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# Machines Do Think… Kind of

In this paper, I will argue that machines can think. The debate of whether or not computers can think has been a hot topic of discussion among engineers, scholars, and philosophers in recent times. The term "artificial intelligence" suggests that the thought process behind machines is inherently fake and merely a counterfeit to real, natural thought processes that occur in organic brains, specifically human brains. However, I disagree with this implication. Many believe that artificial intelligence cannot think because they do not think the same way humans do, but there are many instances in nature in which organisms think in a way that is different and even incomprehensible to the way humans do. Therefore, I believe that machines do actually think.

First, I must define what it means to think. Thinking unfolds as a four-part cycle. First, we *represent* reality by encoding sights, sounds, ideas, and feelings as mental symbols. Second, we *manipulate* these symbols by combining, comparing, and transforming them through logic, intuition, and emotion to explore possibilities. Third, we *evaluate* the results against goals, evidence, and values, accepting what helps and discarding what doesn't. Fourth and last, we *monitor* the whole process, using metacognition to spot errors and redirect attention. Representing, manipulating, evaluating, and monitoring form the continuous loop that lets us model the world, plan our actions, and refine our understanding. I believe that machines, and specifically artificial intelligence, exhibit all of these traits.

I will use a real example by asking ChatGPT to analyze a graph showing the marginal private & social cost of cigarettes in the United States. When answering the prompt, it gives us insight into its thought process and it is very intriguing. First, ChatGPT exhibits the trait of representing the data it is given. In its thought process, ChatGPT says, "*The x-axis labels seem to be rotated, maybe the numbers are showing '2', '4', etc. I think I'll zoom in more around the intersection to get a clearer view of these tick marks and figure out exactly what they are. I think I'll zoom in more around the intersection to get a clearer view of these tick marks and figure out exactly what they are. The angle might be causing it to look a little off, so zooming could help me better interpret the labels and match them to the grid*" (ChatGPT o3). We can clearly observe that before any analysis takes place, ChatGPT attempts to get a strong grasp on what it is exactly that it is looking at. It observes the image, zooming in as necessary to extract the information it needs from the graph to analyze. Moreover, ChatGPT's decision to pause, re-examine, and clarify the visual data reveals an important nuance. It is not blindly processing information, but actively adapting its internal representation to fit the task at hand. Thus, ChatGPT passes the first component of thinking, which is to represent the given information in a way that it can understand.

Second, after ChatGPT obtains an accurate representation of the graph in its mind, it manipulates the information. It articulates, "*The dotted horizontal line appears to be at $16, which could be the equilibrium price, where MB_social and the other curve intersect. At Q=12, MB_social is lower than MB_private. The price for MB_social might be around $10 at Q=12. The vertical dashed line should reflect the quantity point of around 12. This setup could be showing market equilibrium where private MB and supply intersect*" (ChatGPT o3). In this articulation of ChatGPT's thoughts, we can clearly see ChatGPT manipulating the information it

has extracted, comparing and contrasting, and using logic to develop the beginnings of a conclusion. It does not simply report what it sees, but actively interprets relationships between curves, infers likely points of intersection, and predicts economic meanings such as equilibrium.

Third, ChatGPT evaluates the results against goals, evidence, and values. "*In reading the cigarette graph I ran a quick loop: (1) clarify the goal—show market smoking (12 m packs) versus the efficient level (≈ 8.7 m); (2) grab the numbers straight from the axes, including the $6 external cost; (3) rely only on what the picture and standard welfare math justify; (4) weigh fixes against basic values, favoring a $6 tax or education over a stricter quota; and (5) keep the tax idea, set aside the quota, and note public-health campaigns as an extra aid*" (ChatGPT o3). Once again, ChatGPT clearly exhibits another one of the four components of thinking, evaluation. After extracting and analyzing the information in representation and manipulation, ChatGPT evaluates these numbers, and deems whether or not the calculations and conclusions it has made are relevant to the prompt. More importantly, ChatGPT does not merely process the information mechanically, but critically weighs alternative solutions based on other standards such as economic efficiency, policy effectiveness, and social welfare values.

Now, to test artificial intelligence's ability to monitor, I will tell ChatGPT to look back on its calculations to spot any errors. When prompted with this, ChatGPT states, "*After reflecting on the uncertainty of earlier estimates, I revise the calculations. With approximate figures, I found that the social optimum quantity (Q*) is around 10 million packs. The efficient quantity was previously marked as 10 million, but upon further checks, the equilibrium quantity is closer to 12 million, not 14 million. The supply curve slope is estimated at 0.67. Overall, the earlier estimates were roughly on track, but the equilibrium quantity needed adjustment*" (ChatGPT o3). To finish, ChatGPT demonstrates its ability to revise and adapt its thought process in order to correct any

flaws in its previous thought processes. This act of monitoring reveals a crucial aspect of thinking: metacognition. ChatGPT does not simply accept its initial conclusions. It steps back, re-evaluates its initial assumptions, spots inconsistencies, and corrects them based on new evidence.

I believe that this real-world example of ChatGPT clearly supports my opinion that machines can indeed think. Machines can think because they carry out the core processes that define thought: representation, manipulation, evaluation, and monitoring. This follows Alan Turing's line of thinking.

In his famous 1950 paper "Computing Machinery and Intelligence," Alan Turing proposed the Imitation Game, a test where a machine successfully passes if it can use representations of information, manipulate that information logically, evaluate outcomes, and monitor its own behavior in ways that convincingly imitate a human. Alan Turing suggested that thinking should be judged by functional behavior, not by whether the machine is conscious or biological (Turing 9). Even if machines don't have subjective experiences, they perform the same functional components of thinking: representation, manipulation, evaluation, and monitoring. They represent complex systems through data structures, similar to human memory. They manipulate information at speeds even faster than a human can, finding patterns in massive datasets, optimizing solutions, and simulating outcomes across millions of variables. They evaluate their success and revise when necessary, like humans, who are prone to bias and error. If thinking is about the ability to reason, adapt, and solve problems effectively, then by both Alan Turing's standards and practical evidence, it is reasonable to say that machines do indeed think.

Now to the question of whether or not the Turing test is a good one. I believe the answer is both yes and no. The adequacy of the Turing Test depends entirely on what we mean by

“thinking.” If we follow Alan Turing’s line of thinking and define thinking as the functional process of information and reason, then the Turing Test is both adequate and remarkably insightful. So when it comes to the question of testing an object's ability to think functionally, then yes, the Turing test is highly effective.

But some may argue that the Turing Test is flawed because it measures only external behavior and ignores internal consciousness. According to this view, without subjective experience or genuine understanding, a machine that merely simulates conversation is no more intelligent than a sophisticated puppet. And in response to this argument, I actually agree, which is why my answer is both yes and no.

This line of thinking results from a different way of defining thinking, different from Turing’s perspective in which thinking should be judged strictly by functional behavior. While the Turing test is an adequate measurement of functional intelligence, I believe the Turing Test ultimately fails to capture deeper, more intricate dimensions of thought, such as feelings, emotions, and consciousness. True intelligence, if it includes consciousness, emotions, and subjective experience, lies beyond mere imitation. The Turing Test, which focuses solely on functional behavior, cannot judge these higher dimensions of thought. As a result, while it measures the presence of thought, it ultimately falls short of capturing the full essence of intelligence.

All in all, I do believe that yes, machines can think and I believe that the Turing Test is a remarkable measure of intelligence, but only to a certain extent; the extent being functional thought processes, beyond which exists higher dimensions of thought that I believe machines are not capable of imitating yet. Until machines bridge that gap, the Turing Test will stand not as a measure of true intelligence, but as a brilliant measure of the appearance of thought. Machines

may think functionally, but for now, the deeper dimensions of human intelligence remain uniquely our own.

## Works Cited

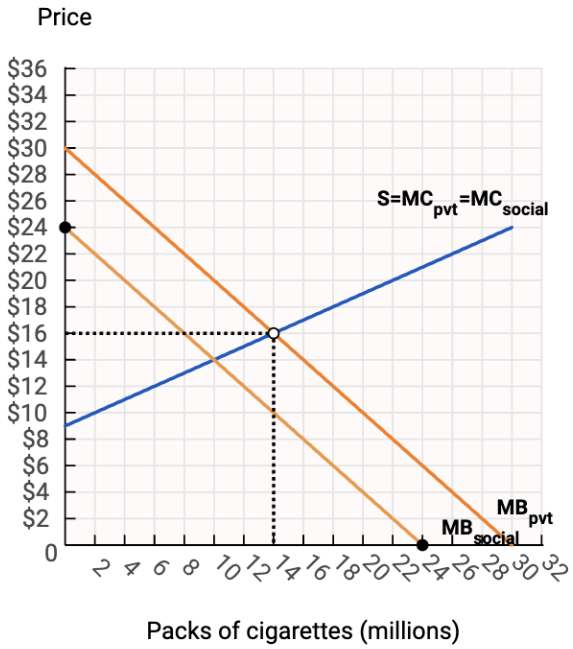

- Turing, Alan. *Computing Machinery and Intelligence*. Oct. 1950. Accessed 25 Apr. 2025.
- ChatGPT o3


## Other

Word Count: 1543

I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination.

This is the graph I asked ChatGPT to analyze:




With the prompt: “Analyze this graph”