

ASSIGNMENT #1

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1. A. Turing, Computing Machinery and Intelligence, MIND, 1950

Can machines think? The Bombe, who interpreted Enigma during World War II, led Turing to believe that a thinking machine was possible and proposed a Turing test to evaluate whether the machine knew how to think. Turing conducted a small test through three players to find an answer to whether the machine could think. There are three people, including man and woman, and interrogator who may be of either sex. The interrogator should be able to decide who is the man and who is the woman while the interrogator is apart from them. Now, man and woman must help confuse the interrogator or reveal the truth. And will the interrogator's criteria change when the computer plays its role instead of the man? The role of the interrogator is now to figure out who is a person and who is a computer through the question. Turing argues that if the interrogator fails to distinguish between a person and a computer, the computer may think. If the Turing's test passed, the real machine might think. However, obviously, the Turing test will pass if we are a human, but that doesn't mean that humans are the machines. What happens if a person pretends to be a machine? It will show poor performance in fast calculation, which is a characteristic of the machine. On the contrary, what happens when a machine pretends to be a human? Of course, since machines do not have the ability to think, which is a characteristic of humans, machines will also show poor performance. However, although there is a limit to a person's fast operation, the machine can hide its poor performance in thinking about a person. So, the best strategy a machine can do in this game is to imitate what a person can answer naturally. I don't think humans can imitate machines, but machines can imitate people enough. I can provide sufficient evidence for my argument based on current technology from all over the world, but I think human and machine are different from these basic features in addition to these technologies. This is not because the machine is far superior to humans. I just don't think machines can replace everything in humans. From the perspective of imitation, people are the ones that machines have to deceive anyway. If so, it can be said that machines have the ability to think sufficiently if they meet only human's criteria. And when it comes to thinking machines at this point, it would be digital computers that anyone can think of. However, in the old days, even the fact that machines thought at a time when the existence of computers was too insufficient may sound paradoxical to someone. Turing believed that machines could think of computers from a time when they were unfamiliar with them. And this belief served as a criterion for the creation of numerous programs. Digital computers, which can be regarded as today's thinking machines, store a lot of information and proceed with numerous calculations. And the control device is involved in this process. It would be true that the difference in the amount that

can be stored here and the difference in the speed that can be calculated are parts that humans are less than machines. If a machine with these advantages has the ability to think, it can turn into a dangerous being. However, I think the role of people who make machines is that important. When we think about the main topic again, we need to organize our thoughts on whether the machine can think. And now we have to think about whether a digital computer can do a good Turing test called an imitation game. From the perspective of a person studying artificial intelligence, I think machines may have superiority over certain tasks. This article tells the position of refuting the machine of thinking for various reasons. However, I think the reason why these refutations appear in my opinion is because they don't want to lose their existence as a person born. I personally think it is most ideal to put people and thinking machines on an equal line. Looking at the ecosystem, there are many symbiotic relationships, and if the advantages of machines and human advantages work together, people will be able to live a better world. Here, attention should be paid to the ability to think, which is a characteristic of a person. Someone will want to make a lot of money using a machine, and someone else will want to do something harmful to others through the machine. I think I can play a sufficient role as a machine if I can develop the machine in a direction where many people are happy. It is always a welcome story for a person studying the field of artificial intelligence to be able to think of machines. If I can do something good for many people around the world, I would like to somehow make a machine that thinks from an ethical point of view the same level as a person. However, there will definitely be a number of people who oppose my thoughts. So, in conclusion, I am always positive about the machine with thoughts, but my main idea is that I should not turn into an ethically problematic being. If we still look at machines from an ethical point of view, many people will have different values. As the ultimate goal, it would be ideal for humans and machines to compete purely to fill each other's shortcomings.

2. A. Halevy, P. Norvig, and F. Pereira, The Unreasonable Effectiveness of Data, iEEE INTELLiGENT SYSTEMS, 2009

Data has now become a very important thing worldwide. Data knows everything and new data is being created every day. In particular, big data has emerged in many areas, and it is really important how to store and use data efficiently. One of the fields dealing with large amounts of data is the natural language processing field. This field is a field that collects and uses data based on language and letters directly related to people. In recent years, the reason why natural language processing with machine learning has succeeded is not simply because it is easy. Basically, it cannot be easy to deal with large amounts of data. In particular, it is true that topics related to this are receiving a lot of attention because the languages spoken by people around the world are different. Let's think of a translation basically. How can we communicate with people who speak hundreds of languages? Basically, someone understands both people's languages and must convey their meaning to both sides. The role is played by a translating service based on machine learning and natural language processing. So, what should we do to get better results? The key is from the data stage. Since it is based on language-related data, the amount is enormous and it is difficult to hope that it is refined. However, if we look closely at these data, we can see that there are rules and that there is a certain relationship between words. People who study natural language processing need to look closely at the relationship of data. Letters can be combined in word units, but new combinations of letters are also possible, making it difficult to process letters in the world. Semantic web appearing here is an agreement of official expression language that allows software services to interact without the need for artificial intelligence. If there is information that becomes a standard, it can interoperate with services that use other standards. It is said that the machine will be able to understand documents and data, not human words and writings. Rather than dealing with inaccurate and ambiguous languages, this interoperable data deals with data that is accurate enough for programs that operate on data to function with each other. That's why building these services today is gradually becoming a direction to solve the problems that existed in mankind. Using semantic web formalism only means that semantic interpretations should be performed on short strings grouped in angular parentheses. What we need is a method of inferring the relationship between column headings and references to the reality of the world. These inferences can sometimes be inaccurate, but if performed well enough, they can actually interact with web data by linking different data collections. Looking at the types of data, unlabeled data is much more than labeled data, and words used by humans in the field of natural language processing are constantly evolving and developing. However, not only completely new words can be created, but also other words can be created as existing words are combined with each other. And the amount of data will increase day by day. From my point of view of studying artificial intelligence, artificial intelligence algorithms need a

large amount of data and good conditions to perform better. And there are already numerous data in the world, and there are countless data that are less valuable. When considering the effectiveness of large-scale data, the performance of the algorithm will increase algebraically based on the number of learning data. Although the amount of data greatly affects the performance of algorithms, this is not necessarily absolute in a world where there are so many meaningless data these days. As we saw earlier, I think the correlation of data is also important, but as a basic rule, the larger the amount of data, the more positive it contributes to algorithm performance. I was able to think a lot at the end of this story. The fact that we have to go outside right now to collect data and think about what we can do seems to be a must for those who study artificial intelligence. There are times when we focused on the performance of algorithms, but there are times when we pay attention to the data itself. In the end, data and artificial intelligence algorithms are closely related, and it seems that we were able to reconsider the effectiveness of large-scale data.