Team Profile: Lucky 13

Personal Information:
Angus Geoffrey Gordon Flavel
S3793726
s3793726@student.rmit.edu.au
Australian
Scottish Heritage
Completed Year 12 SACE
Primary Language: English
I like to write music and take photos

My main interests related to IT are to do with Space, Agriculture, Weather and Artificial Intelligence. Terminator II: Judgement Day is a documentary, not a movie. – After this my interest in IT was eternally sparked. In all seriousness a friend of mine in school was incredible with computers, this always garnered interest subconsciously. Eventually I started a small finance start-up with this friend and other business partners. 3 Years later I'm choosing to come to RMIT to solidify my programming knowledge, and hopefully learn how to develop my own ideas, outsourcing programming less. I expect to have a basic level understanding of how open-source projects are created and collaborated on through services like GitHub, and create my own projects that can be collaborated on with others.

Mark Andrew Jason Doig
s3737820
s3737820@student.rmit.edu.au
Australian
Scottish/English Heritage
Year 10
Primary Language: English
Primary Hobby: Electronics and programming

Always had in interest in how things worked both mechanical and electrical. First computer was a commodore 64 then apple 2c, then IBM compatible xt, then Amiga 500. Taught myself Assembly language 8086,68000 and 6502 and electronics repair. Experience Professionally in IT is brief, in the early 1990-2000 part-time employment with a couple of companies mainly in pc repairs/builds and sales. Was involved in Ipswich city council website green pages around year 1995 when things were slow, and simplicity was crucial. I have mostly been employed in factory shift work for 18 years for many reasons. I have had enough and found online study at RMIT through O.L.A. in the field of I.T. I'm hoping to get my IT knowledge up to date, whether it be Networking/Hardware, Coding or Administration. I don't even know what types of jobs types are out there in The I.T. field. I like fixing hardware and coding for myself and helping other people solve problems.

Jean-Pierre Naboudet
s3794442
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Australian
South African/French Heritage
Year 11 SACE

Born in Sydney to my Australian / South African mother and my French father. Other than coding and music I speak English. My hobby is playing the flute, and I have grown up playing with musical groups such as orchestras, flute ensembles, and bands. I am Year 11 at high school and am doing this subject as IT is not offered at my school. This year we moved from the Central Coast NSW to Adelaide and the process has not been easy.

Christopher Johnson
S3792789
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Australian

I'm 26 my passions include IT, classic cars and gaming, I got into IT because I have always had a fascination about how things computers, webpages and applications work. My main interest in IT is to eventually work up to doing a Bachelors in IT majoring in Networking and Cybersecurity. I came to RMIT through OUA to do the prerequisite courses for the bachelor's degree I aim to do. I hope to learn the necessary fundamentals to build on that knowledge and be successful in my future courses and career.

Personality Tests

Name: Angus Flavel
Myers-Briggs: Campaigner - ENFP
Learning Styles: Auditory - 55% Visual - 40% Tactile - 5%
Inkblot: 67%

Name: Mark Doig
Myers-Briggs: The Duty Fulfiller – ISTJ
Learning Styles: Auditory – 25% Visual – 45% Tactile 30%
IQ: 120+ = Normal Man

Name: Christopher Johnson
Myers-Briggs: The Logistician - ISTJ
Learning Styles (VARK): Auditory - 3 Visual - 10 Tactile - 10
Personality: Conscientiousness - 71%, Extraversion - 42%, Neuroticism 35%, Openness - 23%, Agreeableness 23%.

Name: JP
Myers-Briggs: The Logistician - ISTJ
Learning Styles: Visual: 9, Aural: 5, Kinaesthetic: 4
Motivational Style: Reward–Driven, followed strongly by Achiever, and Thinker.

Christopher and JP have the same ISTJ 'Logistician' Myers-Briggs results. Mark is also ISTJ with a slight variant, as 'The Duty Fulfiller'. With three of the four positions seeking structure, clearly defined rules, and respect for authority and hierarchy, Angus' 'Campaigner' position seamlessly fits in. Providing a necessary level of structure, though simultaneously seeking to shake the status quo by listening to the needs of all involved. Providing the nature isn't too bossy, this dynamic should provide the structure and freedom necessary for both the ISTJ's and ENFP respectively to work in cohesion.

Ideal Jobs:

Name: Angus Flavel
Ideal Job: Software Sales Executive

Name: Mark Doig
Ideal Job: Network/System Admin

Name: Jean-Pierre Naboudet
Ideal Job: Software Engineer

Name: Chris Johnson
Ideal Job: Cyber Security Specialist

The job titles in this group are a Software Sales Executive, Network/System Administrator, Independent Game Developer, Electronics Repairer, Robotics Engineer, and a Software Engineer. The most common element between career paths is that they simply are all based in the IT industry. Each role covers a specific area of the industry, with limited crossover in terms of necessary skills required. I.e. Between the four, the list covers front to back end, development, network admin, security, sales and management. Overall the career plans are relatively different across the four, however generally speaking each career is only a component of a successfully operating business. Due to this, the groups mutual ability to learn from one another is increased.

Industry Data

What are the Job Titles for your group's ideal jobs? How do each of these rank in terms of demand from employers?
The job titles in this group are a Software Sales Executive, Network/System Administrator, Independent Game Developer, Electronics Repairer, Robotics Engineer, and a Software Engineer. The demand for these jobs in the IT industry are rank from highest to lowest in demand. Based on data from Burning Glass and other sources, the order is: Network/Systems Administrator, Software Engineer, Electronic Repairer, Software Sales Executive, and Independent Game Developer.

Name: Jean-Pierre Naboudet
Ideal Job: Software Engineer

How do the IT-specific skills in your required skill set rank in terms of demand from employers?
IT-specific skills rank considerably high for the required skill set of any IT job. It is important for you to have the skills needed to work in the IT industry.

How do the general skills in your required skill set rank in terms of demand from employers?
The required general skills set rank lower than IT-specific skills, as general skills cover a small amount of IT skills. Whilst IT-specific skills cover a lot more IT skills on specific areas in the industry.

What are the three highest ranked IT-specific skills which are not in your required skill set?
The three highest ranked IT-specific skills which are not in my required skill set are skills in: cloud computing, artificial intelligence, and analytical reasoning.

What are the three highest ranked general skills which are not in your required skill set?
The three highest ranked general skills which are not in my required skill set are skills in: creativity, adaptability, and logical thinking.

Having looked at the Burning Glass data, has your opinion of your ideal job changed? Why or why not?
My opinion of my ideal job hasn’t changed, because I can work towards my ideal job; my goal is to learn the skills that I still need and become employed as a Software Engineer.

Name: Mark Doig
Ideal Job: Network/System Admin
Alternate Ideal Jobs: Indie Game Dev, Robotics Repair, Electronics Repair

Job title - Network and Computer Systems Administrator

Specific Skills for job - PC Hardware, Network Hardware, Programming in C, C++, Java, JavaScript, SQL, Linux, Microsoft Windows, Technical Support, Microsoft Office, Oracle, Business Process etc.

General Skills for job - Patience, Analytical, Communication, Multitasking, Problem-solving, Attention to detail, IT and technical skills, Team Working skills, Initiative, Interpersonal skills.

How do the IT-specific skills in your required skill set rank in terms of demand from employers?
Network and Computer Administrators have a wide range of skills the range across almost the whole IT skill spectrum. Programming in C, C++, Java, JavaScript, SQL, Linux, Microsoft Windows, Technical Support, Microsoft Office, Oracle, Business Process etc. Demand is Overall High ranked.

How do the general skills in your required skill set rank in terms of demand from employers?
Network and Computer Administrators have a wide range of skills the range across almost the whole IT skill spectrum even in generic skills.
Demand is Overall High ranked.

What are the three highest ranked IT-specific skills which are not in your required skill set?
Business Management, Graphic Design and Customer Service

What are the three highest ranked general skills which are not in your required skill set?
I don't know, they all seem to be required.

Having looked at burning glass data, has your opinion changed?
Possibly
Why - because overall skill base it high and I'm not sure if I can do it

Name: Angus Flavel
Ideal Job: Software Sales Executive
Alternate Ideal Jobs: Indie Game Dev, Cyber-security

Job title - Software Sales Executive

Specific Skills for job - Experience in IT industry, sales, meeting KPI's, excellent communication skills and understanding professional relationship development, business management, project management, building relationships and business analysis

General Skills for job - Communication skills, problem solving, teamwork/collaboration, planning, and leadership

How do the IT-specific skills in your required skill set rank in terms of demand from employers?
Demand is relatively high, excluding work available for software engineers with specific strength in one particular area of code. Most skills needed for executives in software sales are usually those not readily available in the IT industry, which keeps demand high.

How do the general skills in your required skill set rank in terms of demand from employers?
Demand is relatively high, especially for the general skills needed in the IT industry. The top 5 skills in demand are quite heavily related to the position of a software sales executive.

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

What are the three highest ranked general skills which are not in your required skill set?
All general skills relatively speaking are required in some way shape or form for the position of Software Sales Executive

Having looked at burning glass data, has your opinion changed?
No

Why - It has confirmed my understanding of not only the depth of the IT job market, but the demand and availability for a career path for what has been discussed as a Software Sales Executive.

Name: Christopher Johnson
Ideal Job: Cyber Security

Specific Skills for job
Deep knowledge of various security tools, Cryptography, SQL, JAVA, Oracle, Perl, Python etc.

General Skills for job
Analytical thinking, Communication, Problem-solving, High attention to detail.

How do the IT-specific skills in your required skill set rank in terms of demand from employers?
Very high, Python, HIPAA are in very high demand as are workers overall as there is a huge increase in demand in the field and companies are finding it hard to find qualified people for the job.

How do the general skills in your required skill set rank in terms of demand from employers?
The demand for general skills are high as there are a lot of different general skills needed for the industry, communication and the skills to think analytically are a massive factor.

What are the three highest ranked IT-specific skills which are not in your required skill set?
AI, Cloud Computing and Website production.

What are the three highest ranked general skills which are not in your required skill set?
Mentoring, presentation skills and team building.

Having looked at burning glass data, has your opinion changed? Why?
No, I knew before-hand that it is a very demanding job skillset wise and I am dedicated to learning everything I can.

IT Professional

Dennis Rouland – Mathematics/Physics/Science Teacher at Central Coast Steiner School
This is based on my role which I was employed as for thirteen years up until March 2011 where I then left the IT industry to move into education after the company, I worked for was acquired.

1. What kind of work were you doing as an IT professional?

I was employed as the IT Manager Asia-Pacific for ADC Krone (a telecommunications component manufacturing company). In this role I was responsible for all IT services for the company across its locations in the Asia-Pacific region encompassing Australia, New Zealand, Hong Kong, Singapore, China, India, Thailand and Malaysia. IT services included Networking, telephony, Office applications and the Enterprise business systems (ERP) to support its sales, finance and manufacturing operations. In addition to my IT Management roles I also directly ran and supported the ERP business system including project implementations and customisations to support the business environment. I had IT staff directly reporting to me in Australia (our Asia-Pacific head office on the Central Coast), China, India and worked with people who had dual roles (such as finance managers) in the smaller office locations in NZ, HK, Singapore, Malaysia and Thailand.

2. What kinds of people did you interact with? Other IT professionals, clients, investors, the general public, etc.

My direct reports who were network and systems engineers as well as helpdesk personnel.
Management and directors of the company both in Australia and overseas. The CIO (Chief Information Officer) of our corporate head office based in Minneapolis, USA. Fellow regional IT manager counterparts in Europe, UK, South America and the USA. Support personnel in external companies who provide support and services to hardware and our many applications and systems used in the company (e.g. HP, Microsoft, QAD, SAP etc.). Sales and support personnel of telecommunications providers (e.g. Telstra). Project managers (both internal and external) used for systems implementations across Asia-Pacific locations. Finance managers and auditors responsible for the provision of financial services through our systems together with auditors (both internal and external) to ensure appropriate governance of all systems in use.
Business analysts and programmers who conducted specific modifications of our systems to suit business, manufacturing and financial requirements.

3. As an IT professional, where did you spend most of your time?

Most of my time was spent in the Asia-Pacific head office at Berkeley Vale on the Central Coast of NSW. However, I often travelled to the Asia-Pacific locations I was responsible for providing IT services to, for meetings, business reviews, systems implementation projects etc.
I also frequently quarterly to the US corporate head office for strategic business meetings and global IT meetings. At one stage in 2008 I worked for eight months at our US corporate head office in Minneapolis.

4. What aspect of your position was most challenging?

Business and finance requirements of IT systems across multiple countries.
Challenges of languages and local customs.
Project management across a myriad of diverse locations.
Maintaining skilled staff.
Budgetary and financial constraints versus delivering what was required by the business.

IT Endorsement on LinkedIn

"Rob managed the IT organization within the Asia Pacific region for ADC. Rob is an extremely bright and knowledgeable IT leader. He has the real hands on technical experience to leverage when leading his organization and uses this experience to teach and develop his teams. Rob also has very strong business knowledge and experience and leverages this experience to engage his clients/customers at all levels of the organization (including senior leadership). Rob was not just an IT leader but was a valuable, contributing business leader within our Australia Operations. Rob also provided keen insights to our IT organization. Our IT Applications and Infrastructure teams were located in North America and often did not fully understand the global reach of change in their environments. Rob enlightened these organizations on their global impact and ensured successful deployments within the Asia-Pac region. Often this meant altering a solution to ensure that it met the needs of our APAC customers. Rob also initiated and led significant infrastructure and application advancements from within the APAC region, often with global reach. I really enjoyed working with Rob at ADC. He was a very valuable contributor to our organization, and I strongly endorse his work".

IT Technologies

Autonomous Vehicles

What does it do?
Autonomous vehicles are able to drive or fly them self, without any human interaction or control. What this mean is they are completely self-controlled or Autonomous. How this is achieved is via many electronic input sensors like multiple cameras, radars, sonars, lasers, GPS and many others. The data is processed in a fraction of a second by a computer program and then various outputs signals are sent back to the control systems of the vehicle through electronic and electromechanical means for full control of the steering, braking and acceleration and every other system involved. The vehicle could be a plane, car, boat, drone, or even an Army Tank. It is a ultimately a robot in the form of a vehicle. Primarily for this report I will be focused on Autonomous cars, but most of the information is applied to all type of vehicles.

What is the state of this new technology?
Currently this tech is in full development and has been for many years ,it is actually in use in the military realm, but in normal everyday life it has much needed progress to overcome a few hurdles, the first and ultimately the most important is, is it completely safe, and second, is it able to completely navigate and self-drive on any road type and street configuration, like city, highway and suburban and rural areas and also handle bad weather and heavy or crazy traffic. What about avoiding pedestrians, cyclist's and animals and many other unpredictable situations**.**

They have categorized the ability of these vehicles into 5 levels, of which level 1 is basic assistance to human driving, right through to level 5, which is having full autonomous behaviour, where the car can drive anywhere and everywhere by itself when given the command. Level 5 includes the situation where you could be in town and make a phone call or send a text to your car to come and pick you up at a certain address and it could do it all without any human assistance, and just as a side note, Level 5 comes complete with no steering wheel, you heard it, no steering controls for humans. You could also hop in the car and voice command or physically select your destination, then you would be driven there automatically just like you called a taxi, but this time with no human driver.

What can be done now?
Right at this moment in time we have vehicles being made and sold at level 2 specification of the Autonomous vehicle categories, which is driver assist modes with braking, acceleration, overtaking and lane changing on highways and also peak hour traffic assists with auto steering and speed controls as well. In saying that, all of these features still require a human to intervene periodically.

What is likely to be able to do soon e.g. "in the next 3 years"?
A Bloomberg article states that in the next 3 years, a majority of the autonomous car developers will have vehicles that can drive a predefined route on city streets at lower than normal driving speeds. It will give the illusion of Autonomous behaviour but in reality, it is only partial as the path that it will follow has been programmed into it, and as such is not the AI making the choice. It's a bit like a tram on tram tracks doing a circuit of a particular street address and take you to another address that's on the tracks on that circuit, but the car will not be tracks, but will follow a virtual track in software and GPS and it will be actually steering and observing road rules, which is still pretty cool.

What technological or other developments make this possible?
The biggest key factor in making this tech possible is CPU or microprocessor power and the software running on it. I say microprocessor because it does not have to be a CPU, it could be a GPU or any new type or IC that is doing computation, but no matter how fast a processor is, it's only as fast or good as its software running on it allows it to be, because a fast processor could be held back by poorly written and compiled software just like Microsoft Windows as the perfect example, totally

bloated in size and sluggish, and a totally master at stealing your valuable CPU cycles. Think of a high-performance car with an amateur driver in a race, not only are they going to drive the car like "s***" and at a slower speed, they are probably going to crash it "BSOD". Now put a Pro racing driver in the driving seat of that same car and they will be able to drive it at its fullest speed and push it to its fullest potential like it was made and built for. Fast Processors and fast executing Software are fundamental to good performance in real time calculations. With humans the faster we think, the quicker we can make a choice, also the amount of information we can process at once or things we can concurrently think about greatly enhances our ability to make a good choice. So too with the Quest for Autonomous Vehicles, The Microprocessor and the Software running on it are the primary force behind this tech, the faster the microprocessor can process the data the greater the ability for it to think in real time and act, and the faster is can act and react, the better choices can be made in operation and control of the vehicle.

What is the likely impact?
Some people are likely to lose their jobs. Car manufactures will have a new market for selling cars. More accidents and breakdowns on the roads. Business using these services may make more money and actually get better service because no lunch breaks and no shift work penalties to pay, they don't have to pay anybody. The vehicles can drive 24/7 with no complaints.

What is the potential impact of this development?
I see more negative potentials than positive, first is people are going to lose their jobs, and if they lose their jobs then where are they going to go, because as more automation happens there will be more job losses, so unemployment and poverty is a very real possibility. People and the younger generations will lose the ability to drive as it's being done for them. What if heavy vehicles become autonomous and they fail while driving. What if business owners fail to service the cars regularly? What if these vehicles become hacked or get a virus or something similar? On the positive side some bodies going to make a lot more money, but I don't think it going to be you or me.

What is likely to change?
The AI will get smarter and the Vehicles will become far safer. Another change would be that all the vehicles are completely electrical with no combustion engines involved and that they will need some type of automated charging stations with automatic method or payments.

Which people will be most affected and how?
It is possible that taxi, courier and delivery drivers will be the first jobs to have a negative impact in their areas of employment due to autonomous vehicle operations, because an employer will no longer need to pay and employee to do the same job automatically. People who can't drive or have disabilities could take great advantage of this technological advancement.

Will this create, replace or make redundant any current jobs or technologies?
This technology will definitely cause more job losses than creation. I think current car manufacturers and service centre will update their operations to accommodate these new vehicles, and I'm sure they have already been doing so, due to the release of these vehicles being gradual and progressive. There may be new jobs in the servicing of certain aspects of the vehicles but, as already said most suppliers of these car will most likely up skill their current service staff. It totally possible that manual combustion vehicles may become few and far between or totally obsolete.

How will this affect you?
It will make it harder for me to find a job and I will have a greater fear on the road knowing the computer-controlled cars could actually be more of a hazard than human drivers. If the government forces me to be a passenger in a level 5 vehicle or own one, I'm not going to be happy. As I want personal control of my own car for peace of mind.

In your daily life, how will this affect you?
Driving to work may be slower or more hazardous, going to the shops may be even harder to find a park, or parking spot rage might be a funny thing. I may lose my job as a Forklift Driver.

What will be different for you?
My job may become redundant; I will have to find another job. I may never get road rage again. I may embrace the technology and abuse it somehow like always sleeping in the car or shooting at drones for fun.

How might this affect members of your family or your friends?
I will not feel safe knowing these vehicles are out and about roaming totally by themselves with possible threats to my family, I will also have some family members that will lose their jobs.

Raspberry pi, Arduino and Makey Makey's

What do they do and what can be done now?
Raspberry pi, Arduino and Makey Makey's are 3 different types of electronic gadgets aimed at school kids up to adults and electronics hobbyist and the primary 2 mentioned are even used by professionals, so the user base for them is actually quite large.

Starting with the simplest device first, the Makey Makey. It is basically a keyboard and mouse interface device or HID for a Windows or Mac PC, but there is no keys, because you have to make them by attaching something organic or some type of capacitive or resistive object to an alligator clip on a wire that is connected to the Makey Makey device, so for example you could use a banana as the space bar and an apple as the enter key and maybe lollies or vegetables as other keys. Because it is recognized as a keyboard device it can then be used in any program you like, gaming, music and any serious Apps or whatever you like, but it doesn't have to be used as a keyboard it could be used as any type of input device for reading external real world applications and that's the basis of the Makey Makey device.

Next on the list is the Arduino boards. They are quite a few levels up in performance and versatility from the Makey Makey, but still aimed at children to adults, these boards contain a USB connection for connection to a computer for programming or as part of its operation, and then main Microcontroller IC, which is a very basic computer. What this means is it has a CPU and a tiny bit of RAM and ROM inside one little chip and there is no OS whatsoever, but it has many GPIO connections for both digital and analogue and that's where the real use comes in. You can program them to do nearly unlimited digital and analogue functions. Some things are data loggers, keyboard controllers or HID ,like Makey Makey and real keyboards , plus TV remotes, robotic functions and sensors, alarms, car and engine projects, gaming controller convertors ,simple music keyboard ,test equipment etc , etc , the lists are endless, some people even made basic games with them like Tetris and pong, and made them create a video signal to output on a TV or monitor, that's not easy when it has no video chip and sound chip, as it is just a one little CPU with RAM and ROM of about 2k depending on the size of the Arduino you purchase. They are simple but there uses can be extremely powerful and complex.

The Raspberry Pi is a fully-fledged computer taking the size length and width of a about credit card, with a height of about 10mm. The Idea of this device comes from a man named "David Braben", who is the creator of a Famous 3D open world space game called "Elite". His idea was to make a really cheap computer for the masses for educational purposes. The Raspberry PI came into fruition based on an ARM SOC processor which came from new old stock redundant processors that were mainly used for things like mobile phones. The board has Ram, Rom, Video Chip, HDMI, USB, Ethernet, Wi-Fi, Bluetooth, RCA, AV and a SD card reader. You can also hook up Hard Drives and Flash Drives to it via USB and finally it has many GPIO pins for lots of real-world interfacing and addon boards. The Pi is the cheapest and most powerful and versatile "Educational Hobby Computer" ever made and each incarnation of the raspberry pi cost only about $35 USA dollars

What is the state of this new technology?
The technology in these devices is redundant, but the application of it is very much current and alive with schools and hobbyists all around the world. They are selling like lollies.

What can be done now?
At this moment in time these devices can interface to current and past computer systems. The raspberry PI has endless add-on boards or modules, like cameras, GPS, gyroscopes, and many control and interface boards. The PI can be used as a Current Media Centre and Emulator, although will struggle with 4k content. I can be used as a DNS, a security system, a Server or even a low powered

desktop computer. The PI or a cluster of PI's could form the brain of a robot with complex AI whatever you want to do.

What is likely to be able to do soon eg "in the next 3 years"?
As newer and faster microprocessors come to market and the old stock gets left behind, these types of project hobby boards will keep getting more powerful and more useful and exciting.

What is the state of this new technology?
The next release of the Raspberry PI may be later this year, as a steady flow of updates about every 6 to 12 months, with more memory and faster SOC and GPU, but speed is no the focus of the PI, it's totally low cost and functionality.

What technological or other developments make this possible?
Because of ARM developments to produce more efficient low cost and low power consuming devices for mobile based devices, the chips are literally getting cheap as chips, no pun intended.

What is the likely Impact?
Because of these types of hobby boards, it is bringing about a new generation hobbyist and inventors into the world, creating a generation of not only tech savvy individuals but also the creators and problem solvers of the future.

What is the potential impact of this development?
It's totally possible that because of all this surplus tech being available in devices like the Pi and Arduino, that we may get an accelerating growth of individuals who bring many positive solutions to the world both for the masses and for the elite. It may become common for youth to be involved in hacking devices and hi-tech crime and robotics alike. It could totally go both ways positive and negative.

What is likely to change?
As tech becomes smaller and more powerful, so will these devices, in saying that this mean more bang for your buck. I not sure they will change the design as if it isn't broke then don't fix it, the Pi was release in FEB 2012 and since then other manufactures Like Asus, Intel, Asrock and many others have copied with their own incarnations, but more powerful and more than 3 times the price of the PI. The PI and Arduino formula is simple Cheap Tech to the masses, so if others are making more expensive devices, it defeats the purpose.

Which people will most be affected?
The purpose of these device is to spark the imagination and creativity of the younger generations growing up now , through getting them involved in the creation of tech and not just consumers, so the primary impact is the youth, from late primary school through the teens to early twenties age groups.

Will this create, replace or make redundant any current jobs or technologies?
I don't think there is any negative impacts of these devices when it comes to job loses or any redundancy of current tech as these devices are totally created by redundant tech in the first place and actually through these device new jobs could be create, but more in there manufacture and on selling.

How will this affect you?
There is no negative impact of these devices in my life that I can see.

In your daily life, how will this affect you?
I use Multiple raspberry PIs on a daily basis and some Arduinos every now and then, with increasing frequency, so in essence I totally embrace them.

What will be different for you?
Because of these devices, I now use less electricity and much smaller footprint physically to do things I used to do 15 years ago.

How might this affect member of your family or your friends?
My family and friends love these devices as there cheap and very useful.

Cyber Security

What does it do?
Cybersecurity is the technology that it used to protect networks, systems and data from Cyber-attacks, the technologies cover a very broad range of implementations but is mostly used to monitor and analyse businesses, public organizations and government systems and assess vulnerabilities in the computer systems. The technology protects computers, websites and networks from cyber threats such as malware denial of service attacks, hacks and viruses.

What is the likely impact?
This technology keeps users as safe as possible while browsing, downloading or even just connecting to the internet, without it there would be no safety with any data on the internet, whether personal or business related
What is the potential impact of this development?
The continued security will allow people and businesses to continue running as secure as possible to allow for innovation and future advances without the constant fear of losing your personal or company data.

What is likely to change?
The technology is always changing and advancing both by forward thinking and by reactive changes to threats or other vulnerabilities, as the world becomes more dependent on the internet the Cyber Security technology will become more important and have to become more easily accessible for everyone.

Which people will be most affected and how?
In this day and age cyber security affects everyone on some level but it will have a larger effect on people that depend on their internet technologies for the businesses and income big businesses like banks, hospitals, large websites and police have a lot of very sensitive data that needs to be secure they rely on cyber security deeply for this.

Will this create, replace or make redundant any current jobs or technologies?
This creates a lot of jobs in the security sector, and it won't replace or make any current jobs redundant, but it may take a few hackers out of a job.

How will this affect you?
I have always had a passion for online security and Cyber Security is something I would like to pursue further after I get the fundamental knowledge I need to start an advanced course to learn how it works on a deeper level, on a personal level right now Cyber Security is protecting me as I am writing this, it is protecting the servers I will be uploading this to, is protecting my classmates as they themselves write their parts of this assignment and my teachers as they grade and read this assignment.

How might this affect members of your family or your friends?
It will affect them by letting them browse the internet and keep their data safer and more secure than it has been before, the more casual users of the internet will be affected more than they realize but if the technology works as intended that is the point.

What can be done now?
As it is an ever-evolving technology there will always be more advances and more threats to protect from, continued advances are happening now and will continue for a long time.

What is likely to be able to do soon e.g. "in the next 3 years"?
As more and more people have a need for Cyber Security, I believe it will become a highly sought-after skill and the technology will be further pushed to secure people on a larger scale with almost all businesses now having at least part of their data online it will always need security.

What technological or other developments make this possible?
The internet and other computational developments not only make Cyber Security possible but it makes it a necessity, the evolution of the internet and the number of users on a daily basis has made security and protection a major need as it starts to seem the whole world is now online and user data is everywhere.

Natural Language Processing & Chatterbots

What does it do? What is the state of the art of this new technology? What can be done now?
Natural Language Processing (NLP) is defined as 'the application of computational techniques to the analysis and synthesis of natural language and speech'. A Chatterbot is defined as 'a computer program designed to simulate conversation with human users, especially over the Internet'. Typically, a chatbot uses a form (either rudimentary or dynamic) of NLP to process inputs made by users to determine the necessary appropriate output. Over the course of the history of chatbots, AI-powered assistants have gone through a variety of looks and styles. Originating with Alan Turing in the early 1950's, the idea of a chatbot was synthesised. From here in the early 1960's, Joseph Wizenbaum created Eliza, based off Eliza Doolittle from George Bernard Shaw's play 'Pygmalion' (Digital Trends, 2018). Fast-forward to the age of the internet and we have services like Microsoft's 'Clippy' in 1997, leading to experiments like Microsoft's 'Tay' in 2016 following their success with 'Xiaoice' (known as Microsoft 'Zo' to American users) back in mid-2014. The explosion of instant-messaging based apps with the progression of technology has seen a rise in artificial intelligence based chatbots. So much so that they are now capable of being considered for citizenship in Saudi Arabia, such as Sophia from Hanson Robotics and opening the NYSE like 'Bina48'.

What is likely to be able to do be done soon (say in the next 3 years)?
There will be more comprehensive chatbots, from customer service, to pizza bots and AI services like Siri, Alexa and Xiaoice (Zo for American users). NLP is a function of the way Big Data is processed. Efficient mechanisms can be put in place to process adequate amounts of data that result in models/algorithms behaving in a more quantifiable manner. The level of personalisation that can take place at this point, even within a 10 – 20 turn conversation supersedes anything previously. Changing the way that algorithms use emotional classification within their NLP systems is something that can be done within the next three years. There are also services available like Google's Inactive Account Manager and Dead Social, looking at developing ownership rights for data after users are deceased. This is incredibly important for the development of AI 'Ghost' bots, that replicate a particular human through processing all available data of that person after users are deceased. Chatbot's that function as marketing influencers aren't new either, with bots from 'Brud' like 'lilmiquela', 'bermudaisbae' and 'blawko22' changing the way users interact with digital marketing campaigns from different brands. It's likely that over the next 3 years, a combination of chatbot and online marketing campaigns will compete for the front page of the internet.

What technological or other developments make this possible?
The most likely technological developments that will make this possible are improvements in Natural Language Processing (NLP), particularly Emotions Classification, and Big Data processing in general. Currently, 'Consumer Sentiment Analysis' (CSA) looks at the way that big data is processed for corporations to base marketing/advertisement campaigns off. This measure only allows for a positive, neutral or negative skew to be determined with absolutely no further insight. Classifying the data with more refined parameters on the context of emotion could completely change the way nuance is interpreted. Chatbots prove the lack of interpretation possible from NLP by their inability to express refined understanding irrespective of how much data is processed. Emotions Classification influencing NLP could therefore influence the way chatbots interact with users, which could in turn change how CSA is used by corporations.

What is the likely impact? What is the potential impact of this development?
As Jeff Goldblum's character so eloquently put it in *Jurassic Park:* "Your scientists were so preoccupied with whether or not they could, they didn't stop to think if they should." The likely impact is there will be more personalised chatbot conversations, which will disrupt a number of industries in both positive and negative ways. The positives are based in efficiency and savings, the negatives in work force redundancy.

What is likely to change?
Society at large has the potential to completely restructure the way it works around steady, consistent interactions with chatbot interfaces. Depending on the adoption rates of society to the bots (e.g. Xiaoice's 30 billion conversations with 660 million different users since May 2014), a number of things have the potential to change as a result. From employment/redundancy rates to the restructuring of entire industries to be based around chatbot services, chatbots have the ability to change a lot.

Which people will be most affected and how?
The first industries to be majorly affected both positively and negatively - depending on your position within the industry – would be telecommunications and customer service. However almost every industry from law, engineering, science and medicine to arts, music, philosophy and politics will be affected over the course of the development of this technology. The beautiful and hideous thing about chatbots and NLP is its ability to restructure the way almost any and every industry works in some way, shape or form. As communication and data processing is a necessary component of most business already, developments in these sectors will thereby influence the whole.

Will this create, replace or make redundant any current jobs or technologies?
This will create jobs in the IT field related to chatbot management/repair and natural language engineering. In turn, these will make a number of telecommunications and customer service roles redundant. As for the most part, general enquiries will be sped up by an order of magnitude reducing the need for as many general consultants to be kept on. Technical and creative roles will be of utmost importance by this point, as technical understanding and macrocosmic awareness will ensure job security.

How will this affect you? In your daily life, how will this affect you? (100) What will be different for you? (100) How might this affect members of your family or your friends? (100)
I have been researching and involving myself with entrepreneurial projects based around chatbots and NLP for the better part of 5 years. As a result, developments in this industry should personally benefit my daily life as job opportunities will become more available during postgraduate study. Simultaneously a better 'Siri'/personal assistant for everyday life could seemingly only streamline everyday life, due to inherent lack of organisation this would help. Generally speaking, government and private services will also become more accessible as previously lacking areas of customer service and support will be more adequately covered.

Chatbot technology development changes the landscape of employment availability, which is one of the reasons that initially prompted studying this degree. Having initially worked in telecommunications, customer service and sales and noticing the changes in the workplace as I grew older. It became apparent that the long-term nature of the industry was going to change. As such life has already been impacted due to this. The main difference would be where and how I apply myself in the workforce.

Simultaneously, chatbots have the ability to impact friends and family in a number of ways. From changes in industry workforces to age assistance software for seeing, hearing and interacting with technology. Chatbots and the development of NLP within them will also have a social and moral impact on society. Normalising the integration of artificial intelligence software into society will have an unseen and implicit impact that is yet to be fully quantifiable.

Project Idea

Overview

To develop a more diverse emotions classifier tool for chatbot interfaces, particularly an open-source chatbot known as 'cakechat' hosted on GitHub. This is currently limited to 5 base emotions, 'Neutral', 'Happy', 'Angry', 'Sad' or 'Scared'. The aim of the project would be to add more base emotions to the emotion's classifier tool or change the structure of the way the tool works itself, to allow for more sub-traits of each emotion to be more identifiable.

Motivation

'68% of consumers are utilizing machine learning and artificial intelligence capabilities via their smartphones, often without realizing it.' (Deloitte, 2017)
Simply put, Artificial Intelligence has substantially imbedded itself throughout society. From pizza chatbots, to customer service bots, Siri, Alexa and plenty more. One of the most standout features that seems to be lacking is the ability for bots to recognise and respond appropriately to different emotions depending on their context. Applications like Replika, which host their code open-source on GitHub known as 'Cakechat' use their own emotions classifier. However, you can alter this to be any emotions classifier you wish, such as DeepMoji or another of your choice. The main motivation for this idea is exactly that, noticing the ability to replace the emotions classifier in cakechat with another version. This, and realising that doing this could result in a better user experience with personalised AI chatbots.

Description

More people are gaining access to the internet and mobile phones every day and the rate they use them are increasing rapidly. 'Users look at their phone [on average] 47 times a day, with 89% checking in within one hour of waking up and 81% checking within one hour of going to sleep.' (Deloitte, 2017) AI tools to help recognise and truly understand an increasingly diversifying population is becoming a necessity, in the form of a personalised AI assistant and plenty others.

Sentiment Analysis is used to portray sentiment polarity. Be it a product or movie review, sentiment analysis captures public sentiment in reaction to brands which influences future business decisions. However, this method can only categorise text into either a positive or negative class. A more refined emotions classifier has the ability to extend beyond the reaches of just conversational chatbots, such as changing the way sentiment analysis is conducted and reviewed.

Currently, the Replika interface allows 5 base emotions as addressed earlier. In conjunction with this, the persona-based neural conversation model can recognise different personality traits (up to 20 badges). There are 122 available. These traits however are developed through a quiz-based format within the chat interface itself, and only represent answers to questions you have given. From this, the model converses in accordance to your traits. If the model were capable of developing its own personality traits, and not simply converse on the basis of understanding another's personality traits this may yield more precise results. Either this, or simply allowing the model to better understand each of the 5 base emotions with the context of sub-traits may also do the same.

The goal is to change the way the cakechat emotions classifier currently works, to allow for greater emotional perceptiveness. How exactly this will be done is still up for debate. I imagine that a more precise definition of each emotion and giving the model the capacity to not only learn and understand them but exhibit them itself, will allow for greater emotional perceptiveness. If this idea were to progress any further than here it would seem completely reasonable to assess the merit of how exactly the emotions classifier will be changed, and the overall effectiveness of that change. For example, the emotions 'Excited' and 'Tender' would currently fall under somewhere between 'Happy', 'Sad' and

‘Neutral’. When in fact none of these accurately represent the emotion expressed. If even ‘Excited’ and ‘Tender’ as base emotions could be added to the original list of 5, this would change the model’s ability to interact with the user. On top of this, using their inbuilt concept the badges could be used as personality sub-traits of each emotion. This would highlight emphasis in statements that would be otherwise overlooked. Both the fundamental emotions and sub-traits being altered would change the emotions classifier so that the models output has a heightened ability to interpret and respond to emotional context appropriately. This would be solidified through the continual use of the emotion’s classifier through the chatbot over time, as it functions as a persona-based neural conversation model.

Tools and Technologies:

The Cakechat repository would have to be cloned and installed properly, along with DeepMoji and potentially other emotions classifiers for reference. As far as hardware goes, any reasonably current computer that can be used for appropriate CS/IT courses should be more than sufficient.

Skills Required:

There will need to be a reasonably proficiency in GitHub and Python. Possibly a need to understand Theano and Lasagne though not entirely necessary. Somewhat feasible depending on the groups mutual ability to code and dedicate an appropriate amount of time on the project.

Outcome:

The desired outcome would be to have a working chatbot running through a slightly more expansive/efficient emotions classifier. If you try speaking to Replika, the application version of the open-source software cakechat, you will have a basic understanding of what the issue is. The outcome of this project wouldn’t be to necessarily solve the issue of emotions classification, but more experiment in extending the field. Simply, a chatbot with more than 5 different base emotions should be more personable. The impact this may have could be a more personal interaction with AI personal assistant software around the world. In conjunction, if consumer sentiment analysis were to adopt an approach like this it could revolutionise the way data is processed for targeted advertisements.

Feedback/Group Reflection:

I don't know what happened to the other 2 members, there was no contact from them from the beginning and I hope they didn't drop out of subject or that their circumstances are okay.
As the remaining 4 members we did what we could, while trying to juggle our busy lives.
Chris was moving to a new house, plus he had no internet in the beginning, that's not easy for him, but he did not let the group down. No person in the group was a letdown, each person did their part. You have to ask what the motivation is to do their part. Under this circumstance it is for learning and also to pass the subject, so not one of us wants to fail, we all want to pass. I can honestly say that the group members really seem like nice guys, they are very helpful and kind and motivated and there were no slackers, everyone wanted to help and do their fair share. I enjoyed working with them. In real life circumstance, in a work environment, the situation is totally different motivation wise, like climbing the corporate ladder, pay bonuses, favouritism, deception, risk of losing job and more, and as such a lot of skull-duggery often goes on. I have a personal belief, "A Good Job with bad people = A Bad Job" but "A Bad Job with good people = A Good Job" and finally "A Good Job with Good People = An Awesome Job".

Mark Doig
What went well?
Under the circumstances, the communication and efforts of everybody was very good.

What could be improved?
For one thing, No life commitments like full time shift work. I could've read over the assignment more times earlier in the time period and started to work on the parts that didn't need group collaboration. What I did instead was lightly read the assignment and waited till we all touched base in the group discussion, because I didn't want to do anything until we had all started collaborating as a group. I should've studied the assignment more before group collaborations.

At least one thing that was surprising?
Everybody's ability to keep going and pull through in about 1-week time period, especially our group leader. Big Thanks to Angus.

At least one thing that you have learned about groups?
I can't answer that because I have worked in many groups through my life and this was good as gold. If you don’t all try to do your part and don’t be respectful and helpful, I’m sure the group would have negative performance issues.

Tools
Ah, yes GitHub, well it was not a primary port of call for us. Our main focus as a team from my perception was using Canvas Group Discussion, Discord and Google Docs, then GitHub as final release platform, reason being that our tools worked well for us. And now I know Microsoft owns it, I have a dislike for it.

Christopher Johnson
What went well?
Communication with most of the group was great and the effort from Mark and Angus was exceptional

What could be improved?
I wish I had more time to contribute to the assignment, work commitments, moving to a new house and internet issues limited my time

At least one thing that was surprising?
The effort by all members involved to make sure the assignment was a success

At least one thing that you have learned about groups?
That communication is the number one importance and a lot of people working on one project can be difficult

Tools
I mostly used discord as a communicative tool, google docs are a great help canvas group discussion was a good start to the discussion and GitHub is a good release platform

Jean-Pierre Naboudet

What went well?
I believe that the preparation and communication of the work went very well. We used the R.M.I.T website and Discord to talk to talk to each other. We were also able to fairly allocate tasks and we completed them in time.

What could be improved?
The starting date for reading the assessment, assign jobs, etc. could have been earlier. Rather than starting it a week after the assessment was given.

At least one thing that was surprising?
One thing that surprised me was how fast Angus was able to prepare a Google document for us to type up our work into so that it could be copied and pasted into the website. He managed to type up all of the sections of the assessment into neat portions which we could

Angus Flavel
What went well?
At least 4 of the members responded and had reasonable input given life constraints.

What could be improved?
Time management, organisation, communication skills and appropriate delegation of workload. All group members having a passable input of work would also help.

At least one thing that was surprising?
With less than one week left before the due date, all members that provided input fulfilled necessary requirements to warrant a finished product, something I was not anticipating.

At least one thing that you have learned about groups?
That it is incredibly important to establish rapport with group members as early as possible. This will allow for more fluid communication which will in turn result in a better end result.

Tools
Depending on how you want to look at it, the GitHub group repository commit trail tells a story. Every commit was made by me. I used the website skeleton from Assignment 1 and adjusted appropriate information accordingly. Outside of GitHub, there were a number of conversations which took place over Discord and the Canvas group chat. From these chat interfaces I was able to form a google doc from which the group members collectively worked within.

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