The Current State of AI

Fabian Kietzmann, Chief Digital Officer for MediaCom China, discussed the current state of AI with Adam Coates, Director of Chinese search giant Baidu's Silicon Valley AI Lab. Below are excerpts.

Fabian Kietzmann: *Tell me a bit about yourself and your background. How did you get interested in intelligent systems?*

Adam Coates: I grew up in Calistoga, a small town in California's Napa Valley. I taught myself to program in middle school, just as a hobby. One thing I found inspiring was that programming was applicable to a huge number of problems. It's a universal skill: if you can write down how something should be done, then you can get a computer to do it for you.

While I was an undergraduate student at Stanford University, I realized that AI, and machine learning in particular, was another universal skill that could be used to solve an enormous range of problems.

What really fascinates me is that AI can help create a computer program that learns to solve problems that a human can't solve.

FK: *What do you think of autonomous technologies? Do you think self-driving cars will be prevalent in five years' time?*

AC: Most new cars sold five years from now will not be driverless. Developing self-driving technology is a lot harder than people think. For instance, when you see an obstacle on the highway, you have to determine whether it's a tumbleweed or a boulder. Tomorrow, you'll need to decide if it's a plastic trash bag or a tire. These decisions are not easy to make.
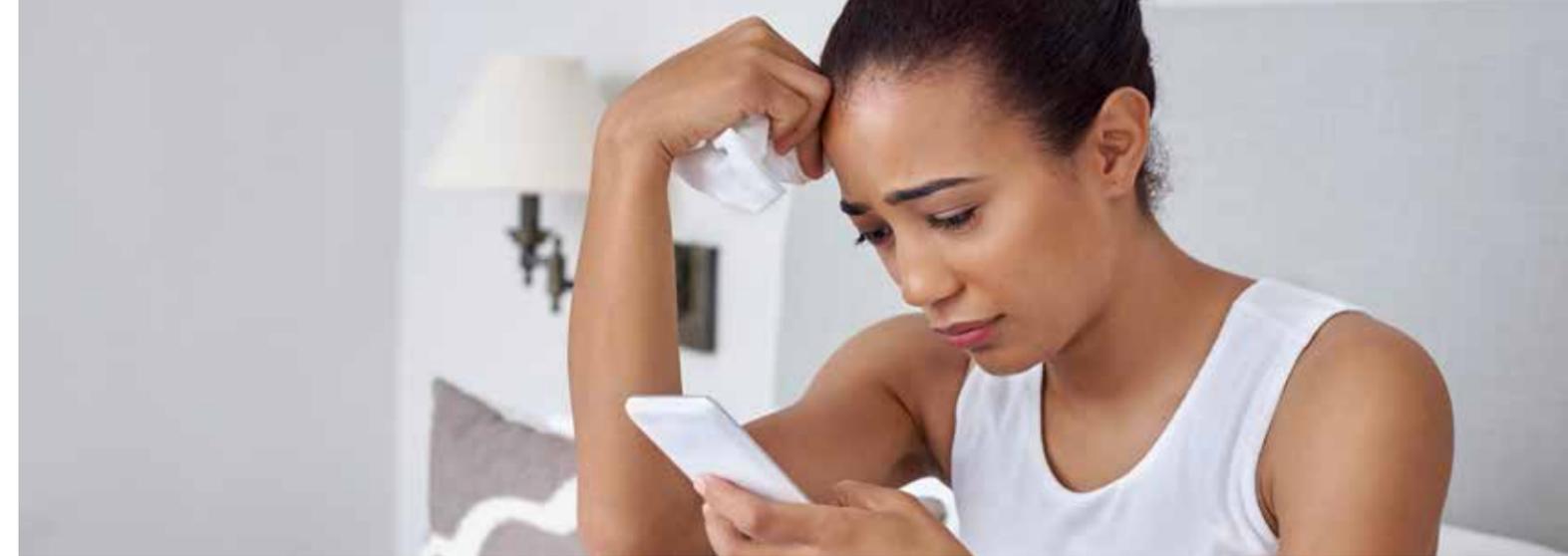
I do believe that the majority of new cars by 2020 will be more automated with the help of AI. That automation will kick in during certain challenging road situations, like protecting a driver when s/he is parallel parking or merging or changing lanes on highways.

FK: *How does Baidu use deep learning?*

AC: Baidu was one of the first companies to begin making major investments in deep learning. In 2014, Baidu built an internal AI platform that empowered engineers across the company to use deep learning tools to tackle problems. This unleashed a lot of creativity and brought about new applications of AI that would have been hard for us to imagine. For example, our infrastructure team created a way to predict which hard drives will fail, and that saves the company money on a daily basis.

In our Silicon Valley Lab, we are focused on several domains, including speech recognition. We are striving to "solve speech," which means creating software that can transcribe speech as well or better than a person can.

We're finding ways to make speech recognition work in noisy environments and situations where the speaker is not close to the device: scenarios in which current technology tends to break down.

Needless to say, accuracy is critically important. With 95% accuracy, about one in every twenty words will be incorrect. With 99% accuracy, the error rate drops to one out of every 100 words. This difference can determine whether your experience is annoying or satisfying.

FK: *What do you see as the future for artificial intelligence?*

AC: I'm excited about AI, particularly because it enables populations currently underserved by technology, like the people in rural China, to access

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new and deeper levels of information. This might seem counterintuitive, but non-technical users actually place higher demands on technology so, in a sense, it is the non-tech-savvy people who will benefit first from AI, not people like me who grew up with computers.

If you told me just three or four years ago about the things we can do now in speech and image recognition, I wouldn't have believed you. The improvements have been dramatic.

AI has been most helpful in improving the ability to search the Internet with visual images as the input (vs. text-based search). For instance, people in China can take a picture of a dress or a shirt, find it on the Web and click to buy it within seconds. Or they can snap a photo of a movie poster and instantly purchase tickets to the next showing at the nearest theater. At Baidu, we are working to help computers "understand" the world in which humans live. We want to connect the online and offline worlds.

FK: *Are there any fears or dangers related to AI that keep you up at night?*

AC: We are really in the early stages of AI development. We are not remotely close to building a computer that is sentient. I don't worry about "evil" AI for the same reason I don't worry about airplanes transforming into Decepticons (yes, I grew up watching Transformers). For now, we're missing too many pieces to be worried about it becoming reality.

FK: *Baidu is dominant in China. What are your plans outside of China and how do your newest innovations fit into the plan?*

AC: Baidu's focus is on China, where there are still huge opportunities, but we are looking at developing economies including the Middle East and North Africa, Southeast Asia and Latin America. These are regions that, in many ways, mirror where China was five or ten years ago. AI will have a huge, positive impact in these economies.