**Section 2**

Over 2700 years before tales of the giant bronze robot Talos the artificial woman Pandora and their creator the god Hephaestus filled the imaginations of people in ancient Greece. Hephaestus is the Greek god of invention and blacksmithing . According to the myth Talos was made to protect the island of Crete from invader by marching around the island three times every day, hurling huge rocks at approaching enemy ships

**Section 3**

3 TYPES OD AI BASED ON CAPABILITIES

1. ANI ( Artificial Narrow Intelligence / Weak A1:

These are intelligent systems that have been specifically programmed to carry out specific tasks and have a very limited or narrow range of competencies Eg, the chess game you play with the computer / Siri ( narrow AI and general AI)

1. AGI ( Artificial General Intelligence / Stronger AI :

A machine can actually think and perform the task on its own just like human , this is more advanced and can perform any kid of task. Eg, a self-driving car

1. ASI ( Artificial supper intelligence) :

highly developed or evolved general AI that surpasses human intelligence ( scientists believe that ASI might lead to singularity, this is a hypothetical point in the future when technological growth becomes uncontrollable and irreversible

**Section 4:**

AI is made out of complex algorithms which are made from many simple algorithms.

Many AI algorithms are capable of learning from information or data.

They can improve themself by learning new strategies or heuristics that have worked in the past and key to the process of machine learning and therefore AI are neural networks

Neural networks are modeled loosely after the human brain which is made of neurons. They are both designed to recognize patterns

Neural networksare made of interconnected layers of algorithms also .called neurons

The neurons are grouped into 3 different layers :

* the input layer receives input data
* this input layer passes the data to the first hidden layer
* the hidden layers perform the mathematical computation of our inputs ( the deep and deep learning refers to having more than 1 layer )
* The output layer returns the output data.

The neurons feed data into each other and can be trained to carry specific tasks. This happens by modifying the importance attributed to input data as it passes between the layers.

During the training of the neural networks, the weights attached to different inputs will continue to be varied until the output from the neural network is very close to what is desired.

These weights are meant to reflect the relative importance of the information that is input. It is at this point the network will have "learned" how to carry out a particular task.

**Types of neural networks**

* A recurrent neural network is a type of neural network particularly well suited to language processing and speech recognition.
* Convolutional neural networks are more commonly used in image recognition

A deep neural network (DNN) or deep learning is where neural networks expanded into sprawling networks with a huge number of layers that are trained using massive amounts of data. It Is these deep neural networks that have fueled the current leap forward in the ability of computers to carry out tasks

* LSTM / Long short term memory (new development of neural network). LTSM can not only process single data points but entire sequences of data, which allows it to operate fast enough to be used in on-demand systems like google translate and recognition.

**Section 5:**

AI is made up of 4 parts

1. Reasoning
2. Natural language processing (NLP)
3. Planning
4. Machine learning (ML)

1) **Reasoning** - machine making conclusions using information or data the same way humans think and reason. computer use algorithms which are rules which are applied when solving a problem. these algorithms imitate the simple step-by-step reasoning that humans use to solve a problem and make logical conclusions. However we humans are not computers and we don't always think logically like a computer. we actually solve most of our problem based on fast intuitive judgments unlike computers who use algorithms

2) **Natural language processing (NLP) -** This gives a computer or a machine the ability to read and understand human languages.

3) Planning -and as we know, a plan is a strategy to achieve something, and you need a plan to reach a goal. This is the same process taken when creating an A.I. program. The computer must have the ability to construct a sequence of actions to reach the final goal.

4) Machine learning - is when a computer system is fed large amounts of information or data, which it then uses to carry out a specific task, such as understanding speech or labeling a photograph. Machine learning happens after a goal or target is defined. The steps to reach that goal are learned by the computer, which trains itself, for example, to identify a simple object such as a banana or an orange.

In a picture, we would feed many different pictures of bananas and oranges into the computer. It is just as we teach a child by showing multiple different pictures of it, therefore allowing the machine to define the steps to identify it as a banana or an orange machine.

Learning is generally split into two main categories supervised learning and unsupervised learning.

But there was also a third form of learning called reinforced learning.

***What is supervised learning?***

A common technique for teaching A.I. systems is by training them using a very large number of labeled examples. These machine learning systems are fed huge amounts of data, which are marked to highlight the features of interest.

Once trained, the system can then apply these labels to new data. For example, when new photos have been uploaded, the machine can identify a banana within the photos. Training these systems requires a vast amount of data. Some systems need to be fed and examined millions of examples to learn how to carry out a task. Effectively, data sets for training systems are very large in size. Google's Open Images data set has about nine million images to train A.I. systems, whereas YouTube has links to millions of labeled videos. In the long run, having access to massive-sized labeled data sets may also prove less important than access to large amounts of computing power.

In recent years, generative adversarial networks or Gans have shown how machine learning systems that are fed a small amount of label data can then generate huge amounts of fresh data to teach themselves. This approach could lead to the rise of semi-supervised learning, where systems can learn how to carry out tasks using a far smaller amount of labeled data than is necessary for training systems using supervised learning today.

***What is unsupervised learning?***

Unsupervised learning uses a different approach where algorithms try to identify patterns in data looking for similarities that can be used to categorize that data. The algorithm is not set up in advance to pick out specific types of data. The machine simply looks for data that can be grouped by its similarities. For instance, a good example of this are news feeds, which grouped together stories on similar topics daily.

***What is reinforcement learning?***

This is very similar to supervised learning, but the main difference is that the machine does not learn of a set of data, but rather a series of trial and error. This type of learning is used in game development. On each successful game, the machine learns to keep doing certain moves first. Take, for example, a puzzle game where the machine learns it must click red before blue. Once the machine learns this, it will always click red before blue.

The main difference between machine learning and deep learning is the way the data is presented to the system.

Machine learning algorithms require structured data and human intervention, while deep learning networks rely on the layers which exist within the neural networks and not require human intervention as it learns through its own errors.

***Section 6***

There have been many developments in the world of A.I. in 2011, IBM's A.I. system, Watson made headlines when it won the U.S. quiz show Jeopardy! The A.I. system beat two of the best players to show ever had. Watson won the show using natural language processing and analytics on its vast sources of data that its process to answer trivia questions in a fraction of a second.

*But what is A.I. used for?*

Speech and language recognition, self-driving and parking vehicles, mapping, facial recognition and surveillance, health care, social media, and robotics.

***Speech and language recognition*** machine-learning systems have helped computers recognize what people are saying with an accuracy of almost 95 percent. Researchers are working towards a goal of 99 percent accuracy. Facial recognition and surveillance in recent years, the accuracy of facial recognition systems have leaped forward to the point where Chinese tech giant Baidu says it can match faces with 99 percent accuracy. Providing the face is clear enough on the video. In China, the authorities are connecting CCTV across the country to facial recognition software and using A.I. systems to track suspects and suspicious behavior. They are also trialing the use of facial recognition glasses by police.

***Health care.***

A.I. is already having a dramatic impact on health care, helping doctors to pick out tumors in x rays, aiding researchers in spotting genetic sequences related to diseases, and identifying molecules that could lead to more effective drugs.

***Robotics.***

Robotics is an area where the use of A.I. has gathered a lot of attention. Robotics is a field of engineering focused on the design and manufacturing of robots. Robots are often used to perform tasks that are difficult or dangerous for humans to do. Robots also perform tasks that are extremely repetitive. Examples of these uses of robots include car assembly lines, preparing and serving foods. Delivering packages. And even as police officers, there are now even robots that interact socially, such as Sophea, the humanoid robot autonomous vehicles or self-driving cars have been in the news a lot lately. Many vehicles are now using inbuilt A.I., including cars, buses, trucks, trains, ships, submarines, and drones. While I won't replace all jobs in the future, what seems to be certain is that I will change the nature of how humans work. The only question is how rapidly and how profoundly automation will alter the workplace. As we said earlier, many people are doing routine, repetitive, and even dangerous jobs. Technology is especially good at automating routine, repetitive work. This could mean that many unskilled jobs will be lost over the next few decades. But the great news is, as with every technological shift, new jobs will be created to replace those lost. It is very much the case that A.I. is a technology that will augment rather than replace many jobs.

Alan Turing from 1912 to 1954. He lived on this planet and made it a better place. Alan Turing is often called the father of modern computing. And quite frankly, he was a genius, a brilliant mathematician, a logician. Alan Turing developed the idea of the modern computer and A.I. during the Second World War. He worked for the British government breaking codes so everyone knew what the enemy was going to do next. Winston Churchill, the prime minister of Great Britain during the Second World War, said Turing shorten the war by two years due to his brilliant work. His name was even given to a term used in the field of A.I..

***The Turing Test*** is a process used for determining whether or not a computer is capable of thinking like a human being.