions are that it puts hundreds of thousands out of employment worldwide, including locomotive drivers, conductors, engineers, and potentially other railway staff well. Although this is not exactly car autonomy, there are many resembling characteristics between self-driving trains, self-driving cars, self-driving trucks, and so on, these making up the category of autonomous vehicles.

Autonomous Vehicles researched and written by Brent Kimm

#### REFERENCES

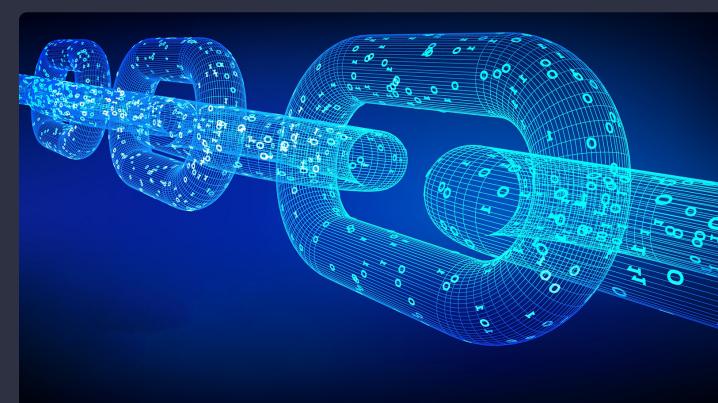
- 
- [1] **Infrastructure.gov.au.** 2020. Automated Vehicles In Australia. [online] Available at: <<https://www.infrastructure.gov.au/transport/automatedvehicles/index.aspx>> [Accessed 17 October 2020].
  - [2] **Hall, C.**, 2020. Self-Driving Cars: Autonomous Driving Levels Explained. [online] Pocket-lint. Available at: <<https://www.pocket-lint.com/cars/news/143955-sae-autonomous-driving-levels-explained>> [Accessed 20 October 2020].

- [3] **Mes-insights.com**, 2020.  
 What Is Machine Learning In Autonomous Vehicles?. [online]  
 Available at: <<https://www.mes-insights.com/what-is-machine-learning-in-autonomous-vehicles-a-948795/&ht>>  
 [Accessed 19 October 2020].
- [4] **Mcdermid, J.**, 2020.  
 Autonomous Cars: Five Reasons They Still Aren't On Our Roads. [online] The Conversation.  
 Available at: <<https://theconversation.com/autonomous-cars-five-reasons-they-still-arent-on-our-roads-143316>>  
 [Accessed 17 October 2020]. (Mcdermid, 2020)
- [5] **ieeexplore.ieee.org**, 2020.  
 Advanced Driver-Assistance Systems: A Path Toward Autonomous Vehicles - IEEE Journals & Magazine. [online]  
 Available at: <<https://ieeexplore.ieee.org/abstract/document/8429957>>  
 [Accessed 19 October 2020]
- [6] **Mattern, S.**, 2020.  
 Mapping'S Intelligent Agents. [online] <https://placesjournal.org/>.  
 Available at: <[https://placesjournal.org/article/mappings-intelligent-agents/?gclid=CjwKCAjwKr8BRB\\_EiwA7eFapkG9p6w0FvrBKZxIOAp45bJpni47uCUn9WKJ-bEdkLbTjfL\\_sv6EBhoCCBQQAvD\\_BwE&cn-reloaded=1](https://placesjournal.org/article/mappings-intelligent-agents/?gclid=CjwKCAjwKr8BRB_EiwA7eFapkG9p6w0FvrBKZxIOAp45bJpni47uCUn9WKJ-bEdkLbTjfL_sv6EBhoCCBQQAvD_BwE&cn-reloaded=1)>  
 [Accessed 17 October 2020].
- [7] **Crozier, R.**, 2020.  
 Roy Hill To Retrofit 77 Haul Trucks For Autonomous Operation. [online] iTnews.  
 Available at: <<https://www.itnews.com.au/news/roy-hill-to-retrofit-77-haul-trucks-for-autonomous-operation-537936>>  
 [Accessed 17 October 2020].
- [8] **ATIA**, 2020.  
 Taxi Statistics | ATIA. [online]  
 Available at: <<https://www.avia.com.au/taxi-statistics/>>  
 [Accessed 17 October 2020]
- [9] **Weedon, A.**, 2020.  
 Driverless Trains Are Being Embraced Around The World — What Could Go Wrong?. [online] Abc.net.au.  
 Available at: <<https://www.abc.net.au/news/2019-05-31/driverless-trains-embraced-around-the-globe-what-could-go-wrong/11155858>>  
 [Accessed 18 October 2020].
- [10] 2020.  
 [online]  
 Available at: <<https://www.youtube.com/watch?v=1IUkyCYdAEY>>  
 [Accessed 17 October 2020].

## BLOCKCHAIN AND CRYPTOCURRENCIES

A Blockchain<sup>[1]</sup> is the peer-to-peer technology that permits users with a common interest to co-create ledgers of transactions without the need to trust the other parties in the peer-to-peer network or the need to rely on a central authority<sup>[2]</sup>, these ledgers are transparent, unchangeable, and stored as verified copy's between multiple nodes.

A transaction is finalised into a block not unlike a page in a paper ledger<sup>[3]</sup>, all blocks are chained from the original block to the most recent block creating the ledger timeline. A single party or parties are unable to make an unauthorised change to the ledger due to there being no one central clearing authority who can allow or deny the change, it's essentially all the users of the peer-to-peer network who authorise adding a block by checking all the previous blocks in the chain, thus changing a block that is already part of the chain is not possible.



Although the name cryptocurrency<sup>[10]</sup> has the word "currency", it is better to refer to cryptocurrency as a medium of exchange, this is due to the debate that a currency shouldn't have intrinsic value, though being a medium of exchange is essentially the same thing. These mediums of exchange use the blockchain technology to validate and legitimise transactions, a person can own cryptocurrency and use it to purchase goods and services privately and securely.

Because cryptocurrency is not regulated, it first found its use by criminals on the internet's black market, though now many users have come to cryptocurrency for its practicality, speed, and security.

Spotify<sup>[5]</sup> is a good example of how blockchain technology is used today, Spotify is using a decentralised database to allow artist to be consistent with license agreements and tracks. They are attempting to solve the issues of artist and labels in the industry which are not being fairly acknowledged with blockchains transparency and unchangeable ledgers.

A good example of what could be done soon (and is in development) is with banking<sup>[6]</sup>, currently in order to transfer currency from an Australian bank to another country it requires the money to go through multiple banks with multiple layers of intermediation, taking an undetermined amount of time without a clear ledger of where the money travelled. Blockchain technology can securely move digital assets without the need of these banks or third parties, this also allows financial services access for people who didn't have this access before and removes many of the transaction and processing fees involved in moving Fiat currency.

Blockchain<sup>[7]</sup> is made up of the past and current transaction ledgers as 'blocks' so, to add a new block, first a miner would attempt to add the transaction(s) as the newest block to the chain. For a miner to be able to achieve this, they must run a full node with the entire transaction data of the blockchain, this data will be compared to data from the other nodes in the peer-to-peer network to verify its legitimacy. Furthermore, the miner must complete an energy intensive mathematical equation using the RAM, CPU, and graphics card of their device while competing with other miners for the right to add the latest transaction to the blockchain. As they are using their energy and hardware (technology with computational power, i.e. computers, phones, servers), Miners are oftentimes incentivised with rewards of cryptocurrency in exchange for performing the tasks which keeps the blockchain maintained.

As these transactions are broadcasted to the peer-to-peer network of nodes, the node's job is to store, spread, and keep the transaction history of the blockchain data as this forms the infrastructure of the blockchain and is considered the blockchain itself. These nodes use known algorithms to check and verify the transactions and user's status. Once validated by the nodes, the transaction combines with the previous blocks in the chain, creating a new block that consist of the previous and current transactions and their data. The new block is added to the chain where it can no longer be altered or moved. A node simply acts as a gatekeeper with a directory of the blockchain transaction history, as well as updating other nodes that are coming online or are outdated.

This Technology can be used to create secure communication in hostile environments, there is no need to rely on trust<sup>[9]</sup> when using a decentralised system like blockchain as it enables every user to have equal privileges. With blockchain technology there is no good or bad, right or wrong, there is only valid or invalid. This is changing some jobs already, for instance; Job's involved with supply chain's no longer need an intermediary to process and account all the transactions between a business deal<sup>[4]</sup>, as blockchain is a reliable foolproof record that the ecosystems of business partners can easily adopt. Thus, for some jobs, the impact of this technology has removed the time, effort, and management involved that would require checking ledgers and accounts, as well as making some jobs redundant.

It is hard to say who is likely to be most affected by blockchain technology and cryptocurrency, as this technology is truly not bound by geography it is very possible that the citizens of a country such as Venezuela<sup>[8]</sup> (Venezuelan's are currently in an economic crisis) would look to cryptocurrency to bypass their hyperinflated fiat currency as this can act as an alternative payment for goods and services.

Blockchain technology allows businesses to process data faster and more efficiently, sometimes by cutting out the middleman entirely and other times by changing old jobs or even adding new jobs. An example of blockchain creating new jobs could be the role of creating the standardised template for a business to enter their data, data entry, running a node or mining, and even increasing jobs in hardware maintenance.

There are also talks about availability of people's information, one Forbes article wrote about the permanent storage of customer health data and their identity which will allow health care systems to accurately find your medical history. This can be a major benefit for medical service providers and their customers as it saves time, unfortunately this also creates the debate about privacy, who really controls your health records stored on multitudes of computers, can you delete it?

To the average Australian, blockchain and cryptocurrency will not be a technology they actively know they are using until cryptocurrency and its uses are adopted by businesses and systems that already have their place in society i.e. banks and supermarkets, or until blockchain is used to store citizens data. It may take a while for this technology to be used by a health care

system or as a form of in store payment. Personally, I would not want my medical history stored in a capacity that doesn't allow it to be erased. For some people this could create a roadblock for potential jobs or government forms, If the person is not breaking a law, then they have the right and choice to prevent their private information from the prying eyes of employers and authorities, wishing to keep some specific information ignorant. Private and confidential information will always interest individuals and businesses with malicious intent or greed. If it is possible that personal data can be stored and viewed by others, then who should be allowed to make entries and who should be allowed to view the data? As an example of a potential road this technology might move towards, a previous employer would have all the power over x-employee if they were allowed to leave a employment profile review.

As new technology, Blockchain and Cryptocurrency are not regulated by the government, but laws are always able to be created and laws are able to be changed. In the interest of keeping my family's private information safe This brings up concern for my family and myself about our privacy. The ability to take advantage of blockchain technology doesn't provide much difference in my daily life as it hasn't been adopted by most of the systems that I already use, and if it were adopted, then one way I would use this technology would be to transfer money between my families and my own foreign and Australian bank accounts while I'm traveling abroad.

As an example of the use for us students looking for a career in the IT industry, the ability to create a side project outside of work hours and storing the ongoing documentation in an unchangeable ledger very well may affect some of us. To have unchangeable dated and timed documentation may be very useful to some students who wish to protect their intellectual property against a company that claims they used company time or resources to work on the project.

As a whole, I like the idea of cryptocurrency and how it can improve our lives, and the technology of blockchain for removing the trust involved in business, yet I am weary about the possibilities of a system that has the ability to leak private and confidential information.

Blockchain and cryptocurrency researched and written by Leonard McDonald

#### REFERENCES

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- [1] 2020. Blockchain Technology For Dummies - Blockchain Explained Simply. [online] Available at: <<https://www.youtube.com/watch?v=2yJqjTiwpxM>> [Accessed 20 October 2020].
- [2] 2020. TED Talks: The Blockchain Explained Simply. [online] Available at: <[https://www.youtube.com/watch?v=KP\\_hGPQVLpA](https://www.youtube.com/watch?v=KP_hGPQVLpA)> [Accessed 20 October 2020].
- [3] BBC News. 2020. Blockchain: The Revolution That Hasn't Quite Happened. [online] Available at: <<https://www.bbc.com/news/business-51281233>> [Accessed 20 October 2020].
- [4] Codersera.com. 2020. How Blockchain Is Revolutionizing The Supply Chain Industry? -. [online] Available at: <<https://codersera.com/blog/how-blockchain-is-revolutionizing-the-supply-chain-industry-2/>> [Accessed 20 October 2020].
- [5] Computer Rock. 2020. Blockchain In Action - 16 Inspirational Examples | Computer Rock. [online] Available at: <<https://computerrock.com/blog/blockchain-in-action-16-inspirational-examples/>> [Accessed 20 October 2020].
- [6] Gazdecki, A.. 2020. Council Post: Five Ways Blockchain Could Change The World. [online] Forbes. Available at: <<https://www.forbes.com/sites/forbestechcouncil/2018/09/07/five-ways-blockchain-could-change-the-world/>> [Accessed 20 October 2020].
- [7] Medium. 2020. Blockchain: What Are Nodes And Masternodes?. [online] Available at: <[https://medium.com/coinmonks/blockchain-what-is-a-node-or-masternode-and-what-does-it-do-4d9a4200938f#:~:text=A%20blockchain%20exists%20out%20of,compare%20it%20to%20small%20servers\).&text=A%20full%20node%20is%20basically,transaction%20history%](https://medium.com/coinmonks/blockchain-what-is-a-node-or-masternode-and-what-does-it-do-4d9a4200938f#:~:text=A%20blockchain%20exists%20out%20of,compare%20it%20to%20small%20servers).&text=A%20full%20node%20is%20basically,transaction%20history%)> [Accessed 20 October 2020].
- [8] Polygon. 2020. How Runescape Is Helping Venezuelans Survive. [online] Available at: <<https://www.polygon.com/features/2020/5/27/21265613/runescape-is-helping-venezuelans-survive>> [Accessed 20 October 2020].
- [9] PwC. 2020. Making Sense Of Bitcoin, Cryptocurrency And Blockchain. [online]

Available at: <<https://www.pwc.com/us/en/industries/financial-services/fintech/bitcoin-blockchain-cryptocurrency.html>>  
[Accessed 20 October 2020].

[10] **Section.** 2020.  
The History Of Blockchain | Section. [online]  
Available at: <<https://www.section.io/engineering-education/history-of-blockchain/#:~:text=Scott%20Stornetta%2C%20started%20work%20on,basis%20of%20the%20decentralized%20blockchain.>>  
[Accessed 20 October 2020].

## CLOUD SERVICES

Cloud Services and Cloud Computing is the delivery of various internet service. An On-demand technology where users can utilize IT resources over the internet and work on these services as a pay per use mechanic, rather than a subscription-based service, which charges users periodically. Cloud computing also enables the user to store data and resources in a server on other premises. It allows the user to access information from any point of access around the globe; all they need is an internet connection and the correct user credentials. Services through cloud technology, are growing by the day, there are usually three types of models used in cloud services.

The first form is Software as a Service (SaaS). SaaS uses the web to convey applications, which are overseen by an outside seller to its clients. The majority of SaaS applications run directly through your internet browser, which implies they do not need any downloads or establishments on the customer side. Because of its web conveyance model, SaaS wipes out the need to have IT staff download and install applications on every individual PC. With SaaS, merchants deal with all expected specialized issues, for example, data, middleware, servers, and storage, resulting in streamlined maintenance and support for the business. SaaS gives various preferences to workers and organizations by extraordinarily diminishing the time and cash spent on repetitive assignments, for example, installing, overseeing, and updating software. This allows much time for specialized staff to spend on more concerning issues and issues inside the organization.

The second form of cloud service is Platform as a Service (PaaS). PaaS delivers specific software while being utilized for applications. PaaS conveys a structure for designers that they can expand upon and use to make modified applications. The enterprise or an outsider supplier can oversee all servers, storage, and networking while the designers can keep up the board of the applications. The delivery model of PaaS is like SaaS, aside from as opposed to conveying the product over the web, PaaS gives a stage to programming creation. This stage is transmitted by utilizing the web, allowing engineers to focus on building the product without agonizing over working frameworks, programming updates, storage, or infrastructure. This cloud service can enormously lessen expenses, and improve a few difficulties that surface in the event that you are quickly creating or sending an application.

The third form of cloud service is Infrastructure as a Service (IaaS). IaaS is made of exceptionally adaptable and mechanized figure assets. IaaS is entirely self-administration for getting to and monitoring the computer, systems administration, networking, storage, and other services. IaaS permits organizations to buy assets on-request and varying as opposed to purchasing equipment outright. IaaS delivers cloud computing infrastructure, including servers, operating systems, networks, and storage, through virtualization technology. These cloud servers are generally given to the organization through a dashboard or an API, giving IaaS customers unlimited oversight over the whole foundation. IaaS provides similar technologies and storage as a traditional data centre without having to keep up or deal with every last bit of it. IaaS customers can, in any case, get to their servers and storage directly, yet it is wholly redistributed through a "virtual data centre" in the cloud.

Rather than SaaS or PaaS, IaaS customers are liable for overseeing angles, for example; applications, runtime, OSes, middleware, and data. Nonetheless, suppliers of the IaaS deal with the servers, hard drives, systems administration, virtualization, and storage.

Over the next few years, there is talk about trying to get a Graphics as a Service (GaaS) in relation to the demand for high-end Graphics Processing Units (GPU). As high-end computers are becoming more in demand for gamers and content creators alike to try and get the most out of the GPU and CPU, this service that will be a fraction of the cost and help all users achieve the demands of a high-end system without the overheads

Technological developments that make cloud computing possible are Broadband networks, and internet architecture, as the cloud network needs to be connected to the internet to access from anywhere around the globe. Datacenter technology in relation to, have a large number of servers at one location (e.g. Google data centers) all connected to the internet to have users connect

Also, a need for Virtualization technology is on the rise. Virtualization is a process of converting a physical IT resource into a virtual IT. Web technology and cloud computing rely on the internet. Web technology is used as both the implementation medium and the management interface for cloud services.

Multitenant technology enables multiple users (tenants) to access the same application simultaneously. Multitenant applications ensure that tenants do not have access to data and configuration information that is not their own.

The likely impact of the globe changing to a cloud service system is that companies can reach around the world to do business. IT Help desk can remote access a computer and help fix the issues without having to have someone go on-site and help their clients. What is likely to change concerning cloud services is getting faster access to networks to get larger files transferred to other virtual computers and your physical computer on site. I believe the most affected in the IT industry from the movement to Cloud Services would be the onsite technicians. With cloud services being offsite, there is no need for local technicians for machine upgrades or application upgrades. A positive for cloud services for the majority of companies is that the overhead cost of running day to day is reduced drastically and increasing the profits annually. Having cloud storage for a company will also reduce the size of the building the company will need in turn increasing the amount of companies in a concentrated area.



Having the data servers off-site and run by other companies lowers the cost of maintenance and the need to upgrade the computers on site.

Cloud Computing is used every day by almost everybody whether it is online schooling, especially during the current global pandemic, to playing and sharing video games with friends and family over servers with game sharing on the consoles. When I am out and about and think about something I need to type into a document, I can write it on my phone and then my phone will sync to the cloud services I have, when I turn my computer on it loads up and syncs to the cloud services, bringing my saved document from the cloud to my pc. An excellent example of one of these services is OneDrive. I also help my mother run a website for the aged care lifestyle coordinators around the world, and we both have input on the site from WordPress to Dropbox. Without these two cloud services, I would not be able to help my mother as she is an hour away from my location. My partner uses cloud services to stay in touch with the work happening in her office as she is working remotely. If we did not have these services at hand or readily available everything I have mentioned above from schooling online, the games we play, to the documents we share between friends family and work, without the advances we have had in cloud computing and cloud technologies none of this would be available

Cloud services researched and written by Michael Heaney

#### REFERENCES

- 
- [1] [En.wikipedia.org](https://en.wikipedia.org) 2020.  
Cloud Computing. [online]  
Available at: <[https://en.wikipedia.org/wiki/Cloud\\_computing](https://en.wikipedia.org/wiki/Cloud_computing)>  
[Accessed 20 October 2020].
- [2] [Hilarispublisher.com](https://www.hilarispublisher.com). 2020.  
[online]  
Available at: <<https://www.hilarispublisher.com/open-access/cloud-computingpositive-impacts-and-challenges-in-business-perspective-jcsb-1000294.pdf>>  
[Accessed 20 October 2020].

**WHAT IS CYBERSECURITY? WHAT MAKES IT SO IMPORTANT?**

Cybersecurity is a range of technologies, processes, and practices which protect data, devices, networks, and applications from anything sinister, ranging from unauthorised access to purposefully being damaged from a cyberattack. According to DNSstuff<sup>[20]</sup>, the most common types of cyberattacks include: SQL Injections, which utilises malicious SQL code to access confidential information such as sensitive company or customer data<sup>[1]</sup>; Phishing Attacks, which is when the attacker poses as a trusted individual or company and tricks the victim through email, or text, into opening a malicious link, which will most likely lead to a malware being installed on the victims system<sup>[2]</sup>; and Malware, that refers to malicious software that can damage or freeze devices, steal sensitive data, and cause general chaos.<sup>[3]</sup>



It doesn't matter who you are or how safe you are, no one is invulnerable from a cyberattack. In today's day and age, cybersecurity is one of, if not the most, necessary types of defence. In our modern society, access to technology is essential. Almost everybody uses some kind of computer and phone. On most of these devices, people keep all their personal information, like stored passwords, bank accounts, social media accounts, and private photos. Anyone can learn how to access and steal this information, with enough time and patience. Scamming someone and stealing their data, is as easy as sending an email, or borrowing their phone to "make a call".

There are various ways to be protected, the main, of course, is downloading an antivirus/antimalware program, which can help to protect devices from malicious programs and individuals. This may seem like enough protection for some people. However, others use VPNs (Virtual Private Network) to route their internet connection through a provider's private server, creating a "tunnel" which encrypts your data.

Over the many years that we have had computers, our safety has had to evolve with it. Back in the old days, before internet banking, social media, online gaming, etc., people did not have much to worry about. However, there were still malicious programs and people out on the World Wide Web, but there was less of a worry of people getting their information stolen from the internet. The first known computer virus was a worm named Creeper which would display a message saying "I'm the creeper: catch me if you can!" created by Bob Thomas in 1971. It was put onto ARPANET (a network which was the foundation of the internet we know today<sup>[6]</sup>) to spread to different computers and self-duplicate, as Creeper duplicated itself, it would erase older versions of itself<sup>[5]</sup>. In retaliation to this, Thomas's friend wrote another program to delete any instance of Creeper appropriately named: Reaper. Thus making Reaper the first antivirus software.

Later, in 1989, the "Morris Worm" started to spread, which was the first DoS (denial of service) attack to spread around the internet, which affected around 6,000 computers. According to the creator of the Morris Worm; Robert Morris. It was designed to determine just how big the internet was, although what the worm would do was infect the same computer over and over thus slowing it down to the point of crashing. To rid the world of the Morris Worm, regional networks had to be disconnected for several days, shutting down the entire internet. From this, teams were created to tackle these kinds of issues; these teams were called Computer Emergency Response Teams, or CERTs for short.<sup>[4]</sup>

Then came the 90s, all new exciting technology! Easily accessible by the public, Tamagotchi's for the kids! Phones which were inside of cars! Super HD realistic amazing graphics in video games! And the most exciting, VIRUSES! Anyone could upload anything, so why not upload viruses? They started primarily as pranks pulled by internet trolls, but later expanded into more complex infections, like trojans, spyware and malware. Unfortunately, CERTs couldn't do a lot, yes they would fight the viruses, but they were just a response team. They could react and deal with the emergency when it came to be but could not prevent the outbreak from occurring. Because of this, antivirus software entered the field, which would fight the viruses, and save people's data.<sup>[4]</sup>

Coming to now, we have cyber-attacks have drastically evolved. Cybercriminals are coming up with more malicious, creative, and challenging ways to obtain people's data and ruin people's lives. This comes to the question, what is the new state of the art technology regarding cybersecurity? Antimalware companies such as Symantec are using Artificial Intelligence and Machine Learning

to "... analyse all of the data running into or out of an organisation to determine where the vulnerabilities of those systems lie." [7] AI and Machine Learning can analyse data collected from millions of different incidents and utilise this knowledge to identify potential threats. Network-monitoring tools can also be used (which utilise AI) to gather the daily behaviour of users, and analyse the information collected to smoke out anything malicious, whether it be a program downloaded on the computer or a link someone clicked on in an email. Thus, making it harder for hostile threats to harm devices.<sup>[7]</sup>

However, this does not mean people cannot steal your information or data; it just makes it harder for harmful programs to access your data. Unfortunately, people can still steal your details from social media sites such as Facebook, or Instagram, and they can take information from your mailbox or mail which was thrown in the rubbish. They can download photos, take your name, and pretty much steal your identity. With the correct safety measures, this can be prevented, by privatising your profiles, limiting the amount of information uploaded onto these sites, putting a lock on your mailbox, and disposing of mail thoroughly.

According to Microsoft's CYBERSPACE 2025: Today's Decisions, Tomorrow's Terrain there are three future scenarios as to what is going to happen. The first being Plateau which predicts that some countries can advance economically and socioeconomically with the use of technology, while others are left behind, causing a very uneven terrain for cybersecurity. The second Peak, which is when governments collaborate to promote strong open trades. In this scenario, businesses, governments and other organisations encourage the widespread use of technology, resulting in the accelerated growth of improved cybersecurity. The third scenario is Canyon, which has a limited use of ICT, causing none-to-slow growth of cybersecurity, due to the isolation, and obstructionist government policies, restricting trade amongst others and lessening economic and socioeconomic relationships with other countries.<sup>[8]</sup>

The most likely scenario out of these three is Plateau. Primarily because, some countries have been struggling to advance technologically, and this will continue for at least another decade. However, the world will be trying to push towards the Peak scenario; I do not think that the Peak outcome will occur for a while.

This would create more jobs in the cybersecurity sector, and in IT in general. With the significant demand for cybersecurity professionals at the moment, it means that if by 2025, the Plateau scenario or the Peak scenario occurs, there will be a more significant demand for cybersecurity professionals.

#### HOW WILL THIS AFFECT YOU?

Every day I use my computer, smartphone, smartwatch, car head-unit, and online banking. All of my information like my name, phone number, address, etc., is accessible on all of these, with the correct safety measures such as; restricting what I upload, keeping my data as private as I can, and using antimalware programs, I have been keeping myself self and my family safe.

Cyber security researched and written by Lochlann Keenan Kelli

#### REFERENCES

---

[1] **Learning Center.** 2020.

What Is SQL Injection | SQL Attack Example & Prevention Methods | Imperva. [online]  
Available at: <<https://www.imperva.com/learn/application-security/sql-injection-sql/>>  
[Accessed 20 October 2020].

[2] **Learning Center.** 2020.

What Is Phishing | Attack Techniques & Scam Examples | Imperva. [online]  
Available at: <<https://www.imperva.com/learn/application-security/phishing-attack-scam/>>  
[Accessed 20 October 2020].

[3] **What Is Malware? How Malware Works & How to Remove It.** 2020.

What Is Malware? How Malware Works & How To Remove It. [online]  
Available at: <<https://www.avg.com/en/signal/what-is-malware>>  
[Accessed 20 October 2020].

[4] **Fruhlinger, J.**, 2020.

Top Cybersecurity Facts, Figures And Statistics For 2020. [online] CSO Online.  
Available at: <<https://www.csionline.com/article/3153707/top-cybersecurity-facts-figures-and-statistics.html>>  
[Accessed 20 October 2020].

[5] **Techopedia.com.** 2020.

What Is Creeper Virus? - Definition From Techopedia. [online]  
Available at: <<https://www.techopedia.com/definition/24180/creeper-virus>>  
[Accessed 20 October 2020].

- [6] **SearchNetworking**, 2020.  
What Is ARPANET? - Definition From WhatIs.Com. [online]  
Available at: <<https://searchnetworking.techtarget.com/definition/ARPANET>>  
[Accessed 20 October 2020].
- [7] **Us.norton.com**, 2020.  
What Is Antivirus Software? Antivirus Definition | Norton.  
[online] Available at: <<https://us.norton.com/internetsecurity-malware-what-is-antivirus.html>>  
[Accessed 20 October 2020].
- [8] **Query.prod.cms.rt.microsoft.com**, 2020.  
[online]  
Available at: <<https://query.prod.cms.rt.microsoft.com/cms/api/am/binary/REXXtS>>  
[Accessed 20 October 2020].
- [9] **Services, P.**, 2020.  
Cyber Attack - What Are Common Cyberthreats?. [online] Cisco.  
Available at: <[https://www.cisco.com/c/en\\_au/products/security/common-cyberattacks.html](https://www.cisco.com/c/en_au/products/security/common-cyberattacks.html)>  
[Accessed 20 October 2020].
- [10] **Digital Guardian**, 2020.  
What Is Cyber Security? Definition, Best Practices & More. [online]  
Available at: <<https://digitalguardian.com/blog/what-cyber-security>>  
[Accessed 20 October 2020].
- [11] **Services, P.**, 2020.  
What Is Cybersecurity?. [online] Cisco.  
Available at: <[https://www.cisco.com/c/en\\_au/products/security/what-is-cybersecurity.html](https://www.cisco.com/c/en_au/products/security/what-is-cybersecurity.html)>  
[Accessed 20 October 2020].
- [12] **Software Reviews, Opinions, and Tips - DNSstuff**, 2020.  
Top 6 Common Types Of Cyberattacks In 2020 - Dnsstuff. [online]  
Available at: <<https://www.dnsstuff.com/common-types-of-cyber-attacks>>  
[Accessed 20 October 2020].
- [13] **Nest**, 2020.  
The Fascinating Evolution Of Cybersecurity. [online]  
Available at: <<https://www.latrobe.edu.au/nest/fascinating-evolution-cybersecurity/>>  
[Accessed 20 October 2020].
- [14] **AJ Willingham, C.**, 2020.  
9 Tech Crazes That Made Us Lose Our Minds In The '90S. [online] CNN.  
Available at: <<https://edition.cnn.com/2017/08/10/us/90s-technology-fads-trnd/index.html>>  
[Accessed 20 October 2020].
- [15] **En.wikipedia.org**, 2020.  
Reaper (Program). [online]  
Available at: <[https://en.wikipedia.org/wiki/Reaper\\_\(program\)](https://en.wikipedia.org/wiki/Reaper_(program))>  
[Accessed 20 October 2020].
- [16] **Nortonlifelock.com**, 2020.  
Securing Against Malware Using Artificial Intelligence. [online]  
Available at: <<https://www.nortonlifelock.com/blogs/feature-stories/securing-against-malware-using-artificial-intelligence>>  
[Accessed 20 October 2020].
- [17] **Nest**, 2020.  
Cybersecurity: One Million Job Openings And Counting ... [online]  
Available at: <<https://www.latrobe.edu.au/nest/cybersecurity-one-million-job-openings-and-counting/>>  
[Accessed 20 October 2020].
- [18] **En.wikipedia.org**, 2020.  
Social Hacking. [online]  
Available at: <[https://en.wikipedia.org/wiki/Social\\_hacking](https://en.wikipedia.org/wiki/Social_hacking)>  
[Accessed 20 October 2020].
- [19] **Palmer, D.**, 2020.  
AI Is Changing Everything About Cybersecurity, For Better And For Worse. Here's What You Need To Know | Zdnet. [online] ZDNet.  
Available at: <<https://www.zdnet.com/article/ai-is-changing-everything-about-cybersecurity-for-better-and-for-worse-heres-what-you-need-to-know/>>  
[Accessed 20 October 2020].
- [20] **Software Reviews, Opinions, and Tips - DNSstuff**, 2020.  
Top 6 Common Types Of Cyberattacks In 2020 - Dnsstuff. [online]  
Available at: <<https://www.dnsstuff.com/common-types-of-cyber-attacks>> [Accessed 20 October 2020].



# REFLECTIONS

THE MEME TEAMS REFLECTIONS ON OUR GROUP PERFORMANCE.

## GROUP REFLECTION

The consensus among “Meme-Team” members is that everyone got along really well. We all believed we became good friends, which lead to a great group dynamic and team chemistry. Michael noted that the group understood when we had time for “fun and games,” and when we knew we had to focus on the task at hand. Thomas believed as a group, we would actively communicate with each other whilst having a solid understanding of each other’s skillsets, which made it easy to delegate out tasks. Everyone seemed to have a similar understanding that we all had personal lives and commitments we had to attend outside of this project. We all communicated well and put things out to a group vote of when we could organize meetings and complete tasks.

We all noted that improvement had to be made in group meetings in the future, particularly not going off-topic. Brent explained that a clear agenda or detailed list of upcoming tasks could have been made beforehand, with further discussion focused on that rather than filling the required times with general chat. Although having a professional image in the workplace is a valuable asset, according to Leonard’s opinion, our relaxed nature in team meetings allowed us to function better.

It was stated through multiple reflections that such high levels of communication in our first project together were surprising. This, in turn, allowed for a better understanding of each other’s strengths and weaknesses and worked fittingly around them. Thomas, who generally finds it difficult to work in team environments, was surprised by how well the team allowed him time and respect to input his information. Brent said that he was surprised how well the Meme-Team got along so well, which Lochlann reiterated by claiming we worked well without any disputes, personal clashes, or arguments.

Overall, we learned that group dynamics vary greatly between team members. Steven explained that it was challenging to organize different tasks and roles as a group. People have different opinions, different skillsets, lives, and commitments outside of the project. There will always be unforeseen circumstances that arise during unexpected times, and he stated that each person has their own unique way of dealing with these problems. Brent’s opinion was that equal contribution toward the assignment was impossible and that certain members carried a greater output over the course of the assignment. It is not that this is a bad thing or that anyone was holding the group back, as all workplaces have employees who naturally accomplish a big workload. He said that to remain level headed, he would focus on what he could do as an individual to contribute to the team, rather than worrying about what anyone else was contributing.

The Meme-Team’s collaboration via Github worked very well for us. Steve had the greatest contributions as he was the predominant coder of our group. Brent uploaded many meeting minutes, so Github’s contributions were slightly exaggerated as Github measures of Lines contributed rather than Words. This platform allowed us to access different forms and files when working together easily, making building the website easy to copy/paste snippets of information. While the contributor’s page on Github is a handy feature, it doesn’t fully

show the team's whole contributions behind the scenes. The graph contribution information doesn't represent time and research put into the information uploaded.

In summary, each team member was definitely happy with the overall results of the project. We all had a great time working with each other. However, it was stressful; we still managed to keep things together, stay focused, and have fun achieving a great finished outcome.

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Below you can find the thoughts and reflections of each team member of the Meme Team

#### BRENT

Overall, I am very pleased with assignment 2. Outside of a few personal commitments that team members have needed to attend, all meetings have had full attendance, have been very punctual and we have met all our required dates.

I feel the agenda for each meeting could have been improved upon. As soon as we finished discussion on the required topics, we were essentially filling in the minimum required time by chatting for the rest of the meeting. A more detailed list of tasks is required in the future.

I was surprised by how well our group got along. A team project rarely coheres perfectly together; however, ours seemed to do so. Everyone was very understanding about the needs of personal commitments and the flexibility required to work around that. After every meeting, team members would sit around and chat about the uni course, the assignment, gaming, and plenty of other things.

What I learned is that it is impossible for each member to contribute an equal amount in a team environment. Whilst our group definitely did not have any slackers per se, I felt a couple of team members carried a huge output over the course of the assignment. In a perfect world, everyone would contribute the same; however, in almost all workplaces I have been involved in, there are definitely people who naturally achieve more than others. I found the important thing is not to stress what others have (or have not) done and focus on what I can do to help the team.

Our Github activity has been a really positive asset to our project. Each member has made outstanding contributions toward it, in particular our Coders. Although I am not in the coding part of our team, I imagine GitHub made their roles much easier.

#### LEONARD

This team works very well together, and I think it shows, everyone pulled their weight and the group dynamic is a testament to how quickly strangers can get to know each other when they have similar interests and a fun attitude which the 'Meme Team' definitely has. Each team member had a healthy amount of urgency, a great deal of communication (multiple times a day inside and outside of Microsoft Teams), and often put in humorous enterprising effort, quite surprisingly, this is exactly the team that fits with my personal profile.

As the team name suggests, a downside to our group of individuals is our ability to 'meme' or joke around. Many times, we would joke around or discuss group work outside of meetings and RMIT approved platforms, but often during a recorded 'Teams' call we would get side-tracked and distracted. If something were to be improved it would be our 'professional image', though it is my opinion we function better with the relaxed nature that's created otherwise. Working in a group allows us all to take on different workloads, simultaneously helping each other and returning the favour, I did not know I would be interested in going to team meetings, but I learnt that groups can become something to look forward to with the right people.

**LOCHLANN**

I feel as though the team has had an outstanding dynamic throughout the course of assignment 2. We all attended every meeting on time, and if not, we would let our team members know well in advance. We would stay on topic as close as possible, although we could have done better in this regard. At times, it did become rather unprofessional with the off-topic chat; however, I think that was more a reflection of how well we got along working with each other. I felt very comfortable with everyone, and there has been a tremendous amount of support between all of us. Tasks have been completed on time.

All of us would communicate as to when we could finish our tasks, and if we could not, we would let the other team members know. All of the meetings were planned around each other's schedules. There were no clashes between anybody. We set-up our team, Meme Team, within the first week or so, allowing us plenty of time to get to know everyone and figure out how we could help each other.

**MICHAEL**

In my reflection of our assignment 2 group, I feel we gelled very well with each other. We had a good understanding of when there was a time for fun and games and when we had to be serious and focus on the tasks at the end.

Although a positive aspect of our meetings was high attendance and punctuality, we lacked a clear agenda and seemed to get sidetracked quite easily. In saying that, this was only our first team assignment together, and it was a massive learning experience for all of us. A positive outcome through this is that we got to know each other well and become friends, which, in turn, will lead to better results when it comes to working together again in the future. I have learned that in group settings, there is a requirement to understand everyone and where they are coming from and understand that their views on certain situations will likely differ from mine. I feel GitHub has helped track our uploads but not what we have done off-site say editing files and research away from the site.

**STEVEN**

Overall as a team, I believe we worked together rather well. I felt we all got along, were productive with our meetings, and showed that we could organise together and willing to take on tasks. All team members were willing to work together to get things done. There is always room for improvement, though.

While everyone had a presence in the meetings and the attendance was high, the meetings could definitely be more organised with a clearer focus of what we wish to discuss before going into them. Some meetings did get side-tracked and go off-topic, but I also was surprised that the communication between us was high and allowed us to get to know each other better along with each other's strengths and weaknesses, which can be really difficult to establish such a friendship in a team environment.

I have learned that it can also be difficult to organise as a group. Everyone has lives outside of the group and can have unforeseen issues that occur outside of work/study. Everyone also has their own preferred style of accomplishing things. Proper planning and communication can help to mitigate these issues.

**THOMAS**

For me, our group, The Meme Team, was particularly fluent when given specific direction or requirements and would actively communicate and collaborate to delegate issues to those who can solve them.

We had a good understanding of each other's unique skillsets, which we would then willingly workaround, increasing the overall productivity. We had amazing flexibility as a team, which was necessary when knowing that each member has different commitments outside of study and also being from multiple different timezones. I found that the group dynamic and rapid ability to solve arising conflicts were extremely good, and we would resolve any issues within the current meeting or a sufficient frame of time in a polite and often humorous manner while still remaining productive.

I found it very enjoyable and was amazed to be able to maintain a playful mood among my group members and still pertain to a constructive atmosphere, stay focused on the task at hand but still having fun with the work given. Generally, I find it a struggle to work with others, in particular in getting my point of information across efficiently and found that in this case, I was given acquit time and respect to get through our meetings appropriately.

In retrospect, I am quite satisfied with our team's overall efforts, especially through the use of GitHub, which made life easy from a collaborative aspect. I look forward to our group's next assignment and any possible future work with my companions at hand.