

IN5480 - Specialization in Research in Design of IT

Individual Assignment 1

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1 Task 1

Search and find three definitions of AI, describe these briefly. Make references.

"The ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings." [1] The Britannica dictionary focuses on the robot or digital computer performing tasks associated with intelligent beings. This is the vaguest definition of the three, and according to the definition it doesn't have to be human intelligence being replicated.

"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." [2] Oxford Dictionary's definition mentions both the theory and the development of the computer system, but associates artificial intelligence with human intelligence in contrast to Britannica's definition. It also gives relevant examples that further help to define what AI actually is.

"The field of computer science dedicated to solving cognitive problems commonly associated with human intelligence, such as learning, problem solving, and pattern recognition." [3] Amazon's definition is quite similar to the one of Oxford Dictionary, while linking AI to computer science and solving cognitive problems.

2 Task 2

Search and find three definitions of Robotics, describe these briefly.

"The branch of technology that deals with the design, construction, operation, and application of robots." [4] Oxford Dictionaries' definition of robotics is concrete, but doesn't go into detail about the robots themselves.

"... technology dealing with the design, construction, and operation of robots in automation" [5] Merriam-Webster's dictionary says that robotics is used in automation, and also mentions the different activities involved in robotics.

"Design, construction, and use of machines (robots) to perform tasks done traditionally by human beings." [6] Britannica's definition can be linked to their definition of AI - that the tasks are done by human (intelligent) beings. It also links robotics to machines for a clearer understanding.

3 Task 3

Search and find three definitions of Machine Learning, describe these briefly.

"Advanced machine learning algorithms are composed of many technologies (such as deep learning, neural networks and natural-language processing), used in unsupervised and supervised learning, that operate guided by lessons from existing information." [7] Gartner, a leading research and advisory company, has the most concrete definition, mentioning different types of machine learning (ie. deep learning, neural networks). Gartner also mentions both unsupervised and supervised learning, but the real explanation of ML is in the last sentence: "that operate guided by lessons from existing information".

"A branch of artificial intelligence in which a computer generates rules underlying or based on raw data that has been fed into it" [8] Collins' definition also focuses on the aspect that ML's decisions is based on rules underlying or raw data.

"The capacity of a computer to learn from experience, i.e. to modify its processing on the basis of newly acquired information." [9] Oxfords definition is quite similar to Collins', focusing on the modification of processing based on new information.

4 Task 4

Write in three to five sentences the relationship between AI and Robotics as you understand this.

While AI is being used to make decisions based on previous information or other rules - it's confined to being "just" a brain. The AI itself can't walk, can't get new visual input or talk to a human. For an AI to walk, it needs legs, sensors and weight distribution. The making of these limbs (or machines) is Robotics. I imagine the relationship just like the human being. Our brain can't see stuff itself, it needs eyes!

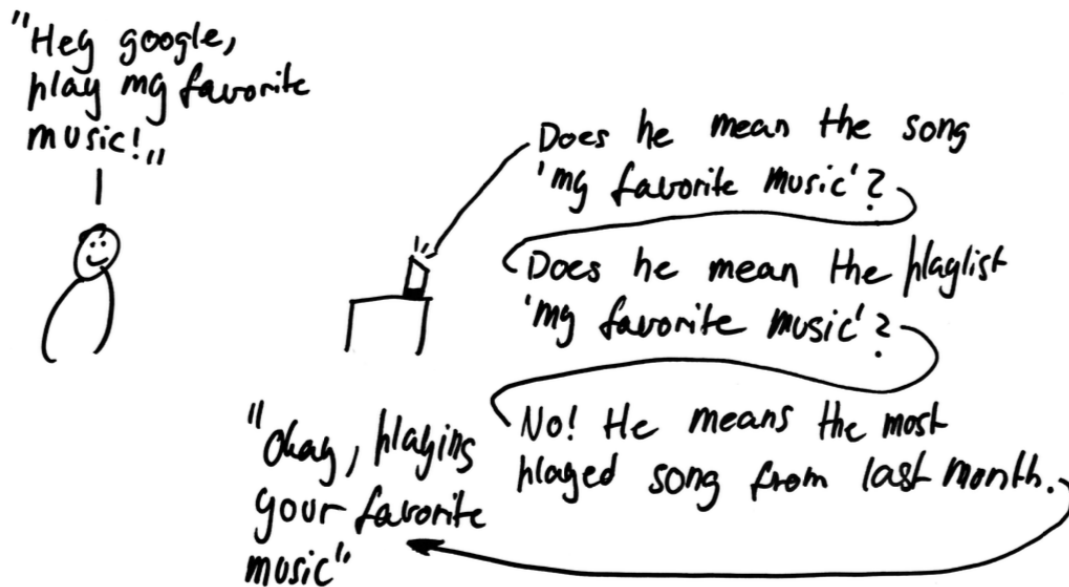
5 Task 5

Make a text to describe your own definition of AI. Explain briefly this definition. Artificial intelligence is a field in computer science, replicating intelligence normally found in human beings in order to perform tasks such as learning, visual perception, speech-recognition and decision-making.

In my definition, I focus on the replicating of intelligence as this is what I understand AI is mostly about. In addition to this I added examples of tasks performed that AI is currently being able to do.

6 Task 6

6. Make a drawing of an interaction with an AI - something that you imagine. Describe with some sentences your drawing.



My drawing tries to explain that the interaction with AI is hidden because the AI itself does actions based on what the user says - trying to figure out what he means.

7 Task 7

Read the article: "On the Subject of Objects: Four Views on Object Perception and Tool Use" by Tarja Susi / Tom Ziemke. Write in your own words one page about the different perspectives on the human relationship with tools.

There are four different views on object perception and tool use being discussed in the article. These are functional tone, equipment, affordance and entry-point.

Functional tone

Functional tone is described by von Uexküll. A central point for his description of the human relationship with tools is that each animal creates its own universe, or "Umwelt". This is because they apply their own meaning to the objects it encounters, leading them to fit the world to their own needs. This universe contains two different worlds, both the animals own world with their perceptions - and the "Wirkwelt", his effector world.

Let's use an example with a stick. When there's no animal nearby, the stick has a neutral functional tone. When a human comes across the stick, the human imprint meaning to the stick, and gives the tool a functional tone. For example if the human will use the stick to throw it to his dog, it's given a "play-quality". If the human will use the stick for building a house, it's given a "build-quality". This means that an object could have different functional tones or meaning in different "Umwelts", based on the animals situation and perception of reality.

Equipment

Heidegger's point is that the relation between the human and the tool is interdependent, meaning the cannot be considered as different entities. The tool and its possibilities depends on the human's ongoing activity. Heidegger meant that there is no such thing as equipment, or a useful thing. Things are defined in terms of the function they provide, but that all depends on the context in which the human is currently in. A hammer isn't a useful equipment if you're going to cut something precisely.

Affordance

Gibson's point is that every object has its own affordances which is made available in the patterns of light that are reflected from surfaces. This means that objects has its own affordances that will always be there. The human's need may change, but the object's affordances will be there nevertheless. An example of this could be the part of a coffee cup used for holding. Because it's hollow, circular, and inviting - this leads to it being an affordance for picking it up.

Entry-point

Kirsh studied the way people works in offices and argued that sometimes the people should fit their environment to them, instead of the opposite. This may lead to people being more productive by reduce mental efforts. He proposed the term 'entry point', which is similar to affordances, meaning they invite us to do something. It's "a structure or cue that represents an invitation to enter an information space or office task". He categorized some of these entry points in an office to: intrusiveness, richness in metadata, visibility, freshness, importance and relevance. In order to reach a good performance in the work-place, these entry points should be adapted to the humans.

8 Task 8

Select one of the perspectives from the article, and go into detail when you describe it.

See 'functional tone' above.

9 Task 9

Select one other article from module 1, and write with your own words what this article is about.

I chose 'Five provocations for Ethical HCI Research' by Brown, B., Weilenmann, A., McMillan, D., and Lampinen, A.

The article is about five provocations as they call it, written in order to challenge the community in HCI about ethics.

The first provocation is about the use of informed consent. The authors argue that it often leads to miscommunication in regards to the benefit of the research. It's also unnecessary and might lead to the researcher being seen as trying to dupe the subject.

The second provocation is about research on vulnerable populations, especially when these aren't left with anything after the trials. The HCI-community should learn from the medical community and leave the participants with a lasting benefit, for example when conducting experiments in poor areas. This could be done by leaving technology for them to use further. In turn, this would lead to more participants being engaged and willing to join because it could have a lasting, positive effect on the community.

The third provocation is about anonymity in HCI research. By using the word 'anonymous',

we raise expectations, not only for researchers, but also for the participants. We can't guarantee their full anonymity because family and friends will always recognize blurred out faces or statements said by the subject in question. In addition to this, some might want to not be anonymous. Therefore, anonymity should be an option for participants, not 'enabled' by default.

The fourth provocation is about Institutional review board and how they limit and makes conducting research harder than it could be. The time they use to process possible research areas could be used to save both time, and in some medical cases life of the subjects in question. The authors propose using a two-stage peer-review process instead.

The last provocation is regarding research performed with or within a commercial company. They propose to block the publication until the complete dataset is made available to others in order to guarantee transparency during review and future replicability of analysis. An example used in the article was about gambling companies doing research on gambling in general. They of course don't want to focus on the downsides for humans in gambling, and thus making the research biased.

10 Task 10

Select one documentary or a fictional film, book or game: describe with your own word how interaction with AI is portrayed in this work.

'Her' (2013) is a fictional film about Theodore, a lonely writer. He purchases what's know as 'OS1', worlds first artificial intelligence operating system. The intelligence is named Samantha, and they quickly grow closer and closer as they talk together. Theodore even brings Samantha outside with him, and he's starting to fall in love with her. The AI is portrayed as a digital assistant who learns from the user. Sort of like a normal human being, but without the physical aspects. The interaction is through both speech and a camera that Samantha has access to. From this, she can see the world and act thereafter. If you didn't know Samatha was an AI, you wouldn't have guessed that she wasn't a human being.

11 Task 11

Describe what you understand by autonomy; both human autonomy and machine autonomy.

Human / personal autonomy - the ability to decide for yourself, do your own actions, without the direct influence of others.

Machine autonomy - a machine that works on it's own, without the need for a human to be involved. This might be AI, or a clock that keeps on ticking without the human interference.

12 Task 12

When was the term "AI" first coined? Please make a reference.

According to Smith, C. (2006) the term 'AI' was coined in 1956 by John McCarthy in 1956.[10]

13 Task 13

Articulate one question for the article "What we talk about when we talk about context" by Paul Dourish in the curriculum.

Dourish argues that users determine the meaning of the technologies that they use, and not the designers. How can designers work together to create designs effectively and change the community as a whole?

14 Task 14

Articulate one question for any other article in the curriculum.

A peer-review instead of an ethics board proposed in the article 'Five provocations for Ethical HCI Research' would impose some challenges. For example, how would one be sure that the person reviewing the work is objective and impartial?

References

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