

# Global Supertrends Forum 2020

## Technology Leaders in a Post-Pandemic World

**Dr. Poppy Crum, PhD.** Stanford University Adjunct Professor, Chief Scientist at Dolby Laboratories, Neuroscientist and Technologist

**Angus Muirhead,** Head of Thematic Equities, Portfolio Manager, Robotic Equity Fund, Credit Suisse

### Can the way a person speaks indicate whether they have the COVID-19 disease?

Yes.

“There are a number of start-ups right now that are able to detect COVID-19 in the presence of someone's voice,” said Dr Poppy Crum, adjunct Professor at Stanford University and chief scientist at Dolby Laboratories.

“No-one has deployed it as yet and it shouldn't be used as a diagnostic... but it's a great way of empowering the individual to know whether to get a COVID test.” It's an example of the power of artificial intelligence. AI and robotics often get bad headlines, but its potential is undoubted, particularly in health.

“There's so much opportunity to support ageing,” Dr Crum said. “It's about leveraging the infrastructure in the home – whether that's heart rates captured through WiFi or emotion, through cameras, through physiological responses, even through the composition of breath. The dynamics of someone's voice can detect depression, for example.

“Suddenly with this amalgamation of sensors in our environment... we can do more than track what pill someone took... We can also see their state of well-being.

“It can enable someone to autonomously live in their home for longer. We've seen people can live for ten years longer in their own home,” she said.

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*“Artificial intelligence is on an inevitable rise. Technology has never been smarter and never been cheaper.”*

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Robotics and artificial intelligence isn't about replacing human intervention. It's about making those interactions even richer.

“I take the most intelligent thermostat on the market today that's in smart homes. It learns our behaviours. It learns a lot of information about us and applies machine learning and AI to that.

“But it doesn't know if I'm hot or cold.”

Artificial intelligence is on an inevitable rise. Technology has never been smarter and never been cheaper, said Angus Muirhead, head of thematic equities, portfolio fund manager at Credit Suisse.

“Twenty years ago, every chip was custom designed for a specific purpose,” Mr Muirhead said.

“Now you can do anything on your mobile device. You can shoot a movie. You can watch movies or play games. So today we have a lot of general service technology,” he said.

“We also have a lot of enabling technology – things like wireless connections, cloud storage and cloud computing. And then we have 26 million people in the world who have professional qualifications in coding, and probably another one or two hundred million who have been self-taught. The building blocks for innovation are in place.”

With so much potential around artificial intelligence and robotics, Dr Crum and Mr Muirhead addressed some of the common questions around the development of the sector.

### Does automation and robotics displace people from jobs, and should taxation play a role to alleviate these concerns?

Robotics and automation are tools for efficiency and productivity, Mr Muirhead said, and taxing them would only hurt the economy. “If you take that away and raise the cost of those systems, you immediately make it more difficult for companies to compete in a global marketplace.” He uses the example of combine harvesters used by farmers, which have replaced horses, mechanical devices and people working in fields.

“A farmer certainly wouldn't want to be taxed on the combine harvester, and most of us wouldn't want to pay higher food prices,” he said.

### Is AI, as part of our daily lives, positive?

“If you think about ageing ... the goal of leveraging machine learning and AI is to keep someone autonomous,” Dr Crum said, adding that it will become even more beneficial as science improves. “The technology we use on a day to day basis is built for one

size fits all, similarly to pharmacological interventions. We have very little opportunity for personalisation and even something as simple as a headphone ... is designed for one size fits all. But we now have the opportunity to rethink how technology supports every individual across demographics, across sex, across geographies and build technologies that is about elevating individuals. That's really important."

### **How should investors think about these trends?**

The critical part of the puzzle for investors is that robotic technology or AI must be affordable and useable for end consumers, said Mr Muirhead. "These systems need to be plug and play, easy to use, reliable and working every time," he said. "It needs to be very simple. Push the button and it works." That's where the opportunity lies.

### **What's the most exciting market opportunity in health tech?**

"What we have learned in the past ten years, is the great deal of richness that comes in the dynamics of our voice, not just in what we say but how we speak," Dr Clum said. "An assessment of my voice can predict within five years ... the likelihood I might have a psychosis. It can predict heart disease and diabetes." "When you start amalgamating different sensors ... like the diameter of my pupil ... paired with dynamics of my vocalizations, how I repeat, certain pronouns or the gaps in my speech, they can be correlated with early Alzheimer's. You can start coming up with algorithms that are really powerful."

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*"We were told don't talk to strangers on the internet and don't get into cars with strangers. Now we literally summon people from the internet and climb into their cars."*

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### **How has COVID-19 impacted the development of AI?**

Industries have increasingly adopted automation solutions during the current pandemic, Mr Muirhead said. And different industries have done so in different ways.

"When COVID struck, it was shocking to us how many businesses knew very little about the state of their supply chains. We will now see more of them add intelligence into our supply chain logistics?" he said.

"Another hot area is chat bots. At the moment something like 40 per cent of call centre agents are actually at their stations. So, there's been a huge demand to say let's try to automate that process."

### **Is AI moving too fast for humans to adapt?**

It's very difficult to imagine what happens next, Mr Muirhead said. "The conclusion we've got to is it's all about education. Can governments step up? Can colleges, universities and schools step up and increase the amount of STEM related courses, so that the workforce, coming out of school, is educated enough to work with AI and robotics? Creativity and innovation are areas where humans actually excel."

### **Should we be worried about privacy concerns?**

Yes we should always be worried, said Dr Crum, but the attention on the issues has triggered improvements in global data privacy regulations and that's beneficial to the general community. Also, people become more comfortable with their data being available to third parties, as time goes on.

"We were told don't talk to strangers on the internet and don't get into cars with strangers. Now we literally summon people from the internet and climb into their cars," she said.

### **Is 5G important to automation and robotics?**

The adoption of 5G internet means faster connectivity and that is critical to an AI and robotic world.

"You can get such high levels of connectivity that devices will connect thousands of times faster to the internet," said Mr Muirhead. "It will mean that devices are always on. For autonomous cars, it would allow you to put all of the intelligence of the autonomous car into the cloud. And for every car to be able to access that instantaneously. So, that is huge. "

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