Activity 2: The Turing Test and Artificial General Intelligence

What is the Turing Test?

In order to assess whether or not the intelligence of a computer is distinguishable from a human, English computer scientist Alan Turing introduced a test in 1950; he asked whether someone could distinguish if they are interacting with a computer or a person. If not, he argued there is no reason to deny that a computer could be as 'intelligent' as a human. Although his concept has invited some criticism, it became the foundation of artificial intelligence development in pursuing the human-equivalent intelligence (also known as Artificial General Intelligence, AGI).

Some refer to AGI as machine 'consciousness' and emphasise its cognitive abilities. Many scholars, including renowned physicist Stephen Hawking openly warned the development of AGI could be the 'worst event in the history of civilization' and could 'spell the end of the human race'. They are particularly concerned about the development of AI soldiers – killer robots. In 2015, over 1,000 researchers in artificial intelligence signed an open letter, warning the threat of an arms race in AI warfare and calling for a ban on autonomous weapons.

Indeed, the battle between AGI and humans occurred in 2017 on the online game *Dota 2*. Researchers developed a machine learning algorithm that allows AGI to play simulated battles by itself. In only 5 months the AGI had played 17,000 years' worth of games, and it competed in the world championship of Dota 2 at *The International* ESport tournament. Although it was defeated by professional gamers in the 5 vs 5 team match, overall it ranked in the top 0.05 per cent in the world.

The development of AGI has raised some serious and complex questions about morality in technology development today. Although it is predicted that AI will become more available and capable in the job market, perhaps human beings should be ultimately responsible for making moral decisions at work and in society?

Figure 1: *AGI defeated a team of amateur gamers before the ESport tournament*[1]

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Task

1. Should artificial intelligence ever make moral choices? Why or why not?

2. Should there be any limitations on developing artificial intelligence? You could compare it with the case of genetic modification technology and the limits that we currently have due to ethical reasons

3. Do you agree with Stephen Hawking's warnings about AI?

Explore More...

[1] Future of Life Institute. (2015). *Autonomous Weapons: An Open Letter From AI & Robotics Researchers.* Retrieved 19 January 2019, from https://futureoflife.org/open-letter-autonomous-weapons/

[2] The Verge. (2018). *OpenAI's Dota 2 defeat is still a win for artificial intelligence.* Retrieved 29 January 2019, from https://www.theverge.com/2018/8/28/17787610/openai-dota-2-bots-ai-lost-international-reinforcement-learning

[3] World Economic Forum. (2016). *Top 9 ethical issues in artificial intelligence.* Retrieved 19 January 2019, from https://www.weforum.org/agenda/2016/10/top-10-ethical-issues-in-artificial-intelligence/