KNOWLEDGE – International Journal
Vol. 19.3
September, 2017

CAN YOU RECOGNIZE IF ONE A HUMAN OR A COMPUTER BY SIMPLY ASKING QUESTIONS TO IT? (Philosophical Issues of Computer Science)

Svetlana Veljanovska
Faculty of law UKLO Kicevo, Republic of Macedonia
svetlana.veljanoska@uklo.edu.mk
Cvetan Veljanovski
Politecnico di Milano, Engineering of Computing Systems,Milano, Italy
cvetan.veljanovski@mail.polimi.it

Abstract : Often, we want to establish communication with other people, and today the easiest way to do that is to find someone to communicate with is on the internet, more precisely on one of the many social networks that are present on the internet, that is how many new friendships have started in the first place in today's world. But often when we do this activity, we are asking our self the question "Do we really know who we are talking to and is the person we want to talk to really on the other side of the computer screen". This is what I call the social media paranoia, because there are always cases that someone is representing him or herself as another person that we want them to be and we have no way to know that, unless we meet that person in real life. So this is the problem that I want to address in to my paper but instead people, I will discuss the case where a machine represents itself as a person, and this really can be the case because now days there are machines that are able to learn and work autonomously, and there are many examples on the internet of such Intelligent machines, such example is the "Cleverbot". You can talk to this robot and ask questions, and it will give you answers, but in some cases it will not be able to reply even though the conversation is simple and understandable to other people. That is why, bellow I will open a discussion regarding few perspectives and I will support my opinions with the help of the test that Alan Turing proposed many years ago, that is the Imitation game, which is used precisely for the purpose to prove if one machine is able to imitate a person and is it possible to fool an interlocutor that it is actually a person. Also I will discuss some criticisms for the test and provide some strong and weak sides of the test, which will help us to realize what kind of communication should we really use in order to check if the person on the other side of our conversation is really a person or a very intelligent machine. At the end of my paper I provide my conclusion derived from the whole discussion, and we will see that the best way to bring the decision is to have a longer conversation on different themes from different fields, and even then, there is the possibility that the probability to bring the right decision is not very high, because it also depends on us how well we know the matter we want to discuss.
Keywords: communication, networks, machine, people

INTRODUCTION

As the technology is improving and the machines become more and more independent, at some point there is a high probability that the machines will replace the people in every aspect in the real world. Those machines will be intelligent, autonomous and self-learning and more effective than the people. This means that we will need to communicate with such machines like we are communicating with people on the social networks, without looking at the face of the person we are talking to. So there will come time when we will have doubt about that do we really communicate with the person we think we communicate or there is some machine that imitates the person we want to communicate with. This is the main issue I want to address in my paper, and that issue is how can we recognize or can we recognize who we are communicating with, is it a human or a machine. I will elaborate my opinion through a game that the famous mathematician Alan Touring proposed, and that is the Imitation game, which was derived from the Touring test also designed by the same mathematician.

HISTORY OF THE IDEA

The question whether it is possible for machines to think was discussed long time ago, from then the philosophers were divided into dualists and materialists. They were divided because both sides had different views for the mind. The dualists supported the thesis that the mind is non-physical and it can't be explained in purely physical terms, but according to the materialists, the mind could be explained physically so it means that it can be created artificially. After a longer period of time the question: "Can a machine show intelligent behavior" was asked from Alan Touring in 1947 during the period when he was a part of the Ratio Club, a club which was interested in the artificial intelligence a decade before the artificial intelligence field was founded, in 1956 by John McCarthy.

So in order to be able come up with an opinion on the question from the topic "Can you recognize if one is a human or a computer", or even more precisely "can machines do things as humans do", first we need to construct the definition of the problem we are interested in. So in order to reach that, I will use the game that Alan Touring proposed, called the Imitation game. The game originally was designed to put one man and one woman in one room and in another room the guests that are present on the party, and they send written questions to the man and the woman. The man and the woman then answer the questions and send them back to the guests, who will then try to guess which answers are from the man and which from the woman. This game later gets another version which is called the Touring test, used to prove if a machine can imitate the behavior of a human.

THE TOURING TEST

The Touring test was designed in order to determine if some preprogrammed computer is able to imitate a human behavior. The test is carried out as a sort of imitation game where on one side of a computer screen sits a human, that person is the judge who has the role to communicate with mysterious respondents on the other side. There are mostly people on the other side, but also there is only one robot-machine created for the purpose of tricking the judge into thinking that it too is also a human. Touring proposed a test where every judge, normally the test was consisted by more than one judge, has maximum of five minutes of conversation with every respondent, and the rule was that a machine has passed the test only if more than 30% of the judges thought that the machine is also a human, hence proving that it is hard to decide if you are talking to a machine or a person.

SOME VERSIONS AND VARIATIONS OF THE TOURING TEST

According to some scientists there are at least three versions of the Turing test, two of which are offered in "Computing Machinery and Intelligence" and one that describes the "Standard Interpretation".(1) These three versions are not equivalent and they have different strengths and weaknesses. Some think that there is only one Imitation game which can be used as test one-to-one, interrogator-machine test, and a simultaneous comparison of a machine and human, both questioned in parallel by an interrogator, hence making the Touring test to be a test of indistinguishability in performance capacity of the machines.(2)

The common understanding of the purpose of the Turing test is can a computer imitate a human.(3) There are two conflicted sides for this test, on one side the scientists support the idea of imitating the human and on the other the scientists that believe that the Touring test is to determine if the machine can fool an interrogator into believing that it is a human, which is the test of intelligence. As it turns out both sides are right because Alan Turing did not intentionally create the test for the purpose of testing the intelligence of the machine.

CRITICISMS FOR THE TURING TEST

In order to provide my opinion, I will discuss examples and different views for my topic, starting from minor criticisms which will lead to deeper criticisms.

If a machine wants to be able to fool an investigator or an interlocutor on the other side, one of the basic abilities to the machine should be to make mistakes for assignments that normally a human would also make a mistake. That would lead to confusing the interlocutor, who is for example in our case 100% sure that a machine will always give the correct answer to a question that requires a lot of mathematical calculations. Now days this can be managed by programming the machine sometimes but not always, to give wrong answers to such questions in order to achieve the given goal.

Another example of imitating a human behavior is when, for example the interlocutor asks a question that requires some explanation. A human would explain in short lines because normally people are lazy to explain things, but a machine will give the answer with all the information that it has in its memory, hence this will lead into a suspicion and maybe the interlocutor will notice how is it possible for one person to have that many information for a given subject. This may lead that the interlocutor realizes that he is talking to a machine.

If we combine the two cases above and the interlocutor asks these two kinds of questions, then we cannot decide with certainty, what is the probability for the machine to fool the interlocutor. This depends on many factors, for example how the machine is programmed to answer on different questions, how much time does the machine need to answer on that question and also what kind of expertness does the interrogator have for the subject they are talking about. But as it turns out the machine will always have problems to fool the interlocutor if the time spent into the conversation is long enough and the appropriate questions are asked to the machine.

Another important problem is that the test is based only on a conversation and not on a physical interaction, and that means that we are separating the body from the mind. So, is the language expressiveness enough to capture all types of intelligence that we, the humans, have? We know that people have the first impression of another person from the

first look at that person, it gives to us some perspective of how intelligent that person is, and after a short communication we know for sure how intelligent one person is. So with the Turing test the interrogator has a harder way of defining if the interrogated part is intelligent, and even more harder is to distinguish if it is a human or a machine because if the machine is more intelligent than the other person that is interrogated, and the interrogator supposes that the a machine can't be more intelligent than a human, he will mistakenly choose that the machine is a human and the human is machine. That is why I think when doing the test, the interrogator should keep an open mind and be able to ask varieties of questions from different fields. Also the machine may make mistakes intentionally to make itself look less intelligent, for example when a hard mathematical question is given, even though the machine is able to solve it, the machine may be programmed always to give wrong answers when such problem is given to it. But the answer provided by the machine should not be random, if the answer should be a number the machine should not respond with a human name or a letter, but with number with a wrong value. Also there are fields which are less known to people, like quantum physics. Here a human on such question would simply answer with "I don't know" or "I don't understand the question", so the machine needs to be able to assume how familiar most of the people are with a given matter.

A more interesting issue is what if the interrogator asks questions about things that don't exist, things that can be made up from the interrogator in order to fool anybody. For example the interrogator asks what are the plurals of the words "platch" and "snorp", on which a human intuitively will respond with lucky guess like, "platchez" and "snorpss", but the machine expects to be asked things that are existing, and not imaginary things, hence it will not be able to answer to those questions because it was not preprogrammed for some things that the programmers are not familiar with, like for example all the words in all the different languages and accents of languages. Hence, this way the interrogator will have better chances to be able to realize that he is talking to a human or to a machine. But as the technology improves, the machines with Artificial Intelligence will benefit more and more from it, hence the problem that we just addressed above can be addressed with the introduction the large databases from where the Artificial Intelligence machine will learn. Such database is the one we use all the time, the Internet, and the machines will be able to download or search it in order to give the appropriate answer. So until now we saw that in the case the machine has unlimited data resources, is programmed to lie, bring false answers and sense when to present itself more or less intelligent, and also depending of the expertise of the interrogator for a given topic, the machine may have chance to lead him to thinking that he is talking to a human and not to a machine.

ANOTHER VERY IMPORTANT ISSUE

There is also another very important and interesting reasoning that I think should be taken into consideration, and that is the way how people experience the world. So in order for a machine to be able to behave like a human, it should also have a specific experience of the world. This reasoning is discussed in the book "Subcognition and the Limits of the Turing Test"(9), where French argues this specific matter. French gives examples of subcognitive questions that could be only answered by a human who has experienced the world. Such example is:"Rate dry leaves as a hiding place". Any human who has experienced such thing would say that dry leaves makes excellent place to hide, because in our childhood we used them exactly for that purpose. So we would think that it is impossible for a machine to be not able to answer on such a question, because now days the machines have the biggest database which is the Internet, and they can find and read such articles written by people who had that kind of experience and derive a conclusion that dry leaves are good place to hide. The problem here is because the machine did not experience that, but it learned it from experiences from the people, so imagine if people don't share their experiences on the internet and don't write about them in books or any kind of text that gives such information, then machines without the possibility of experiencing such situations would not be able to give answers on such questions. That is why it is important for a machine to be able to experience on its own the world around itself, because that way they will be able to precisely express their opinion for a given matter.

If such machine is possible as we described in the last sentence of the previous chapter, and also that machine answers poorly to the given questions, the interrogator needs to know that there are one machine and one person on the other side, in order to bring a decision with who is he talking. But in the case the interrogator doesn't know that information then he will presumably think that he is talking to a very inexperienced person. This tells us that our intelligence in some cases is strongly coupled with our experiences.

STRONG AND WEAK SIDES OF THE TEST

Because I am using the Turing test in my discussion to order to decide if it is possible a machine to fool an interrogator, I want to show some strong and some weak sides of the test. They are useful in order to define how the

Turing test is effective to be used to decide if one machine is able to fool the interrogator, and also if the machine is able to imitate the reasoning of a human.

Regarding the strong sides, one of them is that besides the Turing test is simple, it provides something that can be actually measured, hence it solves this very difficult philosophical question if the machines are able to reason and think like humans. In addition to this strong property of the test, there is also the possibility for the interrogator to ask questions from any field known to the people and in order to answer the question, the machine needs not only to recognize and understand the words, but it also needs to understand and know the topic as well(4). Another strength of the test is that it can be extended to any fashion that the human can think of. For example the test can include video input or even to add the possibility to pass objects through a hatch where the machine will demonstrate its visual and motored skills, hence this test can be used to also solve the problems that the artificial intelligence researchers want to solve(5). The Turing test also provides the possibility to check if one is a machine or a human by asking series of questions which request emotional reasoning and thinking based on feelings in order to give answers, and not mathematical calculations. This kind of reasoning is almost impossible for the components of the machines and is crucial for the development of the Artificial Intelligence(6). This means that if the machines somehow succeed to reach this level of intelligence to have besides the ability to reason based on mathematical calculations, also to think based on emotional feelings, then as Touring says, it will be very hard to distinguish if we are communicating with is machine or a human.

Regarding the weak sides of the Turing test, there are few but important, and they are there because Turing did not propose this test for measuring the intelligence or any other human quality, but he proposed it in order to provide an understandable alternative of the word "think" in order to use it as a reply to the criticisms of the possibilities of the thinking machines. The test is not able to test whether the machine behaves intelligently, but it tests only if it is able to mimic the behavior of a human being. This is a problem because sometimes some actions and thoughts of the humans are not intelligent at all, and the test will fail to measure accurately in two ways:

- In case some human behavior is unintelligent the test requires that the machine is able to execute all human behaviors, regardless of whether they are intelligent or not, such as: temptation to lie or make frequent writing mistakes(7). So if the machine executes only the intelligent behaviors then it will fail the test.
- In case some intelligent behavior is inhuman, the Turing test fails in the case when it doesn't test for highly intelligent behaviors, more precisely in the case the machine is more intelligent than the human, it should avoid to show it to the interrogator because it will fail to behave like human if it solves and gives a solution to a computational problem which is impossible for a human to solve. This is why the Turing test is weak in checking the imitation behavior of the humans if the machine is more intelligent than the human it tries to imitate.

Another weak side of the test are the naivety, the attitude and the skill of the interrogator, because they can also have an effect on the results achieved from the test. This is a weakness because Turing doesn't tell precisely what kind of skills should the questioner have. This means that if an expert in one field questions the machine, and the machine knows a lot for that field of expertise and answers very good on the questions, then that interrogator can be fooled easily by the machine, but also the opposite holds where the machine knows nothing in a given field. Then the machine maybe will give answers in a similar way like another person which is not very interested in that particular field, hence the interrogator will think that it is a person who doesn't know anything about the field of discussion. This is possible because in some fields there is no need for the machine to use intelligent reasoning, but it needs only a memory full of information for that field and it can give the answers only with mathematical calculations or to read them from its prefilled memory full of possible answers(8).

CONCLUSION

At the end of my discussion, my opinion is that we cannot always decide who is communicating with us based only on few questions. I think that we need to spend little more time in order to be sure if on the other side there is a computer or a human. Also it is very important for us to be well prepared for the discussion if we want to notice the small things that maybe give the difference between the human and the machine, but in the present the Artificial intelligence is not that advanced to fool us and regarding the development of the technology, it advances with rapid speed and it may lead that in close future the machines become intelligent enough to be able to fool us. However I think that machines will never be able to reason and operate like humans do, so they will always have weaknesses that will let them down, but it is up to the people to find them and use them against the machines.

BIBLIOGRAPHY

[1] Traiger, Saul (2000), "Making the Right Identification in the Turing Test", *Minds and Machines***10** (4): 561, doi:10.1023/A:1011254505902

[2] *Shah, Huma (October 2010), Deception-detection and machine intelligence in practical Turing tests*

[3] Saygin, A. P.; Cicekli, I.; Akman, V. (2000), "Turing Test: 50 Years Later"(PDF), *Minds and Machines* **10** (4): 463–518,doi:10.1023/A:1011288000451

[4] Haugeland, John (1985), *Artificial Intelligence: The Very Idea*, Cambridge, Mass.: MIT Press

[5] "These six disciplines," write Stuart J. Russell and Peter Norvig, "represent most of AI."Russell & Norvig 2003, p. 3

[6] Smith, G. W. (March 27, 2015). "Art and Artificial Intelligence". ArtEnt. RetrievedMarch 27, 2015.

[7] Saygin, A. P.; Cicekli, I. (2002), "Pragmatics in human-computer conversation", *Journal of Pragmatics* **34** (3): 227–258, doi:10.1016/S0378-2166(02)80001-7

[8] Turing, Alan (October 1950), "Computing Machinery and Intelligence", *Mind* **LIX** (236): 433–460, doi:10.1093/mind/LIX.236.433

[9] R. M. French. Subcognition and the Limits of the Turing Test. In Mind, volume 99, pages 53–65, 1990.