Mandatory Assignment IN5620

1.1. History of AI

The term “Artificial intelligence” was first defined by John McCarthy in 1956. This development took place through a workshop at Stanford University in the same year. The basis of the claim was that the central property of human beings, intelligence can be so precisely described that that it can be simulated by a machine (McCarthy , 2006). However, as the years progressed, we began to see the emergence of other definitions.

John McCarthy defined AI as “the science and engineering of making intelligent machines “. In his definition, there can be seen a focus on machines that are able to simulate human intelligence (Grudin, 2008). However, Bratteteig and Verne (2018) define it as “AI is a subfield of computer science aimed at specifying and making computer systems that mimic human intelligence or express rational behaviour, in the sense that the task would require intelligence if executed by a human”

Grewal defines it as Artificial Intelligence is the mechanical simulation system of collecting knowledge and information and processing intelligence of universe: (collating and interpreting) and disseminating it to the eligible in the form of actionable intelligence.

Thereby, my own definition of artificial intelligence would be “Artificial intelligence refers to systems that are able to process knowledge and information in a manner which simulates human intelligence”

The article “Some Brief Thoughts on the Past and Future of Human-Robot Interaction” (Dautenhahn, 2018) is a fascinating article revolving around Human Robot interaction (HRI) where the writer talks about the things she is excited and optimistic about in this field, while also mentioning parts of it she is worried about

The article writes in detail about how HRI is not only about robots and how they affect humans, but how much a\of a interdisciplinary field it is. Taking into account fields such as psychology and anthropology, there are a lot of developments happening gradually. This development raises concern for Dautenhahn in that she is sceptical of how this may seem over time. However, my question to this article would be if Dautenhahn could refer to a specific example that raises her concern for developments inside the HRI field?

A company that works with AI is c3.ai, which present AI as a service they provide. The company deals with providing enterprise solutions to consolidate data, build AI models and generate predictions. Therefore, while they do closely work with AI , it is catered to customers in way as more of a developmental platform and adjusting the type of AI services provided based on the requirements of the customers.

A video game that tackles the concept of interaction with AI is Detroit : Become Human. The game is set in a world where AI have advanced in a manner where they are able to mimic human behaviour, emotions and appearances. While human beings and AI are seen to be co-existing in this world, the dynamic between is that of a slave and a master. Despite being highly intelligent machines who have shown to have the ability to develop real feelings, human beings mostly mistreat their machines. The game also shows panic can rise amidst the population once the robots become self-aware.

1.2 Robots and AI

The first instance of the word robot being used can be seen is through the Czech author Karol Capek. The word was used in a play and was used with the meaning “forced labor” (MIT Press reader, 2021). The original meaning of the word is in line with how industrial robots are used in the current world, where robots are used to automate work activities which were previously done by human beings.

The insititute of electric and electronical engineers defines robot as “as an autonomous machine capable of sensing its environment, carrying out computations to make decisions, and performing actions in the real world.” (IEEE, 2020)

On the other hand, Brittanica dictionary defines robot as “any automatically operated machine that replaces human effort, though it may not resemble human beings in appearance or perform functions in a humanlike manner.” (Britannica, n.d.). Thereby, my own definition would be that robot refers to a machine that is able perform actions and simulate human effort without a will of its own.

From these definitions, we can notice that there lie some differences between robots and AI. The key difference would be that of intelligence, as the definitions of AI indicates that they have a higher executive function than robots. This would also indicate that AI would be able to carry out functions that a robot may not although are made to simulate human activity,

An example of a contemporary robot would be the Roomba vacuum developed by iRobot. The robot uses its sensors to autonomously detect dirty spots on the floor, and thus carrying out the function of cleaning and vacuuming the house. Moreover, the sensors allow to have a sense of its surroundings and presence of obstacles and are thus able to navigate throughout the house. The Roomba replaces human effort, while it is able sense its environment and carry out computations to make decisions as the IEE definition indicates.

1.3 Universal Design

Universal design refers to the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design (Mace, 1985). Universal design ensures that the designed product can be accessible by any person, rather than developing customizing products to meet the needs of individual user-groups. Therefore, the spectre of inclusion is much broader than other design forms.

There lies a lot of potential in using AI to improve the quality of life for people with disabilities or cognitive impairments. This can be especially in our daily lives in the present world, where AI assistants such as Siri and Cortana have changed quite a lot on people interact with a phone. A blind person is able to navigate through their phone and make calls

simply by calling out Siri. Similar technology is also implemented in entire homes such as Google Home, which also allows a person with locomotive disabilities navigate and control elements of their home through the use of AI. Both technologies make it possible that more users are able to use smartphone and it also makes human navigation inside houses easier,

Through these examples, we see how AI can be has high potential for including more users. However, it also has the potential of excluding people which can be seen in a study by Hundt et al (2022) where stereotypes, bias and discrimination can manifest in AI through machine learning. The robots were programmed with a popular AI algorithm and were given different images to sort through and respond questions related to the pictures. These virtual robots responded to associating the word “criminal” with black men while words such as “homemaker” were associated with black and Latina women.

“Understand” and “understanding” are two words which may sound similar, but bear different meanings. While “understand” means being able to perceive and comprehend a situation while understanding is more related to the concept of reasoning. While machines heave shown that they can “understand” as displayed by a Roomba when it navigates according to its surroundings, its degree of understanding is still not at the level of human beings. Machines are not quite able to process human emotion and gestures in a level that would warrant for it to labelled understanding.

1.4 Guideline for Human AI interaction and HCI

One of Microsoft’s guidelines for human-AI interaction are guideline 13 “Learn from user behavior” which revolves around how the user experience can be personalized through learning from the actionsof the user. This can be widely seen in the Youtube and Google search bar which can increasingly be able to predict quite accurately what you are about to search based upon your use. This is also how a YouTube feed is able to display videos that aligns more with one’s interests.

There are several similarities between HCI design guidelines and Human-Interaction guidelines, one of these being that both guidelines focus on inclusion and having the user in its focus. The comparison is done by looking Microsoft's 18 guidelines for human AI interaction and Nielsen and Molich's 10 HCI design guidelines (Nielsen, 2020). These guidelines also have a significant difference in that HCI has a larger focus on the users and designing solutions with user's needs in mind while Microsoft's guidelines focus more on the behavior of the system over a period of time

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