

Homework #1

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1. Answer the following

- Explain what is meant by Artificial Intelligence.

Artificial intelligence is the attempt to automate human intelligent behavior or actions. Generally speaking artificial intelligence is difficult to define, what we commonly refer to in the modern day when colloquially describing Artificial Intelligence is a large language model or generative AI. These can produce responses to questions simulating human conversation, as well as create photos, videos, and music. This definition only covers a small fraction of the applications of AI. We can define AI through its function, much like Francis Bacons *features*. AI is comprised of some form of pattern recognition, some form of reasoning in about the situation for which it is presented, attempts to deal with both the meaning as well as the surface form of the problem, as well as attempting to use large amounts of knowledge (data) in order to solve a specific problem.

- Ada Lovelace was a collaborator and supporter of Charles Babbage and is sometimes regarded as the first computer programmer. She is quoted as saying in reference to Babbage's Analytical Engine: "The Analytical Engine has no pretensions whatever to originate anything. It can do whatever we know how to order it to perform. It can follow analysis; but it has no power of anticipating any analytical relations or truths. Its province is to assist us to making available what we are already acquainted with." Do you agree with Lovelace's statement in the context of modern-day computing? Explain your answer, i.e., state why you agree or disagree.

I do agree with her statements. Specifically in the context of artificial intelligence her statement, "It can follow analysis; but it has no power of anticipating any analytical relations or truths. Its province is to assist us to making available what we are already acquainted with." Generative AI such as chatgpt has been poised as a revolutionary technology, that will replace jobs, however, it does not currently have the capacity to generate new knowledge. Currently, all information provided by chatgpt is derived from statements and data gathered from previous writings. In fact when training on its own data regression has been observed, proving that it is not intelligent in itself. It is assisting us in locating information that has already been created.

- What is the Turing Test? In your opinion, is this test a correct measure of intelligence? State your reasons.

The Turing Test also known as the Imitation Game essentially seeks to prove if a computer is intelligent. The test consists of two participants as well as the computer. The goal on participant number one is too test to see if they can differentiate between a computer and a human. This test essentially is attempting to see if a computer can successfully mimic human conversation. I personally do not believe this is a correct measurement of intelligence. Humans are traditionally unreliable, we are forgetful, slow thinkers (when compared to computers especially), and we make mistakes often. Additionally Artificial Intelligence does not aim to emulate human intelligence. These issues seem to arise from the avoidance in traditionally defining intelligence.

- Is attempting to build a machine that can pass the Turing Test a suitable aim of AI research? State your reasons.

It depends. I would argue that any form of research within artificial intelligence would be a suitable aim, due to the adolescence of AI. No matter the form of research it will prove fruitful in some capacity. While I do not agree the purpose of AI is to mimic human intelligence, research within testing intelligence maybe the skeleton key to further understanding our own intelligence as well as artificial ones. For instance in 2022 Lambda (google AI)

supposedly passed the Turing test. While its soul goal was not to pass a Turing test, it has proved useful, even revolutionary in modern life. Further research into passing the Turing test would enable researchers to more thoroughly understand LLM's and allow them to more closely emulate human speech.

- The Strong AI Hypothesis claims that it is possible to program a digital computer so that it embodies true human-like consciousness, i.e., intelligence, understanding, emotions, self-awareness, etc. State whether you agree or disagree with this hypothesis and give your reasons.
 - In 1976, Alan Newell and Herbert Simon proposed the Physical Symbol System Hypothesis: The necessary and sufficient condition that a system be intelligent is that it be a physical symbol system. Do you agree with this hypothesis?
 - In 1980, John Searle presented his Chinese Room Argument. This was intended to dispute the Strong AI Hypothesis, and implicitly also the Physical Symbol System Hypothesis. What is the key point of Searle's argument? Do you agree with it? Does it effectively dispute the two hypotheses?
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Citations

- Luger, G. F. (2009). Artificial Intelligence: Structures and Strategies for Complex Problem Solving (6th ed.). Pearson.
- Google's AI passed the Turing test — and showed how it's broken - The Washington Post. (n.d.). <https://www.washingtonpost.com/technology/2022/06/17/google-ai-lamda-turing-test/>