

Individual assignment - Module 1

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

1.1 The history of AI:

When, and by whom, was the term first used?

The term *artificial intelligence* was first used by John McCarthy in 1956. McCarthy was an American mathematician and logician and was known to be the first to use the word. Before the term was officially used, the potential of computing was discussed in the 50s by people like Alan Turing, Claude Shannon and Isaac Asimov. These three all wrote influential papers and did work that shaped the history of AI going further. (Grudin, 2009)

1.2 Definitions

Definition from the Oxford learning dictionary:

“The study and development of computer systems that can copy intelligent human behaviour.”

This definition is somewhat of a basic understanding of what AI is, and the source for this is a dictionary, so it makes sense that the definition doesn't go into much detail. I would call this the basis of what AI could be described as.

Definition from T. Bratteteig and G. Verne, 2018:

“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.”

This definition is a recent one, since it's from an article published in 2018. This definition focuses on that an AI should be able to do and process tasks, and especially tasks that if they were done by a human would require some sort of intelligence. This allows us to imagine what kind of tasks an AI would be required to do according to this definition. Also the definition is written by two researchers working with participatory design, which the article where the definition is located is about. This could mean that the researchers don't look at the concept of AI from a very technical perspective, but more from a design-perspective.

Definition from John McCarthy, 2007:

“It is the science and engineering of making intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence, but AI does not have to confine itself to methods that are biologically observable”

McCarthy describes AI as intelligent machines and computer programs. And it seems like he tries to describe that the AI doesn't always openly show human-like intelligence.

My own definition:

It seems like most definitions describe a somewhat intelligent computer system, that could in some way be compared to how humans are intelligent. It also seems like the AI needs to be able to accomplish tasks. My definition would therefore be something like this:

“Artificial intelligence (AI) is a technological system designed for performing tasks with a human-like intelligence.”

1.3 A contemporary company that work with AI

Describe how this company present AI on their web pages. In what way does this company talk about AI, as a product, as a service, framework or “idea”?

A company I found that uses AI is the norwegian bank Nordea. It seems like they use an AI-solution for connecting users with the right service personnel or unit within Nordea. On the front page of their website nothing is presented about AI or the use of an AI, but they have released a press release about their collaboration with an AI-specialized company called Feelingstrem, which delivered the AI-system they now use. The press release i found was published in 2017, and as I don't have Nordea as my personal bank, it was difficult to find out how this system actually works and if it's still in use.

1.4 A fictional film series that is about the use and interaction with AI:

Describe with your own word how human interaction with AI is portrayed in this work.

Westworld is a show on HBO that describes a futuristic world, where robots have passed the Turing-test and can no longer be distinguished from humans. Westworld in itself is an amusement park, where humans can enjoy living a life without limits or consequences while interacting with the robots in any way they want. One could say that the villains in this show are the humans, because of the way they treat the robots and how they feel little to no remorse of their actions against them. In later seasons of the show, they are faced with a computer system that has predicted all foreseeable futures and in a way has chosen the best path that humanity can follow based on these predictions. This system is driven by an AI called Rehoboam, and Rehoboam gains control over the world by for example restricting work options for certain people, because it thinks that this is the only way to keep all of humanity on the right path.

2 Robots and AI systems

2.1 How the word Robot came about:

The word “Robot” was first introduced in a Czech play called R.U.R (Rossum’s Universal Robots), written by Karel Capek and performed in 1920. The word itself comes from a Slovenian or a Czech word “robota” which means forced labor.

2.2 Definitions

Definition from the Oxford learner dictionary:

“A machine that can perform a complicated series of tasks by itself.”

Again, as the AI definition from a dictionary, this definition touches on the basis of what a robot is. It is an “independent” machine that can perform tasks.

Definition by Trenton Schulz, 2020:

“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.”

This definition defines more aspects of what a robot could be and how it can be described. It is something physical that accomplishes tasks by interacting with something. This definition gives you more of an actual picture of what a robot could be, in comparison with the definition from Oxford.

My own definition:

I found it difficult to come up with a definition of a robot. One could think of robots in movies and in books, and it’s something totally different then when I imagine a functioning robot that exists today. So I decided to focus on what exists today, and try not to think of all possible future robots. My definition: “A robot is a physical object that can accomplish predetermined tasks by interacting with the physical environment or with a person.”

2.3 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.

I would argue that a robot is an AI-system in physical form. Many of the definitions describe a system that is able to perform tasks, and is somewhat “independent” when following the programmed pattern or task. Here I’m thinking “independent” in the way that it may not need a human to turn it on and off, or that the system could make decisions that would benefit the predetermined tasks. Both a robot and an AI are according to the definitions supposed to be able to perform tasks, and a robot is a physical object while an AI doesn't need to be.

Based on the definitions, more of the AI-definitions focus on intelligence and human-like intelligence, so it could seem that one doesn't have the same intelligence-standards for a robot such as for an AI-system.

2.4 A 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.

The iRobot Roomba is a robot vacuum cleaner that is supposed to do some of the cleaning jobs so that users don't need to do them. Users don't have to be present when the robot does its tasks, and you can program the robot to clean when it suits you the best. It moves around the room and changes direction every time it encounters a wall, a floor molding or an edge (like a staircase going downward). Once it is done it finds its way back to a charging station or if it's cleaning in a separate room from the cleaning station the user has to physically move it so it can manage to enter the charging station.

3 Universal Design and AI systems

3.1 A definition of Universal Design:

Definition from National Disability Authority:

“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.”

Universal design is in my opinion design that opens possibilities for everyone to use it. That there are always options to access it no matter what types of abilities you have as a user. The definition from NDA describes exactly this, that something should be designed so that it's accessible, understandable and can be used by everyone no matter their differences.

3.2 The potential of AI

3.2.1 Describe the potential of AI with respect to human perception, human movement and human cognition/emotions.

Systems using AI is as I've mentioned before often described as kind of independent, so this could maybe help people who were earlier dependent on the help of other people to be more independent in their everyday life. An example of this could possibly be a smart home where the user could use voice commands to control the system.

3.2.2 Describe the potential of AI for including and excluding people.

AI has great potential when it comes to including humans. For example when it comes to voice recognition or voice-over-systems. This helps people with vision related disabilities or maybe people have trouble using their hands to press buttons. It could also be a possibility that AI could exclude people if the systems weren't designed with universal design in mind. It could for example be made too complicated for elders to understand.

3.3 Do machines understand?

The word understanding is in my opinion the way people perceive information and how they act on it. So in a way machines could do the exact same thing, they perceive the information they get and act on it according to the programmed rules of the system. I would say the biggest difference between a humans' understanding and an AIs understanding, is their ability to see the nuances in the information and interpret the information according to body language or tone.

4 Guideline for Human-AI interaction

4.1 Microsoft's 18 guidelines

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

Microsoft guideline number 9: Support efficient correction

The AI system needs to let the user correct the answers and decisions made by the AI, without disrupting the flow of the interaction. For example, the user needs to be able to let the AI know that it disagrees with a decision the AI makes.

4.2 HCI guidelines

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.

I chose to look at Norman's Seven Principles of Usability. The ability to see what is happening (visibility) and to get feedback is something that seems important in both sets of guidelines. I think feedback is the most relevant similarity between Norman's HCI principles and Microsoft's Human-AI interaction guidelines.

5 References

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