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Can Machines Talk? Comparison of Eliza With Modern Dialogue Systems



Created in 1966, ELIZA was a computer programme which simulated conversations with users. Since then, other chat bots have been created, and are more advanced. This study comparatively analyses five chat bots highly valued in the Turing Test and concludes that these natural language conversational agents have had their skills improved in comparison to ELIZA. They are able to learn from each conversation, but are still far from ideal bots.

A silent Saturday morning of 1966, BBN's Vice-president arrived to the company headquarters to make a services demonstration to some customers. He expected to find his chief programmer, but once saw the computer online connected decided to use it to write him. After some minutes and because of what he perceived as not 'respectful' answers, he decided to call him at home. His programmer was astonished because he was not at the other side of the screen: the boss has been talking with a computer program. It was an Eliza's version a chat bot created by MIT scientist Joseph Weizenbaum.

50 years later, Huma Shah, Kevin Warick, Defeng Wu, and me (Jordi Vallverdú) asked ourselves whether these machines has really improved their performance and which were the possible reasons of their most failure attempts at passing the Turing Test (TT). Well, the truth is that the TT of 2014, organized by Professors Shah and Warwick at Royal Society's London headquarters

offered a surprising result: the not Eugene Goostman, who simulated to be a 13 years old Ukrainian boy, surpassed with controversy the TT. We considered that it was necessary to think about the virtues and defects of the last chatbots. Therefore, we designed an experiment comparing the last better 5 (Cleverbot, Elbot, Eugene Goostman, JFred, and Ultra Hal) with an online version of ELIZA.

The comparative study included students from several European Universities (including UAB) as well as from one Chinese university. We tried to check whether these natural language conversational agents had improved their skills in comparison to ELIZA. The results were clear: Yes. And not only because these chat bots use more complex elusive answers, flowing the programming ELIZA style, but due to their learning skills. Contemporary bots are able to learn from each conversation. These skills are allowing the implementation of bots into commercial services (like IKEA's Anna bot) or even into educational domains. These machines talk like humans do, but they even are able to express vague ideas or changing emotional states or moods.

Certainly they are still far from the incredible bots of film *Her*, as we've shown in previous researches (Vallverdú, Jordi; Shah, Huma; Casacuberta, David. Chatterbox Challenge as a Testbed for Synthetic Emotions. *International Journal of Synthetic Emotions*. 2010, vol. 1, num. 2, p. 57-86). The most recent case of Microsoft's twitter bot TAY, which expressed in just 24 working hours racist as well as nazi ideas through tweets force us to consider how must learn these bots. They learn with us and they need to know what does is a *person*. Because are there people who are not it. It is on our hands to make possible that these machines extract the best from us.

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References

Shah, Huma; Warwick, Kevin; Vallverdú, Jordi; Wud, Defeng. [Can machines talk? Comparison of Eliza with modern dialogue systems](#). *Computers in Human Behavior*. 2016, vol. 58, p. 278-295. doi: 10.1016/j.chb.2016.01.004.

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