Individual assignment (first iteration)

1. Search and find three definitions of AI, describe these briefly. Make references.
John McCarthy defines artificial intelligence (AI) as the science and engineering of making intelligent machines, especially computer programs. He also states that AI is related to computers' tasks on understanding human intelligence (page 2, 1998).

In the documentary "Open Source Stories: Road to AI" by Red Hat Videoes (2007) Chris Nicholson present AI as a box with math and encoding. Data goes into the box and decisions based on the data come out. Francois Chollet, from the same documentary, formulated this definition as follows: *input + output = rules*.

Kok (et al.) has several definitions of AI. One of those is that artificial intelligence is the concept where machines can have human-like intelligence; they can learn, self-correct, adapt etc. (page 2, 2009).

2. Search and find three definitions of Robotics, describe these briefly.
According to Owen-Hill robotics is a branch of technology that deals with robots. He says that robots are programmable machines that can usually carry out a series of actions autonomously (2017).

Siciliano et al. also explains that robotics is about the study of the machines that replace human tasks, both physical activities and decision making (2010, page 1). Robotics' common definition in the science field is a "intelligent connection between perception and caution" (2008, page 2). He also writes that robotics is a subject concerning the cultural area of mechanics, computers, control and electronics (2008, page 3).

Laumond (2012) defines robotics as the relationship a machine, that can move, and who's motions are computer-controlled, can have in the real world. He says robotics differ from automats and computers.

3. Search and find three definitions of Machine Learning, describe these briefly.
Kim, Flaxman and Teh explain that machine learning teaches computers how to learn. It is, according to them, a field of computer science (2017).

Yufeng (2018) has a somewhat abstract definition of machine learning. He says that machine learning brings the promise of deriving meaning from data. Everything from music, word, pictures, spreadsheets and more (2017).

Thirdly, Gary Sims (2015) expresses machine learning is the extraction of knowledge from data. He claims that it's related more to statistical analysis and data mining than AI is.
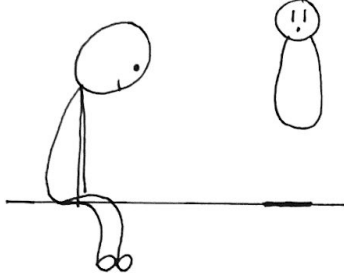
4. Write in three to five sentences the relationship between AI and Robotics as you understand this.

As I understand it AI and robotics are two very different branches of science and technology. AI is about developing computer programs that can complete tasks only humans can do, whereas robotics is about creating machines (robots) that require guidance and instructions given by humans. Robotics involve the mechanical parts of robots as well as their programs.

5. Make a text to describe your own definition of AI. Explain briefly this definition.

As I explained in my previous answer my perception is that AI are computer programs that have human-like intelligence. They can learn, correct themselves and adapt.

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

Figur 1: The year is 2031. A school with a lot of troubled children hire an AI robot (Octa) that specializes in mental health,illnesses and issues in children and young adults.

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.

The article (Susi and Ziemke, 2005) is about the relationship and interaction between an agent (human or animal) and its environment, or a subject and an object. There are four different views/theories on this matter; functional tone (von Uexküll), equipment (Heidegger), affordance (Gibson), and, more recently, entry point (Kirsh) (Susi and Ziemke 2005, page 6). The approach used was to understand artefacts and their use to describe the fundamental relationship between subject and object, and how we objectify our surroundings (Susi and Ziemke 2005, page 7).

Uexküll has created a term called "Umwelt" that is a closed unit consisting of animals' perceptual world and their effector worlds (Susi and Ziemke 2005, page 7), it is a subjective universe (Susi and Ziemke 2005, page 8). Functional tones are about how we perceive objects in Umwelt. Functional tones are about the relationships subjects (animals) have to objects; subjects imprint meaning on objects and transform them into something with meaning. What functional tone is being used depends on the subject's mood (Susi and Ziemke 2005, page 8).

Heidegger developed the concept of equipment and his main concern was animals (Susi and Ziemke 2005, page 8). Figure 2 shows how Heidegger divided the term "being", and equipment focuses on non-human beings (things), this include tools and materials (Susi and Ziemke 2005, page 9).
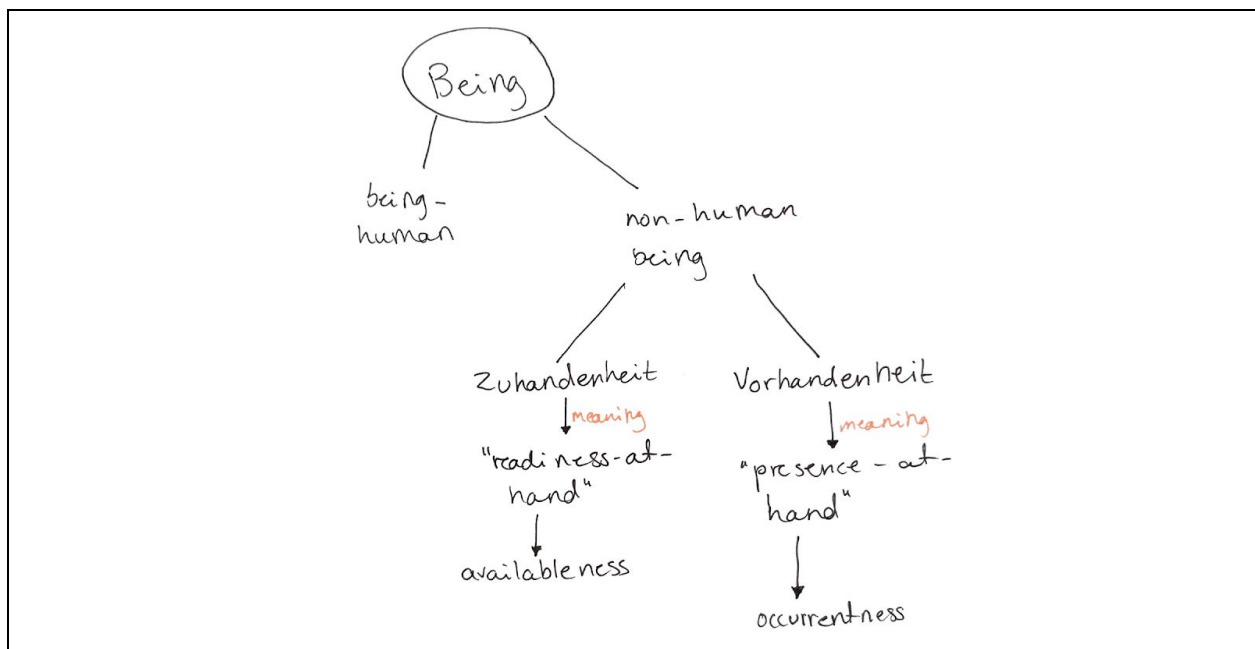

Figure 2: Heidegger's perception of beings. Self made figured based on Susi and Ziemke (2005, page 8-9)

According to Heidegger objects and subjects can't be considered separately, they have an independent relationship (Susi and Ziemke 2005, page 10). (Equipmental) things are defined by their different functions, but equipment has to be involved with other objects, and be in a meaningful activity, to function (Susi and Ziemke 2005, page 9). Heidegger says the use of equipment gives reason to understand them (first-hand). The knowledge of the function of equipment gives us an understanding of them (second-hand) (Susi and Ziemke 2005, page 10).

Gibson emphasises the mutual relationship between subject and object. Each subject lives in its own set of affordances. The information about the environment (affordances) is what the animal can see. He describes this as light reflected from a surface. A user's needs change, but affordances doesn't, they can always be perceived (Susi and Ziemke 2005, page 11-12).

Kirsh was interested in how subjects make use of the environmental structures to achieve tasks. People create entry points to help achieve their daily goals, especially in their working space (offices) (Susi and Ziemke 2005, page 12-13). Entry points are objective or subjective and invite people in to enter an office space or task (Susi and Ziemke 2005, page 13).

8. Select one of the perspectives from the article, and go into detail when you describe it
I selected the perspective entry point by Kirsh. An entry point is a structure/cue that is meant as an invitation to go to a office/information space. Examples of these kinds of cues are sticky notes, analog or digital calendars with tasks and whiteboards with notes. People make collections of entry points that inform them of their schedules, tasks etc, they are informative and personal (Susi and Ziemke 2005, page 13). Entry points created by people working in offices have different characteristics that affect how people react to them. The first entry points are user independant; intrusiveness, richness in metadata (underlying information) and the four remaining are user dependant; visibility, freshness, importance and relevance (Susi and Ziemke 2005, page 13-14).

9. Select one other article from module 1, and write with your own words what this article is about.
Ironies of automation (Bainbridge, 1982) is about how automation of industrial processes can lead to more problems, and the fact that not everything works out as intended (hence the irony of it all) (page 129). The purpose of automation is to replace human control with automated devices (Bainbridge 1982, page 129), but many of them still need human supervision (page 130). Other challenges and ironies include monitoring the devices, lack of decision making skills in the devices and long term knowledge about the systems and cognitive skills (Bainbridge 1982, page 130).

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.

I chose the character "Ultron" from Avengers: Age of Ultron (2015). Ultron was intended to be a "peacekeeping" program that found out that the easiest fix to all the misery on earth would be extinction. His intentions were good (in theory) because he believed that extinction would cause a fresh start, but of course no one else wanted him to kill all humans, so the movie's heroes did their best to destroy him. He was intended to be an AI program, but quickly made a "body" for himself. He wanted to look like a human, only better, more evolved. He actually made allies throughout the movie and got humans to do his dirty work. I can't recall any scenes in the movie where he showed compassion towards others, he was always too fixated on his mission. He wanted to make peace, but also wanted the humans (especially the Avengers) to suffer along the way, maybe because he thought they had destroyed the planet in the first place. Ironically he had a sense of humour, and he often gave big speeches to explain his, it seemed like he wanted to be understood by the humans. In addition, it seemed like he had a severe God complex.

11. Describe what you understand by autonomy; both human autonomy and machine autonomy.
Based on Weinstein, Przybylski and Ryan's (2012, page 397) description my understanding is that human autonomy is about one self, what a person is driven by (when he/she isn't driven by external forces). Machine autonomy, on the other hand, is the ability a machine has to make decision on its own (Nickerson and Reilly 2004, page 1-2).

12. When was the term "AI" first coined? Please make a reference.
According to McCorduck et al. (1977) the term "artificial intelligence" was first used by John McCarthy in 1956 when he, and a number of colleagues, proposed a study to the Rockefeller Foundation that would be done in summer of 1956 at Dartmouth College in New Hampshire (1977, page 953).

13. Articulate one question for the article "What we talk about when we talk about context" by Paul Dourish in the curriculum.
How, through context, can mobile users become more aware and understanding of security in their systems and applications, based on the environment their in at a given time? Question articulated based on Dourish (2004, page 26-27).

14. Articulate one question for any other article in the curriculum.
The purpose of replacing human control with automation is to reduce costs, but if some tasks still require human supervision and/or monitoring, can it be a valuable option to replace that worker with a supervising robot? This question is articulated for Bainbridge's Ironies of automation (1982).

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