Demystify the technology that creates AI; SMU professor warns intelligent machines are far from objective

Beware of relying uncritically on big data computer systems, warns a St. Mary's University professor undertaking a five-year research project dubbed Where Science Meets Fiction: Social Robots and the Ethical Imagination.

"There are real dangers now with big data," said Dr. Teresa Heffernan, the St. Mary's University professor undertaking the research project. "Algorithms have the same biases as humans."

With her research project, the professor is hoping to demystify the technology that creates artificial intelligence and bring together experts from all walks of life to begin a dialogue about how humans and these machines should interact - what to do and what not to do.

"I want to shift the conversation that has been shaped by Silicon Valley . . . to make it more open and question the rhetoric, to demystify the technology and expose how the technology works rather than be dominated by it," said Heffernan.

That's already started. On March 31 and Apr. 1, her project, funded by Canada's Social Sciences and Humanities Research Council, hosted Cyborg Futures: Animal Life and Social Robots, at St. Mary's. That conference brought together experts to discuss how robotics and artificial intelligence will shape the future of work, the environment, war, human relationships, and, yes, sex.

Certainly, Heffernan is no sci-fi nerd. She does not believe in a technological future with truly sentient robots and has no fear of a Skynet seizing control of the world and launching a war against humans. The professor considers the likelihood of computers gaining true consciousness to be essentially zero.

"Can we build ethics into (a robot)? No, not with an if-then algorithm," she says. "It's nonsense. It's a mixture of marketing and fantasy."

But while the professor is confident that society has nothing to fear from a Skynet or HAL or Terminator robots, she is firmly convinced there are technological dangers right now.

Companies and governments are turning to big data in the hope of making better decisions but Heffernan says these intelligent machines are far from objective, or more reasonable than people.

"The early algorithm for face recognition was geared towards people with light skin. So, it would identify people with dark skin as apes," said Heffernan. "They're also biased against women, really. For instance, let's say you have a system that advertises a job for a vice-president. It may place it more often on men's computers than on women's."

Sexist computers? Yes, says Heffernan.

Since men now fill more vice-president positions than women, a computer system that places job ads might tend to showcase such an opportunity on men's computers more often as they surf the web, reasoning - albeit falsely - that men are more likely to be good vice-presidential material.

"It replicates the biases out there in the world," said Heffernan.

OK. Maybe. But racist computers? Again, yes.

Two years ago, a black man and a friend, who is also black, reportedly did a Google Image search of a photograph of themselves. And the result was more than a little insulting. According to a news report, Google Images identified Jacky Alcin· and his friend as - yikes! - gorillas.

Not cool.

Alcin· called Google out on Twitter, posting a photograph of himself and his friend and the message: "Google Photos, y'all f#@^ed up. My friend's not a gorilla."

Google reportedly apologized, saying there was still a lot of work left to do with automatic image labelling. But the incident served to underscore the limits of even Google's algorithms.

"We're trusting in the neutrality of big data to make these better decisions for us but . . . it's not more neutral," said Heffernan. "What we're being sold is that this big data will be smarter than us, but what I am saying is that it will not be more neutral."

The more egregious biases of computers - such as sexist or racist assumptions - might be relatively easy to spot by reasonable human employees. But more subtle biases could easily influence the way companies, governments or organizations that use big data make their decisions.

Relying too heavily and uncritically is one potential pitfall of the current work in artificial intelligence and robotics. It is certainly not the only one.

As the world moves ahead with more intensive use of artificial intelligence, some estimates have already pegged future job losses into the millions. In its Future of Jobs report, the Switzerland-based World Economic Forum stated that the disruptive fields of artificial intelligence, machine learning, robotics, nanotechnology, 3D printing, genetics and biotechnology will create massive job losses.

"Across the countries covered by the report, current trends could lead to a net employment impact of more than 5.1 million jobs lost to disruptive labour market changes over the period 2015-2020, with a total loss of 7.1 million jobs," states that report.

Artificially intelligent computer systems can lead to greater efficiencies for companies but will also cause job losses and, in some cases, fall short of realizing opportunities a human could have easily spotted, said Heffernan.

"Computers can't deal with metaphors or context," she said. "A human may recognize there is a market there . . . but a computer will only replicate what's there."

Then, there's the "ick" factor.

In his 2007 book, Love + Sex with Robots, artificial intelligence expert David Levy argued that humans and robots will be having sexual relations and marrying by the year 2050.

Bizarre? Just too crazy to ever be real? Think again.

Legislators are already considering robot rights. Last year, a report was put to the European Parliament's Commission on Civil Law Rules on Robotics to consider giving robots rights.

Although robots don't feel pain or die, human beings can project feelings onto them and become very upset when robots are deliberately damaged or destroyed. Since companies make use of robotics to produce goods and serve their clientele, giving rights to robots could have repercussions for the business world - and there's a movement afoot to make that happen.

"There's a whole branch of the robotics industry that is trying to grant rights to robots to protect them from harm," said Heffernan.

"The argument is we do damage to ourselves if we do harm to a robot with whom we have an affective relationship, much as we would if we were to abuse a dog."

The St. Mary's professor's current project, which stated in 2013, ends next year, but she is already anticipating a much bigger research project to expand on what she has already built.

Credit: James Risdon

Illustration

Droid K-2S0, the sassy star of the Rogue One installation of the Star Wars series. Dr. Teresa Heffernan of St. Mary's University wonders if we can build ethics into a robot.

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