

Can Computers Think?

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1. Introduction

The world has been changing rapidly with the innovations of science and technology. These technological changes are affecting almost every area of the economy, society, and culture. Especially inventions that related to computers have been changing people's lives and habits by facilitating and automating their tasks. Almost every simple task which does not require human operation is getting done by computers. These inventions make people depend on computers and they have become a significant part of life now. When computers are appropriately programmed and instructed to do a particular job, they cost less in the long run and are less troublesome than a human. Therefore, computers have started replacing humans in fields that require a labor force. In the future also, tasks that require creativity and know-how will be automated by computers. With current technological developments, computers can almost imitate human actions, can answer questions, and generate unique sentences from a couple of words. Thus, as computers get creative, the question “Can computers think?” arises. Despite the great progress in science and technology, people are not able to explain what thinking means. Also, people are not yet able to develop a computer that can exactly imitate humans. But even if there is a computer capable of these specifications, it will not think; it will only execute the rules defined by people.

2. Computers and the Human Mind

Humans have always tried to find what can be automated. The evolution of computers is based on answering this question. As the capabilities of computers increase, they become able to do more complex tasks, such as automating production processes, assisting drivers, and assisting people by chatbots. Currently, most of the customer services are using chatbots to automate the question-answering process. These kinds of chatbots are programmed under a specific domain and they are capable of answering most of the questions related to the company. This level of automation helps companies to employ fewer workers and help their customers faster. However, these automated computers are only manipulating a set of syntactical rules and mimicking human actions and their progress as if humans were doing the job. For a computer to imitate human actions, how the human mind works should be understood and interpretable by scientists because human mind is the origin of the thinking process. According to Dr. Endy, “the designs of natural biological systems are not optimised by evolution for the purposes of human understanding,” which means that interpreting human biology is unlike other problems that can be computed by arithmetics because evolution is not human-made (Endy, 2005). Every human is

biologically unique, so is the mind. The human mind is unpredictable, emotional, subjective, and continuously creating new ideas and thoughts which makes it a nondeterministic meat machine. Digital computer programs require a set of operations, symbols, and rules to compute. Therefore, even if a digital computer could give meaningful output to a particular input, it is not an answer to the thinking process. Indeed, it is just a symbol manipulation according to given rules because thinking is more than symbol manipulations. Also, Searle claims that “the computer program is defined purely syntactically. But thinking is more than just a matter of manipulating meaningless symbols, it involves meaningful semantic contents. These semantic contents are what we mean by 'meaning'.” (Searle, 1984). According to Searle, “thinking” needs a deep understanding of the connection between sequence of symbols and meanings of those symbols. Therefore, the human mind cannot be programmed by a computer, because computers lack semantics which makes symbols meaningful.

3. Turing Test

Mathematician and computer scientist Alan Turing proposed the question “Can machines think?”, and his works have formed the future of artificial intelligence. He attempted to describe the definition of intelligence in terms of a game called ‘imitation game’ known as the Turing Test. The test is just a dialog between an interrogator and a computer or a human. The interrogator aims to determine which of the other two is the human and which is the computer. If the computer convinces the interrogator that it is a human, then it could think like humans. Thus, Turing claims that there are no differences between human minds and machines. That is, the human brain is just a digital computer, and the mind is a computer program (Turing, 1950). Searle defined this view as strong artificial intelligence. According to him, a strong artificial intelligence idea is valid if the mind is defined purely formally, not treated as a product of biological processes, and computer programs are also defined purely formally. On the other hand, he claims that strong artificial intelligence is not feasible because he already stated that the human mind involves meaningful semantic contents and sensations (Günther, 2012). Other philosophers and psychologists defined the human mind and thinking process in different ways like the ability to learn and solve problems. Although Searle and Turing may have been wrong, it does not change the fact that these studies shaped today's artificial intelligence studies. Currently, artificial intelligence is based on statistical modeling and probability. These make computers more intelligent about the analysis of data than humans, but these are not thinking process and the mind is more than just computational power.

4. Conclusion

Rapidly advancing technology have enabled computers to become a part of life and brought comfort, laziness, and productivity. These factors pushed people to automate every single task by computers. Therefore, automation caused the demand for replacing humans with computers due to their efficiency and reliability which could cause technological unemployment. To expand the abilities of computers, artificial intelligence is improved with more complex techniques and a surplus of data. Modern artificial intelligence systems are still working with arithmetic computations, probability, and modeling. These systems are developed by humans with a set of instructions and data. Systems with given inputs generate expected output, but expected outputs do not indicate that machines are understanding what it is to compute. These machines only manipulate the symbols implemented by humans and they do not think or search for meaning in the given program because they are programmed to do specific task. Maybe in the future, we will have computers that can think.

5. References

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