Big Ideas in AI
Reflections on Module 1

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Question 1

While learning and displaying knowledge is one of the main characteristics of what intelligence is, I believe that features such as motivation and ambition does not necessarily involve learning. In addition, humans are creative, great at making abstractions, and have emotional knowledge. Creativity and abstraction making in AI has been a prominent research topic for many years, most recently through technologies, such as Dall-E and MidJourney, or in creative communities working with creative coding. Although these technologies, and the results from the creative coders, seem promising, original and novel, the AI itself is not creative - it is merely acting upon rules or defined behavior which makes it seem creative. If an AI would be creative itself, it should be capable of developing, defining, and performing its own creative style over time, creating works which are based primarily on imagination and not data it has been trained on.

Question 2

As the section insinuates, the limiting factor of achieving fast programs is not related to computing power, but rather it lies somewhere on the human side - or the connection between human and computer. The tension and frustrations many of us experience when programming, can often be connected with the most basic goals of programming languages. Two basic goals exists for most programming languages. The first is to be executable by computers. The second is to be translatable to and from human languages by a human, ideally sharing certain concepts with them as well.

Humans are great in solving ambiguities while it remains impossible for computers to do the same. This sets different requirements for programming and human languages - programming languages need to be strictly unambiguous, while human languages, and humans themselves, are based on a more chaotic and dynamic nature. This creates a natural hindrance when translating from human languages to programming languages as we need to formulate thoughts, ideas, and concepts into concise non-ambiguous algorithms.

Question 3

I agree the most with statement B. The statement given by the researchers does not state whether the computer will use language intelligently, i.e. as a strong AI. Thus, computers which are seemingly able to use a language intelligently, will deceive human recipients to believe that it is manifesting its own inner thoughts. A recent, and widely covered, example of this is found in Google's conversation technology LaMDA. Engineer Blake Lemoine has stated that he believes LaMDA had become sentient, based on his ongoing conversations with the AI [1]. This raises the question: if the general population can not tell the difference between a perceived strong AI and an actual strong AI, is there a difference at all?

Question 4

A way to estimate the amount of binary neurons, if the number of cases to be represented is known, is to convert the number from base-10 to binary. In the given Animal class example, 10 binary neurons would be needed - covering a maximum of $2^{10} = 1024$ cases.

Question 5

Visual sensory data is abstracted by humans continuously throughout the day. The eye captures light which the brain converts into imagery. The brain then abstracts the imagery into objects - faces, vehicles, buildings. These objects can be subject of further abstraction as faces becomes names and buildings may be associated with certain purposes.

References

[1] Nitasha Tiku. *The Google Engineer who thinks the company's AI has come to life.* June 2022. URL: https://www.washingtonpost.com/technology/2022/06/11/google-ai-lamda-blake-lemoine/.