



Cognitive machines and artificial intelligence (AI)

Report

“The majority of what we see in the market is not AI,” said Dr Peter Waggett, director of emerging technology at IBM and a panelist in the final EEMA Fireside Briefing of 2017.

Indeed many claims around AI are definitely artificial. AI is used to mean automation or ‘doing things with data’. Sometimes even the automation is artificial. A human or manual process is masquerading behind the computer façade.

IBM speaks of augmented rather than artificial intelligence. This complements and supports people as a type of intelligent assistant, rather than replaces them. But what kind of intelligence should we expect from machines, and what are the social implications?

The panel comprising Dr Waggett, Professor Ibrahim Kushchu, director of mobileGov UK, and chair Stuart McRae, social business evangelist at IBM discussed these and other wide open questions.

On intelligence (domain, general, distributed and super)

Computers are intelligent — at least they can be programmed to be. For example, humans have taught machines to play chess and the Chinese board game Go. Computers can beat human grandmasters and professional players at these games. But their intelligence is niche. They cannot play all board games.

Similarly, robots have domain intelligence in that they can move on smooth surfaces. They lack the intelligence to walk on all terrains. Human intelligence is often called ‘general intelligence’ as we can perform various tasks, including exception handling. This is the result of various biological and physiological processes, some of which we still do not understand.

But how long will it be before machines are connected together for distributed intelligence? Or are super-intelligent and outperform us? As to high-level machine intelligence that is better and cheaper than humans, there is a substantial chance of this within our lifetime — certainly within our children’s lifetime. So says Nick Bostrom, founding director of Oxford University’s Future of Humanity Institute.

The rise of the machines will be driven by ubiquitous connectivity, the exponential availability of data and cheap data storage. This is powering huge advances in analytics, AI and machine learning algorithms. Unlike the databases of the 1950s and 60s where programmers got out what they put in, machines are already crafting algorithms that can learn from experience.



OK computer?

This gives rise to a number of ethical questions. What about evil or runaway AI? Andrew Ng, chief scientist at Chinese search giant Baidu in an interview with *Wired* said that worrying about this type of destructive AI is akin to worrying about over-population on Mars. On the one hand, this is understandable. Human civilisation and history has been beset by war, pollution, famine, disease and sub-standard living conditions. Can the machines actually do any worse?

On the other hand, people do worry. Technology is morally neutral, so we cannot guarantee that only the good guys will have AI or build it. Who or what programmes the machine and therefore decides on its logic and morality? What about the data set used? The technology giants, including Amazon, Facebook, Google, IBM and Microsoft, have set up a body to conduct research into ethical questions about how AI affects humanity.

The future may yet be one of man plus machine, rather than man versus machine. Both have their relative strengths and weaknesses. IBM summarises that man has common sense, morals, imagination, compassion. S/he can understand dilemmas, abstract, dream and generalise. Whereas machines are good at locating knowledge, eliminating bias and identifying patterns. They can do natural language processing at scale and provide endless capacity.

Wide open questions

But do machines have consciousness? Professor Kushchu explained that we would first have to define what consciousness was. Yet for now, machines do not have consciousness. What about the Turing test? Do we need Turing 2? The panel also explored questions around connecting AI to quantum computers and the human brain.

We don't even know how much we don't know about our own brains. So, the road to greater understanding of cognitive machines and AI and working with them will be long — and inevitably winding. To explore the possible future impacts and prepare responses, individuals and organisations are invited to join the recently launched EEMA Cognitive Machines and Artificial Intelligent work channel.

To register your interest in participating, please contact Fiona Hawkins, f.hawkins@eema.org

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