IN5480 – Individual assignment 1

Concepts, definition and history of AI and interaction with AI

After playing an essential role in the British code breaking during World War II, Alan Turing wrote in the *London Times* in 1949 about how computers could enter the fields of human intellect (Grudin, 2009, p. 49). The term *artificial intelligence* was first used by the American mathematician and logician John McCarthy in 1956, in a call for participation in a workshop. Hans Moravec described how the pioneers of AI in the 1950s viewed computer as "locomotives of thought, which might outperform human in higher mental work" (Grudin, 2009, p. 49). While the interest in AI shortly declined in the early 1960s as HCI had a major breakthrough, AI research still rose through the decade. J. C. R. Licklider described how AI could be used to exploit computers, the AI research received further support, and was eventually established as a field (Grudin, 2009, p. 50). Many in the late 1960s and early 1970s believed that within few years machines would match and rival the intelligence of human beings. Later it become clear that AI had been oversold, and an AI winter lasted from the mid-1970s to the early 1980s while HCI thrived (Grudin, 2009, p. 52). In the 1980s AI once again blossomed and gathered momentum, while in the 1990s the AI field entered another winter that lasted until about 1997 (Grudin, 2009, pp. 53-54). Since then and during the 2000s the field kept growing (Grudin, 2009, p. 55).

Here are three different definitions of AI:

"Artificial intelligence (AI), the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings" (Copeland, 2020).

"Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems" (Burns, Laskowski, & Tucci, 2021).

"Artificial intelligence is a constellation of many different technologies working together to enable machines to sense, comprehend, act, and learn with human-like levels of intelligence" (Accenture, n.d.).

These definitions focus on the connection between machines and human intelligence, and I would define AI as the ability to simulate human-like intelligence in machines and computers.

Kerstin Dautenhahn (2018) has written an article about her thoughts on the past and future of human-robot interaction (HRI). She is excited about how the HRI community has grown, but also worried about the constraints of the experimental approach being used to study HRI.

Again X want to make investment and maintenance in real estate more sustainable, presenting AI algorithms as an important tool to make the unseeable visible and quantifiable (Again X, n.d.).

The Imitation Game (Tyldum, 2014), a film adaptation of Alan Turing's biography, explores how people think about machines and their ability to think or be intelligent. Turing puts his faith in building and developing a computer to crack the code, while the others didn't believe a machine could outperform human intelligence.

Robots and AI systems

The word "robot" derives from the Czech word "rabota", meaning forced labor, and origins from the Czezh play *R.U.R.* (Rossum's Universal Robots) by Karel Čapek, where a company mass-produced workers using biotechnology (Jordan, 2019).

Cambridge Dictionary (n.d.) defines a robot as "a machine controlled by a computer that is used to perform jobs automatically" while Erico Guizzo (2020) defines a robot as "an autonomous machine capable of sensing its environment, carrying out computations to make decisions, and performing actions in the real world". I would define a robot as an automatically operated machine that performs tasks.

While robots need to be controlled or given instructions to perform autonomously, AI allows the ability to make decisions (Sharma, 2019). Therefore, as the AI definitions describes, AI is connected and compared to human intelligence.

The AV1 robot from No Isolation is developed to help long-term sick children out of their isolation, equipped with camera, microphone and speaker, controlled by the user with a smartphone or tablet app (No Isolation, n.d.). This makes it possible for the children to participate and digitally attend to both classes and other activities.

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" (National Disability Authority, n.d.). As this definition states, Universal Design is all about designing inclusive products and solutions, making them usable to everyone.

AI has a great potential to create inclusive solutions, especially the ability to include people with different disabilities. Robot lawn mowers and robot vacuum cleaners have already proven to make life easier for people with physical disabilities. An important thing to remember when creating new solutions, is to also be inclusive in the developing process, to make sure that the final solution doesn't exclude any potential user groups.

We use the term "understand" to describe the power of comprehension and perceiving the intended meaning of something. Although machines apparently are able to understand commands, and some even their surroundings, I believe there is a difference between how we talk about people and machines understanding things. I think we talk about machines understanding when they in fact are not understanding in the same ways as people, because of their lack of human consciousness.

Guideline for Human-AI interaction

The 9th guideline for human-AI interaction is about supporting efficient correction when something is wrong (Amershi, Vorvoreanu, & Horvitz, 2019). An example of this can be found when writing in a Word document and words get marked as written incorrectly when

they are actually correctly written, but unknown to the software. In these cases, users can simply choose to ignore and remove the marking or add the word to the local dictionary.

While guidelines for human-AI interaction and HCI design have several similarities, focusing on designing inclusive and understandable solutions, they differ in that the guidelines for human-AI interaction emphasize how a solution should work over a long period of time, while the ones for HCI design emphasizes the users and their interactions. (Wong, 2020).

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