Introduction to AI

1st Individual Assignment

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First iteration

Concepts, definition and history of interaction with AI. ● Human Robot Interaction. ● Universal Design and Interaction with AI.

Concepts , definitions and history of interaction with AI.

The journey to understand whether machine can think started much earlier. John McCarthy along with Alan Turing give a term Artificial Intelligence in 1955 and later in 1956 after a huge academic conference started AI as a field. [1] Five years later Alan Turing wrote a paper on the notion of machines being able to simulate human beings and the ability to do intelligent things, such as play Chess [Turing50].

Three definitions of AI:

"Artificial intelligence (AI) is the simulation of human intelligence processes by machines, especially computer systems. These processes include learning, reasoning and self-correction." (Special Report: Artificial intelligence apps come of age, 2011)

2. The *Encyclopaedia Britannica* states, " artificial intelligence (AI), the ability of a digital computer or computer controlled robot to perform tasks commonly associated with intelligent beings". intelligent being means those who can adapt to changing circumstances. (B.j. Copeland, 2011)

3. Artificial Intelligence (AI) is the field of computer science dedicated to solving cognitive problems commonly associated with human intelligence, such as learning, problem solving and pattern recognition. (Amazon , no date). Amazon is distributing their AWS platform to different users, where users can implement accordingly.

 I would like to define AI as a computer driven machine, controlled and manipulated by human technology to solve the cognitive problems in a limited

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[1] Conversations On the Leading Edge of Knowledge and Discovery with Jeffrey Mishlove

time. By this i mean AI is a machine but it can compete work with human or can do what human can do in an efficient way.

While reading different articles on AI, i found many interesting facts and use of AI by different companies but the one which attracted me is how Amazon uses machine learning. "Amazon.com has launched AWS(amazon web services) to allow other business to enjoy the same IT infrastructure, with agility and cost benefits". This shows that Amazon is using AI as a service platform. AWS and amazon.com develop tools to develop simple-to-use theorem to solve pragmatic problems for every business. These tools are first tested in the scale and mission critical environment of amazon.com before they are sent to users.

I would like to connect my understand of AI with the movie *Avengers endgame*, how machine learning gave Thanos a soul? (The universe belong to marvel , 2019)2. Digital Domain, one of the digital effect firms hired for this movie, used a sophisticated machine learning software named Masquerade to make the performance of motion capture more realistic and natural (The universe belong to marvel). If there were not AI used in this process, they would have to do all this manually, which would take more time and the result also won't be as effective as it is today.

Robots and AI systems

The term Robot comes from a Czech word, robot, meaning "forced labor"[3]. The word was first used to denote a fictional humanoid in a 1920 play by Czech writer, Karel Capek. But the word was invented by his brother Josef Capek.

The modern concept came into use after industrial revolution. In 1954 George Devol invented the first digitally operated and a programmable robot named the Unimate. later in 1956, along with his friend Joseph Engelberger, Devol formed the world's first robot company. The modern robots were used in factories for manufacturing which helped to minimised the production cost and time.

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[2] https://www.goodworklabs.com/machine-learning-avengers-endgame/

[3] Other Slavic languages also use this stem in similar meaning, eg. Eastern Slavic Belarusian & Russian рабыня (rabynya), Ukrainian раб (rab) & Southern Slavic Bosnian, Bulgarian, Croatian, Macedonian, Serbian Роб (rob). Czech is a Western Slavic language, as is Slovak. Robota, in Slovak, is used to just mean work.

The two definitions of Robot:

1. "A robot is a machine especially one programmable by a computer which is capable of carrying out a complex series of actions automatically".[4] This means a robot is a physical machine which can perform different tasks in accordance to human preference.
2. Cambridge states Robot as a machine controlled by a computer that is used to perform jobs automatically. [5] They also call it as an emotionless machine which can perform effectively then humans in certain tasks.

3. While looking both the definitions above, i can simply explain explain Robot as a emotionless machine, controlled by computers, which performs task automatically inefficient way. This means a robot is a machine built by humans to perform similar task as humans but only in certain circumstances, only what human ask them to do.

Relation between AI and Robot

As from the definitions and discussion on both AI and robots in above paragraphs. We clearly see that AI is a computer program designed for tasks normally requiring human intelligence, while robot is a machine that completes difficult tasks automatically. AI could be use to control and build robots. Yes "a robot" is different from "an AI".AI doesn't need to move while the robot have moments. AI is not necessarily a physical machine except bot programs like Chatbot. Chatbot can be describe as a artificially intelligent robot. AI acts as a brain while robot acts as the body. but there are some similarities as well. A robot can actually have AI and both of them are operated by human intelligence. If we go back to the second definition of AI , it says AI is a "computer controlled robot to perform tasks commonly associated with intelligent beings". This means AI is also a robot which performs complicated tasks with the help of human intelligence. And hence, i can conclude AI is a part of robot. Technology is building to produce intelligent robots but a robot

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[4] Definition of 'robot'. Oxford English Dictionary. Retrieved November 27, 2016.

[5] https://dictionary.cambridge.org/dictionary/english/robot

alone is not an AI. It is only a machine that performs tasks controlled by humans.

While talking about contemporary robot, i always used to wonder on the robots which looks like human, talks like human, and works like human, which is known as **humanoid robot**. A humanoid robot is a robot with its body shape built to resemble the human body. Humanoid robot have head , body , legs and arms similar to human body. It has sensors to sense its surroundings and get different measurements, and several motors installed into it helps the robot to move its part. For example the human robot **Sophia** which uses artificial intelligence, visual data processing and facial recognition. It can reply your questions, it have a recognition sensor and cameras in her eyes, which makes her smarter over time[6]. She can recognise faces, sustain eye contact and recognise individuals and can proceed visual data.(Mallonee, Laura). Sophia can hold speeches, interviews and can hold conversation using natural language subsystem.

Universal Design and AI systems

"Universal design is the design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people regardless of their age, size, ability or disability."[7]
 A product should be designed/build for everyone who wish to use it. Nobody should be excluded only because they are differently able, they lack something that other have. Universal design should meet the need of diverse people, both majority and minority groups. As we know that if an environment is accessible, usable, convenient and pleasure to use , everyone benefits. Universal design creates products and services that meet peoples' needs. It should be used to the greatest possible extent, in the widest possible possible range of situations. Everyone should be included. That is why we call universal design a good design.
Artificial Intelligence is developing faster and speeding up exponentially. It is a future of growth. Human research is continuously focused in developing the artificial intelligence. "Experts say the rise of artificial intelligence will make

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[6] https://www.youtube.com/watch?v=W0_DPi0PmF0

[7] http://universaldesign.ie/What-is-Universal-Design/

most people better over the next decade"(Pwe research centre, Artificial intelligence and the future of humans, 2018). AI is a new factor of production and has the potential to introduce new sources of growth, changing how work is done and reinforcing the role of people to drive growth in business. It helps people saving their time and work load. for example chatbots are helping people to find solutions quicker and in more efficient way. This chatbot has a great future in development. Although the growth of intelligence in chatbot take over job of few people in customer service but there the consumer side is always brighter. But there is always a question in my mind as other people have; as emerging algorithm-driven artificial intelligence(as perviously talked in Sophia) continues to spread, will people be better off than they are today?[8]

I think AI has a potential of including majority of population in the world. It has a great future and can be a good example of universal design. More and more industries are being influenced by AI, and our society is transforming everyday. Over the next few years we will witness the world being entirely disrupted by improvements in AI and machine learning[9].
The research shows, during the last few years the development of machine learning has been increased rapidly. AI is including people from various services, such as; driving assistant, solving larger and complex problems, robots that has capacity to communicate and counselling people.

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[8] https://www.pewinternet.org/2018/12/10/artificial-intelligence-and-the-future-of-humans/

[9] https://www.forbes.com/sites/forbestechcouncil/2018/06/13/three-impacts-of-artificial-intelligence-on-society/#61fcc8e56ec0

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