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IN5480

Individual Assignment IN5480

1.1 Concepts, definition and history of AI and interaction with AI

First, write a section about how AI came about, the history of AI. When, and by whom, was the term first used?

It was the American mathematician and logician John McCarthy who first used the term Artificial Intelligence. He and two others proposed the term Artificial Intelligence in a paper for the Dartmouth conference in 1956 .

Definitions of artificial intelligence:

Definition 1:

"The theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages" (The English Oxford Living Dictionary).

This definition focuses on artificial intelligence as a computer system which can perform tasks that normally requires human intelligence.

Definition 2:

"Artificial intelligence (AI), the ability of a digital computer or computer-controlled robot to perform a task commonly associated with intelligent beings" (Copeland, B.J, 2006, Encyclopedia Britannica).

This definition focuses on the intelligence aspect with artificial intelligence, as artificial intelligence does tasks that previously were done by humans.

Definition 3:

"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" (Bratteteig & Verne: 2018:1-2).

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This is a definition that came in a paper from 2018, by two researchers from the DESIGN group at IFI, this research group focuses on participatory design and user-centered processes. It is interesting that in their definition focuses on the fact that Artificial Intelligence mimics human intelligence, but they issue an explicit difference between human intelligence and machine intelligence.

My definition of artificial intelligence: *Artificial intelligence (AI) are computer systems that are created to give computers the ability to do tasks and reason with human-like intelligence.*
I wanted to focus my definition on that artificial intelligence gives computers the ability to "think" and with that could do tasks that need cognitive ability. I think this is important because of the learning aspect with AI, the AI has to learn to do these tasks, like a human needs to do as well.

Find one contemporary company that works with AI and describe how this company presents AI on their web pages. In what way does this company talk about AI, as a product, as a service, framework or "idea"?

I choose Netflix, and how they use artificial intelligence/machine learning in their streaming platform. Netflix uses AI to improve the personalization of Movie recommendations. They use the watching history of other users with similar taste, to recommend what you might be interested in watching next. Netflix uses AI to improve their product for every user, by personalizing the content.

Select one documentary or a fictional film, book or game that is about the use and interaction with AI. Describe with your own word how human interaction with AI is portrayed in this work.

Iron Man

In this movie, which is set in the future, we follow Tony Stark, who has an AI assistant named JARVIS. JARVIS helps Tony Stark throughout the movie with mathematical equations, consult in daily questions about how the weather is and all sorts of stuff. Tony interacts with JARVIS continuously through the movie through speech and is a very intelligent AI.

1.2 Robots and AI systems

First, write a section about how the word Robot came about.

The word "robot" was first used in the Czech play "R.U.R or Rossum's Universal Robots". Where the word originated from the Church Slavic and meant "servitude", "forced labor" or "drudgery". The word was a product of the central European system of serfdom by which a tenant's rent was paid for in forced labor.

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Then, find two different definitions of "robot". Describe and explain these definitions. Based on these definitions, make one definition yourself, and describe and explain this definition. 2(3)

Definition 1:

"Actuated mechanism programmable in two or more axes with a degree of autonomy, moving within its environment, to perform intended tasks" (ISO 8373: 2012).

This definition says that it's a mechanism that is programmable in two or more axes, meaning that it can move in different directions to perform tasks.

Definition 2:

"A robot … refers to a physical object that interacts with the physical environment, either on its own or via a person, to accomplish a task" (Schulz, Trenton, 2020).

This definition focuses on that a robot is a physical object that can interact with the physical environment to perform tasks. It is important to understand that in this definition Schulz refers to a robot as a physical thing, not something on the web.

My definition: A robot is a physical object that is programmed to do a set of tasks in the physical environment.

My definition of a robot agrees with Schulz with the aspect of being an actual physical object, that will interact physically with either humans or environment to do a set of tasks.

Discuss the relation between AI and Robots. Is "a robot" different from "an AI"? In what ways are they different and similar? Bring in the definitions that you described earlier about robots and AI for this discussion.

The central to the definitions of robots is that the robots are set to do tasks. The tasks they are set to do are either tasks humans don't want to do and are highly specialized in the way they do it. This is a central aspect that separates robots with AI, robots are not able "learn" by themselves, but are programmed to do the tasks given to them.

Find one contemporary physical robot, either described in a research article - or a commercial robot, and describe how this robot moves and how a human user is interacting and using the robot in a specific situation.

Lawn mower robot

The lawn mower robot is a commercial robot that has a highly specialized task to perform. The robot cuts grass in a specified area and through the sensors across the lawn the robot knows

the boundaries. When the robot gets to a boundary it turns and moves on with the task. This is compliance with the definitions above, where the robot has a specific set of tasks to be done and is a physical object that interacts with the physical environment.

1.3 Universal Design and AI systems

Please find and describe a definition of Universal Design. Explain this definition, how you understand what Universal Design is about with respect to inclusion.

Definition: "*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: http://universaldesign.ie/What-is-Universal-Design/ (accessed 10/09/2020)

This definition by National Disability Authority aims to include as many people as possible in as many situations and contexts as possible. They try to define the spaces where universal design should be done/used, whether it is in the physical or digital environment.

Describe the potential of AI with respect to human perception, human movement and human cognition/emotions. You are encouraged to use examples.

AI has a huge potential in universal design if it's designed "correctly". For example, has AI the potential to help older adults with reduced ability in movements to send text through voice recognition. With an AI that is developed for this purpose the elderly people can interact with friends and family in an easier manner.

Describe the potential of AI for including and excluding people. You are encouraged to use examples.

The uniqueness with humans and how we are interacting with each other gets lost in numbers. This is what universal design aims to protect. As artificial intelligence uses the numbers on huge datasets to calculate averages, the potential to exclude both ends of the normal distribution curve increases rapidly. The paradox is that often these people rely on universal design mostly.

In WCAG 2.1 principles and in the Human AI-Interaction guidelines the concept "understand" and "understanding" is used. Explain briefly in what way you make sense of the concept "understand" and "understanding". Then address the question: Do machines understand?

I understand the concept as a cognitive ability, where you can make sense of something new. For example if you learn something new at the university you can get an understanding of how you should do something and why you should do it that way.

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I don't think that machines understand, but I think that machines can be exposed for a situation so many times that it learns what the outcome will be. By this I mean that machines "learn" what to do without the understanding of why it should do it.

1.4 Guideline for Human-AI interaction

Please select one of the 18 guidelines from Microsoft, and describe this guideline with a different example than what is given by Microsoft.

I have chosen guideline number four from the Microsoft Guidelines for AI interaction. From Microsoft: "Show contextually relevant information. Display information relevant to the users current task and environment". Like I explained earlier with Netflix way of using AI to show a user relevant movie recommendations, they use this guideline to show a user what they might like in the context of watching a movie.

Search, and find one set of HCI design guidelines. Discuss briefly similarities and differences between the HCI design guidelines and the Human-AI interaction guidelines.

The similarities between the HCI design guidelines and Human-AI interaction guidelines lies in the way the guidelines want a system or a product to be easy to interact with. And during the interaction both want to give feedback, either it is to the user or the AI system, both rely on good feedback during interaction.

Some differences are that the Human-AI interaction guidelines want the AI-system to learn both from feedback and the use of the system. But in the HCI-guidelines it is the user that has to learn from the feedback from the system. It will say that the user will learn how the system works, but the AI will learn how the user uses the system.

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