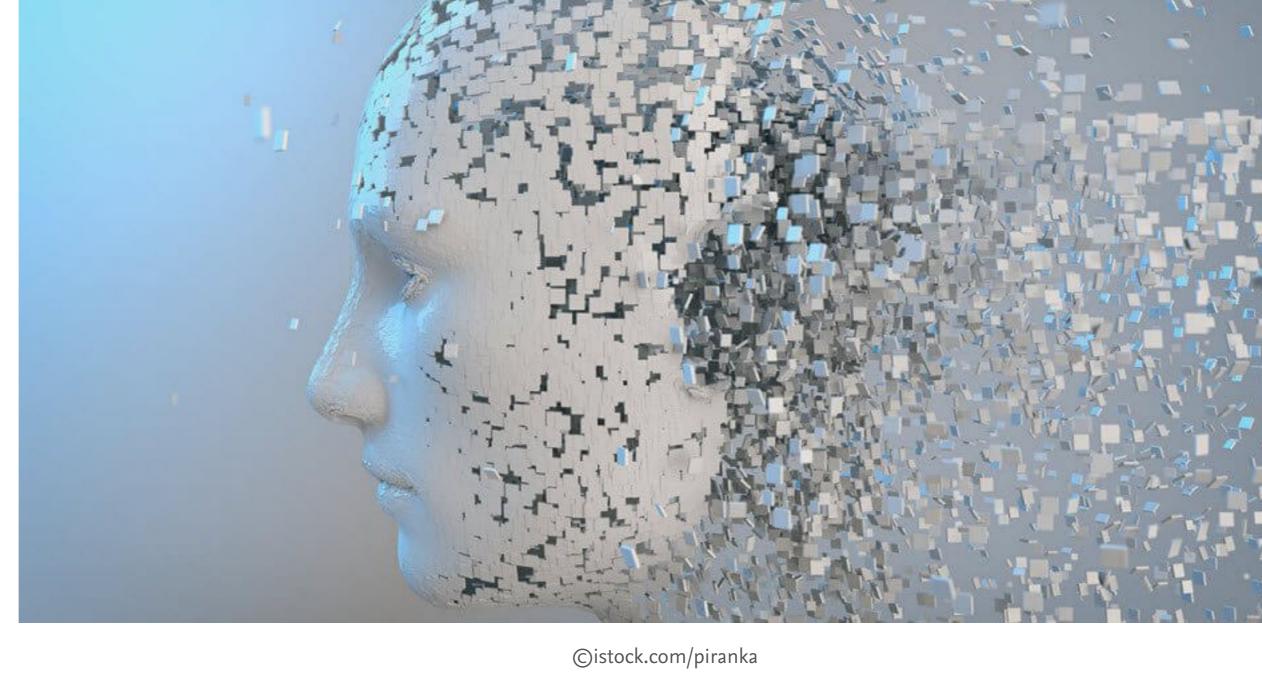
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## The biggest misconceptions about AI: the experts' view Five experts reveal common misunderstandings around "the singularity" and what AI can and can't do

By Sweitze Roffel and Ian Evans July 16, 2018 © 8 mins



telephone and you would try to find a way to police the misuse of the telephone," he said at the VivaTech conference in Paris 

✓ last month. Others talk about the singularity – the point at which an AI suddenly becomes sentient – and use that possibility to stoke fears already fueled by dozens of sci-fi movies. The reality is less dramatic. There's no questioning that AI has the potential to be destructive, and it also has the potential to be transformative, although in

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neither case does it reach the extremes sometimes portrayed by the mass media and the entertainment industry. At Elsevier, we're increasingly using AI technologies such as machine learning,

natural language processing (NLP), knowledge based systems and knowledge graphs to help researchers, engineers and clinicians do their work. For example, we can use NLP to automatically understand the subject of an article and route it to the right reviewers and the right journal. We can use knowledge graphs to direct university departments to the funding

systems to support the deductive reasoning clinicians use to provide an

But what does the technology mean in the wider context of society? We

caught up with some of the leading figures in artificial intelligence research

opportunities in which they are most likely to succeed. We can use knowledge

to get their view on the biggest misunderstandings around AI as well as their hopes and fears for the technology. Prof. Gary Marcus, NYU: "The biggest misconception around AI is that people think we're close to it." Dr. Gary Marcus is Professor of Psychology

Geometric Intelligence, acquired by Uber in **2017. ◄** He writes: "I think the biggest misconception around AI

certain narrow problems like speech recognition very well. We've done that in ways that we couldn't have imagined five or ten years ago. But the idea of having machines that can reason about the world in the ways that human beings can ... I don't think we've made any significant progress in that at all. Humans can be super flexible – they can learn something in one context and apply it in

another. Machines can't do that.

can be super beneficial."

of California Irvine > . He writes:

example."

Dr. Max Welling is Professor and Research

Chair in Machine Learning at the University of

Amsterdam and full professor at the University

"At this point, many people think that AI is a

accurate diagnosis.

memory works. Talking about the singularity is like trying to boil intelligence down to a single IQ number, which itself will change in an individual from day to day. What does an artificial superintelligence mean? Machines are already way smarter than us when it comes to playing games with very tight boundaries, but nowhere near as smart as us when it comes to playing a computer game a 12-year-old could play." Prof. Max Welling, University of Amsterdam and UC

Irvine: "It's a glorified signal processing tool, but it

level reasoning it can't do. It can't look at a picture and project into time about what will happen next or extrapolate as to what were the things that happened before and what the causal relationships were that led to the current image. That is a much more complicated understanding of a situation and is something we can't do yet. It might take a while before we can.

"It's important not to overestimate the current standards. It's a glorified signal

processing tool, but it can be super beneficial – almost any other scientist

Prof. Joanna Bryson, University of Bath: "As for the

algorithm that suddenly knows everything ... the

would benefit from collaborating with machine learning specialists, for

Princeton's Center for Information Technology Policy. *¬* She writes: "When people think about AI, it's usually around two concepts. One is human-like

possible because there already is human intelligence, but it's unlikely we will build it. If you clone a human, you have a

intelligence – referred to as general AI – and

the other is a single algorithm that suddenly

knows everything. The first of those must be

to remember things, a plane is super-human in its ability to fly. But if we had something exactly like a person, which could transfer skills from one task to another, and which started competing with us that would create a problem. As for the algorithm that suddenly knows everything, which people

sometimes refer to as the singularity – that's impossible."

The flip side of that is that people think of it as

already a lot of applications of various forms of

something in the far future, but there are

Elizabeth Ling is SVP of Web Analytics at Elsevier **¬** . She writes: "One common misconception is that AI has suddenly happened. In reality, it's a longstanding domain of science that's been evolving.

Engineering and Computer Sciences at UC Berkeley and Adjunct Professor of Neurological "There's a common misunderstanding that Al presents a risk because it will magically become

far we've got with a certain problem with 10 or 20 years of research." "When it comes to the singularity, it's based on this misperception that machines will get faster and faster and faster than the brain and at some point they'll just take off. Making machines faster doesn't make them more intelligent. You'll just get the wrong answer more quickly. The benefit of having faster machines is to speed up the cycle of experimentation. If it takes

themselves to be better and having that become a cycle. It's a possibility, and I it at all. That's a basic thing but I don't think that's the real issue. If we make machines that are more capable than we are that can have an impact at a global scale, that's a more present risk. It's not about the ability to redesign internet it has access to 5 billion screens, if it regulates electricity or the depend on whether it can redesign itself."

Contributors Written by Sweitze Roffel

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to the existence of civilization." At the time, Facebook CEO Mark Zuckerburg described such warnings as "pretty irresponsible." More recently, Google CEO Eric Schmidt suggested that the answer to fears about AI was to police it: "The example I would offer is, would you not invent the telephone because of the possible misuse of the telephone by evil people? No, you would build the

and Neural Science, New York University, former CEO of the machine learning startup

is that people think we're close to it. We're not anywhere near that. We've learned to engineer Prof. Gary Marcus, PhD

"There's also a lot of misunderstanding around the singularity . As a concept, this reduces a complicated problem to a single dimension. There are so many dimensions in artificial intelligence and natural intelligence, questions around what perception is, how language develops and how

silver bullet that will solve everything. In reality, it's more that we can do really good signal processing. In other words, AI can Prof. Max Welling, PhD extract relevant features, analyse images, and understand speech, but there is a lot of high

singularity – that's impossible." Dr. Joanna Bryson is Associate Professor at the University of Bath and Affiliate at

biological human, but if you build something like a human, everything changes – you've built something that can do anything a human can do. I don't think we will ever recreate that. There's no one piece we can't build, and we've gone super-human in many ways already, if you consider that 'super-human' means that machines can outperform humans in one specific task. A book is super-human in its ability

Prof. Joanna Bryson, PhD

systems in society. ... They just don't look like people expect."

Elizabeth Ling, Elsevier: "Al is already used in many

management system. Al applications will be on websites where you may not even notice them. It's been with us longer than people think." Prof. Stuart Russell, UC Berkeley: "Making machines faster doesn't make them more intelligent." Dr. Stuart Russell is Professor of Electrical

conscious and spontaneously hate human beings. Prof. Stuart Russell, PhD There's no reason to be concerned about spontaneous malevolent consciousness." "It also sometimes gets reported as though five years ago we didn't have AI, and now we do, but the research has been going for 60 years and we've made fairly continuous progress. Every so often research reaches a point where you

can create a product that people will pay for and from the outside of the field

it looks like some kind of breakthrough. But it's not – we're just showing how

you 3 weeks to try something you can't move forwards. If it takes 3 minutes you can go on to the next thing and you're better able to quickly develop something that works well." "The other form of the singularity is the idea of machines redesigning

think that if you're serious about creating human level AI, you'd better figure out how to make sure that doesn't happen. If you can't ensure that a machine doesn't redesign itself in some physical form, you don't have any control over itself, it's about the ability to change the world. If a more capable AI is on the financial system, it can have an impact on a global scale and that impact won't

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> Ian Evans is Content Director for Global Communications at Elsevier. Previously, he was Editor-in-Chief of Elsevier's Global Communications Newsroom. Based in Oxford, he joined Elsevier six years ago from a small trade publisher specializing

\*Machine learning is the catalyst, but it will converge with a bunch of other echnologies that are going to blur the lines between the digital and the human world."

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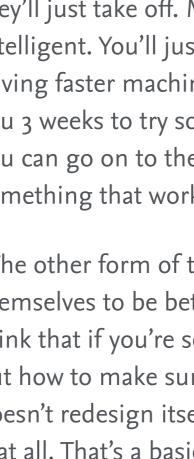
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AI. It's already used in many systems in society. The thing is they just don't look like people expect. If you mention AI in warfare for example, people think of smart drones, but in reality, it's more likely to appear in a logistics

Elizabeth Ling



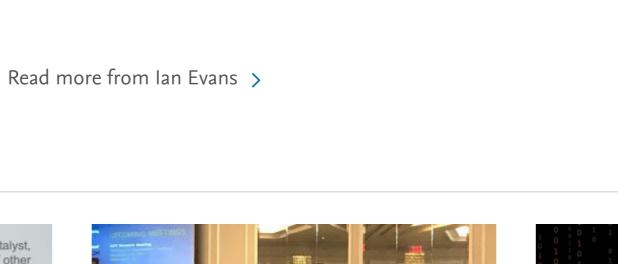






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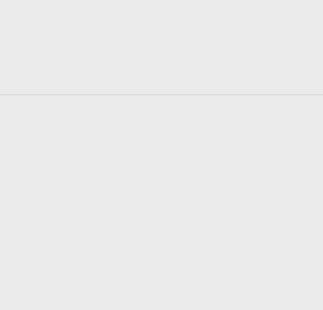
computational intelligence and theory. He holds an

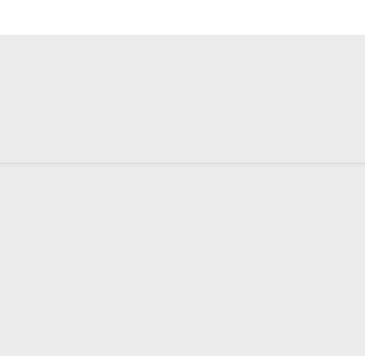
engineering degree in chemistry from the University of

Groningen. He joined Elsevier in 2004 and is based in

journals, Sweitze Roffel focuses on artificial and





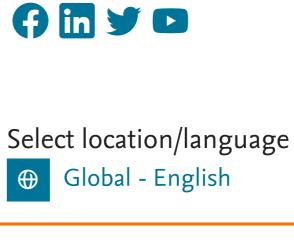


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