

Analysis: Computing Machinery and Intelligence

In this paper, Dr. Alan M. Turing proposes a question “can machines think?” and argues that there is no convincing argument that machines cannot think intelligently like humans, and different approaches can be undertaken in hopes of advancing machine intelligence.

He formulated this as an Imitation Game, where an interrogator tries to distinguish a machine from a human to find the differences in thinking ability. Machines involved in this game are termed as digital computers that execute fixed instructions without any discrepancy. There are some assumptions about the digital computers that they have limitless storage capacity and can replicate any machine with discrete, non-continuous states.

Dr. Turing stated that in 50 years’ time, human interrogators will not correctly differentiate machines from humans with more than 70 percent chance in the imitation game and considers disagreeing opinions to the prediction. An objection that machines cannot think as God has not given a soul to them does not hold, because God would face no difficulty conferring a soul to a machine. A mathematical argument that discrete state machines are limited in answering questions can be dismissed by the lack of proof that humans are not restricted by the same limitations.

Given the undeniable possibility that machines could learn based on a conditioned reflex, the ability of machines to think can be framed as the ability of machines to learn. A human mind can be replicated by programming a child’s brain that has relatively few processes, and then influencing it with education and other experiences. The learning process to improve a machine can be made faster than the process of evolution through intelligent teaching methods. A carrot-and-stick approach can be undertaken to guide the machine toward improvements.

A machine that learns may seem paradoxical because a conventional machine’s rules do not change. However, the rules that change over time in the learning process are temporary. The learning process is a tendency to act favorably toward specified objectives. The hope is that in time, machines will be able to rival humans in all intellectual fields, but for now, there is still much exploration and experimentation to be done.

Likes:

1. I think this is a good article and it probably requires some brainstorming and some more re-reads to get the hang of it. Dr. Turing made these predictions 70 years ago and I think some of his predictions turn out to be true.
2. In the “Heads in the sand objection” Dr. Turing says that the consequences of machines thinking would be too dreadful and I tend to agree with this if it turns out to be true.
3. Although I disagree with some of his predictions may be I am biased on not to agree with them but I read more about his work and his contributions are inspiring.
4. I also liked how he thought of creating a child’s brain, then educate it. Through experimentation of the machine and teaching methods one could emulate an evolutionary process.

Dislikes:

1. I agree with you that Dr. Turing wrote this article 70 years ago and this article is in many respects, a scientific prophecy. While reading this paper I felt that for Dr. Turing there were no arguments other than to say that we need to wait and see what will happen in 50 years.
2. When it comes to a comparison between humans and machines, my opinion has always been that a machine can do only what you ask it to do and human intelligence can never be matched.
3. The author talks about how a child learns and a machine can be better and faster if it is trained to do so but a machine won't learn in the same way a child does and of course the domain of human intelligence can not be matched to a machine.
4. I might be wrong but since they mention the game of chess and If I code or train a computer to play a game of chess and make it compete with a human, I think the probability that the human can beat the computer is large ?