T Technologies

There are a lot of fascinating developments going on in the IT world, many of which may fall by the wayside, but some of which are likely to change the way the world works. Historic examples of such developments include the Internet, smartphones, cloud computing and public-key cryptography.

In this section you should report on 4 of the areas below.

● Clouds, services, servers

● Cybersecurity

● Blockchain and cryptocurrencies

● Machine Learning

● Autonomous vehicles

● Natural Language processing and chatterbots

● Robots

● Raspberry Pis, Arduinos, Makey Makeys and other small computing devices

Some starting points and other information will be made available on Canvas. For each of the areas covered, you should report on theollowing.

What does it do? (600 words) ​What is the state of the art of this new technology? What can be done now? What is likely to be able to do be done soon (say in the next 3 years)? What technological or other developments make this possible?

What is the likely impact? (300 words) ​What is the potential impact of this development? What is likely to change? Which people will be most affected and how? Will this create, replace or make redundant any current jobs or technologies?

How will this affect you? (300 words) ​In your daily life, how will this affect you? What will be different for you? How might this affect members of your family or your friends?

Clouds, services, servers

Cybersecurity

Blockchain and cryptocurrencies

Natural Language processing and chatterbots

<https://www.levelcloud.net/why-levelcloud/cloud-education-center/advantages-and-disadvantages-of-cloud-computing/>

<http://au.pcmag.com/networking-communications-software-products/29902/feature/what-is-cloud-computing>

<https://www.cisco.com/c/en/us/products/security/what-is-cybersecurity.html>

<http://www.northropgrumman.com/Capabilities/Cybersecurity/Documents/Assets/Why_Is_Cybersecurity_Important.pdf>

<https://www.cybersecuritymastersdegree.org/software-development/>

<https://www.investopedia.com/terms/b/blockchain.asp>

<https://medium.com/theblock1/cryptocurrency-and-blockchain-the-future-9cd689e977ca>

<http://www.talespin.ai/to-bot-or-not-to-bot/>

<https://www.technologyreview.com/s/602068/the-hr-person-at-your-next-job-may-actually-be-a-bot/>

As the world revolves more and more around the internet and information technology, there plenty of sectors and parts of the internet which is being further developed. Information Technology generally would mean the use of any computers, storage, networks and other physical devices, infrastructure and processes to create, process, store, secure and exchanging in all forms of data. Generally and typically, Information Technology is the use of context in enterprise operations as opposed to personal or entertainment technologies. As Information technology develops and to further advance, plenty of sectors are being categorized and plenty more opportunities and information are being showcased to the public. The 4 developments in the information technology sector that i will talk about is the clouds, services and servers, cyber-security, blockchain and cryptocurrencies and natural language processing and chatterbots.

**Clouds, services and servers**

Cloud computing is the general idea of storing information and accessing data through the world wide web in comparison to your system’s computer hard drive. The term “cloud” is generally a metaphor for the term internet, but it is used to widely that it became a term for this particular service. The history of cloud computing derives from the days where plenty of information technology development ideas were drawn and presented in the form of flowcharts. The infrastructure of a cloud would be represented by a big, fluffy and puffy form which was shaped like a cloud. This was how the term cloud was formed and since then, everyone was using the term cloud as a representation of information being stored in the servers and hubs. The significant difference between a local storage and a cloud storage is technically, when you store information in a local storage, the information would be stored in the hard drive of the computer while when you store in the cloud servers, the information would be stored in the servers and users would be able to retrieve the information anytime they have access to the internet and the storage servers. This would also bring much convenience to the users as they would be able to not only retrieve data anywhere anytime, but they would also be able to retrieve them in an easier manner while the device would be able to sync their data automatically by itself through the system settings.

The concept of a cloud is very simple, it is simply not having a dedicated network attached storage ( NAS ) or server in residence. Albeit being able to remotely access the cloud, the concept of using it in a home premise or office settings doesn’t necessarily mean that you’re optimizing the cloud storage, But through the synchronization of the system, they would be able to optimize the usage of cloud through arrangement and the placement of the data in a better manner that saves much more space optimizing the cloud to its full potential. There are several advantages and disadvantages through the usage of cloud computing. The first advantage that would be mentioned is the benefit of cost saving, the advantage of being able to save cost is probably the most significant benefit amongst all the others. As for the use of cloud computing, users would not only be able to save cost from purchasing storages and servers, but they would also be able to save cost from purchasing equipments. This would allow corporate companies to save cost from different aspects and they wouldn’t have to worry about unnecessary cost that would affect the company. The second main advantage of cloud computing is the reliability of it. As you know, plenty of factors would occur when it comes to the use of storage in a company and most of the time it is deemed unreliable albeit spending so much money on it. With cloud computing, companies would be rest assured that there would be no problems as there would be representatives from the cloud computing companies to solve their issue incase of any problems. The third main benefit of using cloud computing is the manageability of it. With the use of cloud computing, there are plenty of fees that would also be eliminated along the process. As you use cloud computing as a service provider, maintenance fee and resource fee would not be required as your service provider would already be covering most of it, therefore it is beneficial for a company as they would also not have to spend unecesary money on all these fees. Although there are plenty of advantages along the use of cloud computing, but there are also disadvantages along it. The first disadvantage would be downtime, although cloud computing is often deemed reliable and safe, but there are certain times where downtimes are needed for the benefit of the cloud. Therefore, a company is required to wait and they would not be able to control the downtime period. The second disadvantage of cloud computing would be security, although cloud computing service providers would often implement the best security software to protect their consumers from breach of data, but there is always a risk when consumers provide their service providers with their data. Therefore it is not always safe albeit saving a lot of problems.

As cloud computing progress and to continue to replace external storage devices, it is no doubt that consumers would convert to using cloud computing sooner or later. Therefore in the near future, plenty of consumers would convert and to use cloud computing as it is not only convenient, but is it also reliable and it saves plenty of work, effort and time through the use of it. Therefore in conclusion, the development and the innovation of cloud computing is a major advantage in the IT industry and it would definitely help the industry in plenty of aspects.

**Cybersecurity**

Cybersecurity is the general idea of having to protect the software systems ,networks and programs from digital attacks. The purpose and the goals of these attacks are usually aimed to destroy, manipulate or to change sensitive information in the system. This would allow the invader to be able to gain access to the information in the system and to allow them to extort money from the users or to interrupt normal ongoing business in the organisation. Cybersecurity works in a form where it contains multiple layers of protection spreading across computers, networks, programs or data that one intends to keep safe. A successful cybersecurity data approach would contain all of the above. In a widespread organisation, the people, processes and technology are the ones that complements each other to create an effective defense from cyber attacks.

There are several types of cybersecurity threats when it comes to the potential breach of cybersecurity. The few most common cybersecurity threats would be ransomware, malware, social engineering and phishing. The first common threat would be ransomware, ransomware is typically a type of malicious software where it is often designed to extort money by blocking the user in gaining access to important files or system in the computer system until the ransom is paid. Hackers would often times lock the computer through a special code and the user is required to pay the hacker a certain amount otherwise the whole computer system would often be wiped out. Often times, user would be forced to pay in order for their files and this is why it is always recommended to back up the system or to back up important files into clouds or external hard drives. Sometimes when even the user has paid the ransom, it is not guaranteed that the files would be recovered or the system restored. It often times would depend on the hacker itself. The second common threat that often occurs would be the malware threats, malware is a type of software that is specifically designed to gain unauthorised access towards user or to allow hackers to be able to gain access to cause damage to a computer. This would often times lead to a breach in data allowing the hacker to gain access to the users computer, the user would then be vulnerable to other hackers as there is already a trace there. The third most common threat in the cybersecurity would be social engineering. Social engineering is often a tactic that would allow hackers into tracking you into user to reveal their sensitive information. They would often times be able to hack you and to obtain monetary payment or to gain access to your confidential data. Social engineering could also be combined with any other threats into making it more invulnerable. The final and most common threat lastly would be phishing. Phishing is the practice of creating and sending fake messages making users into believing that they are the actual user. This would often times be used to obtain sensitive data, passwords and credit card information. It is the most common threat amongst all the others. Albeit this is very common and plenty of people know about it, plenty of users are still often tricked on a daily basis by this threat.

Cybersecurity is a major thing in the Information Technology community and as technology advances, cybersecurity is more required in certain aspects of it. As the world revolves more and more around digitals and gadgets, plenty of sensitive information and personal information are inserted into digital devices, therefore having the knowledge of cybersecurity is rather important and is highly encouraged to everyone.

**Blockchain and Cryptocurrencies**

Blockchain is the general idea of having a digitized, decentralised, public ledge to all cryptocurrency transactions. Blockchains are often and still constantly growing as blocks, blocks are commonly known as the most recent transactions. Blocks are constantly recorded and added in a proper orders, this allows market participants to keep track of their blockchain transactions without central recordkeeping. Each node in a computer that is connected to the network would always get a copy of the blockchain, which is then downloaded automatically into the computer alongside the network. Blockchains are originally developed as the accounting method to partner alongside the virtual currency Bitcoin. The concept which Bitcoin uses would be commonly known as the distributed ledger technology ( DLT ), and it is commonly appearing in a variety of commercial applications today. Currently in the blockchain technology and community, blockchains nowadays are primarily used to verify transactions amongst all digital currencies. Doing so, through the process of verifying transactions, this would allow the system to create a record that cannot be changed. The process of verifying transactions and storing of records are often verified by the community instead of a single authority.

The main blockchain nowadays would often times be Bitcoin, it is the main technological innovation and it has been the head of all blockchains ever since. Bitcoin is created through the process of mining data and it isn’t regulated by a singular authority. Users would be able to dictate and validate transactions when one another pays for good and services, eliminating the need for a third-party to process and store payments. The transaction would then be converted into blocks and then it would be recorded into the blockchains. This is the simple concept on how bitcoins work and how they function. The whole drive for bitcoin is also due to the simple fact where it is attracted by the idea of eliminated a third-party middleman in the transaction allowing users to be able to directly pay to the party that they are purchasing from.

The concept of blockchains are very innovative and as technology advances in the digital world today, plenty of more blockchains are being developed and produced and ever since then, the prices of each of them are skyrocketing. Each blockchain produced are at a different level and each has their unique hash key to it. As technology advances today, a digital currency is much needed in the process of purchasing and it truly would change the world of transactions if it is more commonly used amongst more parties.

**Natural Language processing and chatterbots**

A Chatterbot, which is also commonly known as chatbot, talkbot, interactive agent is the general idea of having a computer program or an artificial intelligence to conduct a simple constructed conversation via auditory or textual methods with a user. Such programs that has been programmed are often times used to simulate how a human would behave during a conversation and to replicate a similar feeling towards it. Chatterbots are typically used in dialog systems usually in the customer service industry or information acquisition. Some chatterbots commonly use sophisticated language processing systems but the simpler versions would commonly scan for keywords in the input, and then displaying the sequence of sentence that has been incorporated in the system.

The original term known as “Chatterbot” has been originally originated by Michael Mauldin. Michael Mauldin is also commonly known ass the creator of the first chatterbot in 1994, the chatterbot is known as Verbot. In the times today, most chatbots that are most commonly used would be the chatterbots in google assistance, amazon alexa, facebook messenger or wechat. Chatterbots would also commonly be classified into a few categories which is the conversation commerce, analytics, communication, customer support, design, developer tools, education, entertainment, finance, food, games, health , VR, marketing, news, personal, productivity, shopping, social, sports and travel and utilities.

In the current society that we all live in, plenty of people and consumers would already somehow heard of or have already been using chatbots for quite awhile already. Chatterbots are very interactive and in the current digital society, chatbots help out a lot in the daily basis of either work or entertainment. Everyone in all certain industries would often benefit in the concept of a chatterbot. Chatterbots are fast to reply and prompt in providing services in industries that they are specified in. Consumers would be able to get a prompt response and to be happy about it. Chatterbots are also capable to learning and implementing information into their system, they would also be able to retrieve information and provide a more human approach to consumers.

Although there are plenty of benefits towards a chatterbot, in today’s digital era, chatterbots still lack the ability to sound exactly like a human. The experience given by a chatterbot would still differ in comparison to having a conversation with a real-life person. Therefore, research and studies have proven that chatterbot might be the potential future of Artificial intelligence and communication and it holds a great future ahead of everyone in all industries.