Individual assignment 1 - First iteration

1. Three definitions of AI

Definition 1:

"[The automation of] activities that we associate with human thinking, activities such as decision-making, problem solving, learning ..." (Bellman, 1978).

Bellman (1978) sees AI in his definition as a way of portraying human thinking. Where the goal is to give a machine the "toolbox" that humans have to go through the same processes when thinking about a problem etc.

Definition 2:

"The study of the computations that make it possible to perceive, reason, and act" (Winston, 1992).

Winston's (1992) definition of AI focuses also on portraying human thinking in machines. The difference lies in the reasoning perspective - perceive - reason - act. Where the goal can be to have a machine that can use reason to come up with an answer where there are no concrete ones.

Definition 3:

"The study of how to make computers do things at which, at the moment, people are better" (Rich & Knight, 1991).

Rich and Knight (1991) focus on AI where the goal is to act more like humans, with all of its capabilities: Movement, reasoning etc. A focus that is more present in robotics or in making machines that can pass as humans via the Turing test etc.

2. Three definitions of Robotics

Definition 1:

"Robotics is the study of robots. Robots are machines that can be used to do jobs. Some

robots can do work themselves. Other robots must always have a person telling them what to do" (NASA, 2009).

NASA has a two factored definition, where they describe briefly what robotics is and focus more on robots for the rest of it. Where they via describing what a robot is, also describes what the focus is when working with robotics.

Definition 2:

"Robotics is the study of mechanical engineering, electrical engineering, electronic engineering and computer science and is a broader way of looking at developments" (LEO, 2018).

This definition is more focused on the different disciplines that is involved in robotics, and not about what you do in robotics, besides that, you have "a broader look".

Definition 3:

"The branch of technology that deals with the design, construction, operation, and application of robots." (English Oxford living dictionaries, 2018).

In this definition the broader definitions of work practices are described, contrary to the LEO (2018) one where they name the disciplines.

3. Three definitions of Machine Learning

Definition 1:

"Machine learning is based on algorithms that can learn from data without relying on rules-based programming" (Pyle and San José, 2015)

Pyle and San José (2015) sees machine learning as a way for a machine to gain knowledge and learn from its environment without giving it so-called rules to follow, as you usually do in programming.

Definition 2:

"A branch of artificial intelligence that systematically applies algorithms to synthesize the underlying relationships among data and information" (Awad and Khanna, 2015).

In Awad and Khanna's (2015) definition they also refer to algorithms, but here they talk about how you can use these algorithms to look at relational factors between data and information, that together give a much more whole picture of the environment that the machine learning is applied.

Definition 3:
"Field of study that gives computers the ability to learn without being explicitly programmed" Samuel, 1959 (as cited in The Conversation, 2017).

This definition originally by Samuel (1959) takes in to account the same aspects as Pyle and San José (2015). The difference is in the granularity of the definition, this one being the more abstract one. But given that this one is from 1959 it is accurate even today.

4. My understanding og the relationship between AI and Robotics

I think about robotics as the science of making robots. A robot can come in different shapes and have different goals. The common denominator is usually that all robots are some kind of artefact that is designed and programmed to assist humans or other robots in tasks - kind of like software but in a physical form. AI on the other hand does not have to be "a part" of a robot, it can be pure software. In many cases, robots have some kind of AI, especially social robots.

5. My definition of AI

"*You develop AI when you as a programmer give a machine characteristics with the goal of mimicking human thought processes via a "programmed brain". The result is a autonomous machine that can solve problems in its environment, that humans would normally do. "* My definition, 2018

For a machine to have the ability to mimic the human thought process, a programmer needs to define and construct the "machinery" that makes up the machines "brain". You don't program and construct the "brain" of the machine to be equal to a human, but you give it the necessary functions to solve tasks in its environment. You could say that many machines, with and without AI, solve tasks that humans would normally do. But here I think that the task must have a level of complexity which we as humans would solve with "intelligence".

6. A drawing of an interaction with an AI

I have drawn one way of interacting with AI, where it is present in an artefact like Alexa or Google home. Where the machine, in this example, knows you have had a long day and wonders therefore if it should order you dinner, so you don't have to.

7. Four Views on Object Perception and Tool Use

In the next paragraphs I will briefly describe the four different relationships that Susi and Ziemke (2005) describes in their article: On the Subject of Objects: Four Views on Object Perception and Tool Use.

1) Functional tone
The relationship between one subjects perception and use of tools can be explained via a functional tone, according to the biologist Jakob von Uexküll. You as a person are here the one that determines the relationships meaning - where it gets a "functional tone"..What meaning you associate with it depends on your mood, context etc.

2) Equipment
Philosopher Martin Heidegger sees the relationship between subjects and objects as something unified, meaning that you can not look at subjects and tools as independent entities. An object gets their meaning through the way they are used. Where a subject manipulates the object and learns about its functionality. But we can not explain the relationship via knowledge or perception. To understand this you need to look at "what it means for a being to exist".

3) Affordance
The American psychologist James J. Gibson sees the relationship through the term affordance. He argues that the objects in its environment possess affordance (a way of perceiving them) how this is perceived is through reflections from surfaces that subjects

encounter. But the objects possess affordance even when it is not being perceived by a subject.

4) Entry point
David Kirsh refers to the term 'Entry point' which is a trait that an object possesses that gives the subject an "invitation to enter an information space or office task", almost like affordance. This can, for instance, be a list of things to do. He also uses the term entry point collections which are a personal collection of what you need to do in a day, the next and so forth. You can say it is a system the subject creates to structure their everyday lives.

8. More about the term 'Entry point'

Kirsh research on entry points comes from an office context. Where entry points - or collections of entry points could be found on the worker's desks. Some workers are tidy - who likes systems and has a clean desk. Others can't be bothered with structure and thrive without it, but usually has to use ad hoc systems to structure their work. How these entry points affect the workers can be seen along the six dimensions: 1) *Intrusiveness* - attention-grabbing traits from the objects, like a colour. 2) *Richness in metadata* - information the entry point gives on underlying information, like a heading. 3) *Visibility* - how attention-grabbing the entry point is. 4) *Freshness* - what you used last is most likely to be used again. 5) *Importance* - how important the entry point is, like a due date. 6) *Relevance* - if an entry point is useful for the task at hand, you are more likely to use it.

9. Short about the article: Does AI make PD obsolete?"

Bratteteig & Verne (2016) takes a look at challenges related to the fields of AI and Participatory design. Particularly how users can contribute to the design process when designing for AI, through the lens of participatory design. Here they point out one bid challenge which is the fact that AI or the learning process for an AI can happen and change very fast. Which makes it difficult to design for.

10. AI in a fictional book

In Dan Brown's book Origins, featuring symbology professor Robert Langdon you get to know Winston a personal assistant to the futurist Edmond Kirsch. Winston is a highly

intelligent AI that can mimic human behaviour in the form of thought processes and communication (to some degree). When Robert Langdon first encountered Winston he thought that he was talking to a human. So it is safe to say that Winston has passed the Turing test with flying collars. Winston has no physical form but can communicate through several technologies like a cell phone and a computer. He can also "hack" into pretty much every system with internet access. Winston is in communication with Robert Langdon in pretty much the whole book, because of circumstances (don't want to spoil the book).

11. Human- and machine autonomy

A human has autonomy when it can do whatever it wants, without being controlled by others. Machines, on the other hand, is today controlled by humans and are rarely fully autonomous. Aspects like AI contribute to this autonomy, and some machines run autonomously if turned on - like those in a factory. So a machine can have autonomous tasks, like vacuuming (for a vacuuming robot) but when and where is determined by humans.

12. When was the term "AI" first coined?

The professor emeritus John MacCarthy was the first person to coin the term "AI" in 1956. The computer scientist has had a big role in creating systems that can mimic human skills like vision, hearing etc. His work with AI is just one of many inventions on his resume, he invented among other things the programming language LISP (The Independent, 2011).

13. Question to: "What we talk about when we talk about context"

How can you use this way of thinking about context when designing for more tangible interfaces - where a screen is not so prominent and the information flow/processing is not so easy to visualise?

14. Question to: "Does AI make PD obsolete?"

Can Participatory design become more important in the after-design process since AI is constantly evolving?

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