Asian Financial Forum 2018

Keynote Luncheon

Synopsis

The recent victories of AlphaGo, an artificial intelligence (AI) program, over the world's top human players of Go demonstrated how computers can be developed to perform highly complex tasks better than humans. Combined with the use of robotics, AI is expected to be applied in many areas, which could have a huge impact on society. Professor Rus addressed the latest advances in AI and robotics, and the impact their application will have on the financial and business sectors.

Opening Remarks and Moderator

- **Mr Raymund Chao**
  Asia Pacific and Greater China Chairman, PwC

Speaker

- **Professor Daniela Rus**
  Director, Computer Science and Artificial Intelligence Lab (CSAIL); Professor, Electrical Engineering and Computer Science, MIT

Raymund Chao opened with a summary of the different types of artificial intelligence (AI) and how they work: (1) Assisted intelligence, such as GPS in cars; (2) Augmented intelligence, which allows people or organizations to do things more efficiently; and (3) Autonomous intelligence, such as self-driving cars. He said there are two possible perspectives: some people look at the great improvements AI generates, while others look at the negative side, such as job losses and eventual loss of control as machines become exponentially smarter. He pointed out that AI has significant economic implications as it is expected to contribute US$15.7 trillion to the global economy by 2030, $6.6 trillion of this from increased productivity. AI has positive implications for areas such as climate change, disease diagnosis and treatment, and cyber security.

Daniela Rus first addressed concerns about job losses. She pointed out that AI and robotics are just tools, which can help reduce traffic accidents, diagnose and treat disease, move goods more efficiently, address the consequences of climate change, and provide universal access to education. She said there has been significant progress in three areas: robotics, AI and machine learning. However, when AI is used alone for cancer diagnosis, it has a higher error rate (7.5 per cent) than human diagnosis (3.5 per cent), but when AI is used to assist human diagnosis, the error rate falls to 0.5 per cent. The reason for this is that machines are better at some things, such as data analysis, and people are better at others, such as critical thinking. So they complement each other. It is the same for financial analysis.

She said machine learning tools can help us prepare for the future. AI and blockchain systems can bring trust. But machine learning can make mistakes, so you still need people.

AI can improve legal work. Natural language processing allows a machine to read thousands of cases and provide lawyers with key information, but we still need lawyers to present a case, plead, etc.

AI can also provide real-time information on supply chain management and instant translation. Google used machine learning to improve data centre efficiency by 40 per cent. Ford uses it to assess loan applications. The possibilities are endless.

She discussed some of the challenges for AI and robotics. One problem is that we only have one-off solutions at present. Medical solutions cannot be used in legal applications, for example. Another problem is that machines cannot even reason as well as an 18-month-old child.

But AI and robotics can do a lot and offer great potential for the future. For example, they can provide independence and mobility to the elderly and people with disabilities, with autonomous scooters, wheelchairs, cars and buses, resulting in a better quality of life. For blind people, AI can describe the things around them so they can get around without a walking stick or guide dog. Robots are our partners in factories, hospitals and homes and on farms. AI and robotics can make our roads safer and less polluted by reducing energy consumption. One example she gave was that by introducing a delay of three minutes in taxi response time in New York City, you could have 3,000 fewer taxis on the road, thus improving the quality of life through reduced pollution and traffic congestion, while also increasing profit and wages. She said that taxis could eventually become autonomous, but that today's technology cannot cope with factors such as traffic congestion, snow and rain.

Robots will allow mass customization and personalization of products at a price most people can afford. Templates will be customized at home and then produced.

However, we need a code of rules for AI systems. The systems must assure customers that their privacy will be respected and that they will be treated fairly. They must also account for where the data comes from.

Rus concluded by pointing out that AI will assist with both cognitive and physical tasks, but our rules must stipulate what helps or hurts us. We can't stop tech advances, but we can regulate to make sure the results are positive.

Regarding career advice for parents and young people, she said that digital literacy is critical. You must be able to think conceptually and, no matter what career you choose, you will need to understand how data is processed.

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