

QG Breakfast Series

6 August 2019 event - transcript

Impact of AI on the workplace

Peter Fitzsimon, Consultant, Strategic Transformation, Queensland Government Chief Information Office

MC: I'd like to welcome now the first of our panellists to the stage Peter Fitzsimon. Peter currently works in the Strategic Transformation team with the Queensland Government Chief Information Office focusing on encouraging agencies to make improved and appropriate use of current technologies like Office 365 and Cloud computing, and emerging technologies like machine learning, artificial intelligence and the internet of things. Which I'm interested to hear about Peter actually. Peter previously worked at CITEC for seven years as a solutions architect and prior to that he was with Microsoft for 11 years as a technology specialist. So after 40 years in the IT industry you'd think he'd know everything by now but like many IT professionals he tells us that he's constantly having to learn new things to keep up with the crazy pace of change in technology and its application to how we do our business. So thank you for joining us Peter.

PETER: Thank you Kylie for that welcome and thanks to the organisers for the opportunity today to talk with you guys today. Barbara and Brett's introduction talks were great talks because they really lead into some of the cool things that are happening in this space. We are already the victims and/or beneficiaries of machine learning and AI in our life today. It's been around for a while. It's not new. Commercially it's been used over 15 years. People using this kind of technology to improve the way they do business. Recommendation engines. If you play with Google, Google search, Amazon, Netflix, any of those things that make recommendations to you they're using machine learning in the background to work out what people like you have liked in the past and try and make an encouragement for you to use something else. Fraud detection and technology in banks. I don't know about you, but I've certainly been the beneficiary of a bank ringing up saying did you really make that \$2,000 expense in a country that you've never been to before? And I go no. Right. And I never hear any more about it. So I assume they're protecting me in some space. And I like them to keep doing it please. Facial recognition and Facebook. I guess we've all been a victim of that in some cases, or maybe a beneficiary. But that's a very emerging, oh I say it's emerging technology, it's a very active technology today in the way that we do stuff like that. Predictive text on your mobile phones. We all make use of that. Sometimes we get it wrong. Who's sent a text message that went nah that didn't quite look right. My wife goes did you really mean to say that? No, no, no, it was the phone, it was the phone. And of course language services. Apple, Siri, Cortana, Amazon Alexa, all the Google assistance stuff. We all benefit from using that stuff. And I just had a bit of a discussion at our table today about the benefits of language conversion and translation technology that Google provide. And that's just going to continue to get better to the point where I perceive in the future we won't have this thing called a language



barrier, because people will have already just learnt how to use this technology. It will of course mean that we'll probably have reduced reason to learn a second language, which is probably a little bit disappointing too in some cases. There's a range of technologies that are used in the machine learning and AI space. And I won't go through all of them today, but I do want to mention three that are probably getting the most activity in the space at the moment.

And the first one is what we call digital data analysis. And this is simply taking existing digital data to make some sort of correlation or prediction with the information. And think of stock prices. If someone had a system that said if I looked at all the history of stock prices, could I make predictions on what a stock is going to be. And answer is yeah people do make predictions. Whether they're correct or not depends on the quality of their data. But they do make those predictions. House prices. ANZ advertise on TV that you can go along and it'll give you a price on a house that you're looking at. Basically that's machine learning in the background taking in a whole number of features, what they call features of that property and trying to make an assessment of the price versus other houses in that area. So that's one of the areas that we do digital data analysis. It already exists. We've been doing it for years. It's the easiest thing to do, because the data is in a form that we can control and manage very easily by computers.

The second form is what we call computer vision. And this is now taking pictures and videos and stuff like that to make some sort of assessment out of that object. Facial recognition is a good example of computer vision. Again, we see it all over the place today. It's a very advanced field now today with some stuff in the background going on. It gets used for clever things like counting people. Counting people, counting birds. People use it on remote islands. They fly drones over a beach and basically can count the number of sea birds on the beach using this kind of technology. Perhaps one of the greatest thing I like is Surf Life Saving now have the opportunity to fly a drone across a beach and do computer vision recognition, object recognition of a shark. So they can find out whether the beach is safe or whether there's something to be considered further out. And they can detect the difference between a shark and a surfer. That's good. They can find out if they're close. Which is another good thing. So. And probably the other really good example of this stuff is computer imaging, sorry, medical imaging. So the ability to basically look at medical images and detect an abnormality in an image. Probably to some extent we're getting to the point now we can do that with computer vision more accurately than we can do it with a human. So it's become a really strong area.

The third area is what we call natural language processing. So this is taking voice text and converting into something useful. So translation is a great example of that. And we've all I said benefited from that using Google stuff. There's also moving into what we call sentiment analysis now. So we're not just content with saying what words did you say, we want to detect how you said it. So were you angry when you said that. And could that mean that I have to respond or have a technology that responds differently to you if you're angry than if you're happy. So we'll see that sort of stuff. And of course document analysis and information is very easy as well, is very simple to do these days.

So for this morning's talk I want to take some information from a gentleman called Kai-Fu Lee. Kai-Fu Lee was a Taiwanese born citizen who was educated in America since his early teens. He worked on Apple's early voice recognition technology they put in some of the early Apple devices. Worked for Microsoft Research as a head of Microsoft Research in China then became the country manager for Google in China and now has his own company doing a startup, a venture capitalist company supporting start-ups in the AI space. He wrote a book published last year which gives a really good indication of some of the things that's AI's

happening. The book was, it's called AI Superpowers. And it was kind of focused on the rivalry between China and America to try and dominate the AI space. But in that book he also talks a lot of things about the impact on society and jobs. And that's the areas that I want to talk about today. He talked about four stages of AI. Internet AI, things like recommendation engines. We know about that, it's been going on for quite a while. We've benefited, we've used it, whatever. Business AI is another stage he talks about. And again this is in practice today. So banks are using business AI effectively to do the fraud type analysis they do. The area that's really booming today though is what we call perception AI. And this is a phase that entered it many years ago if you really think about it, but it's really quite significant now. And the availability of computing power is really what's helped us develop things in this space. So this is giving our machine learning systems ears and eyes. The ability to look at stuff and hear stuff and make decisions around that. Computer vision. Analysis of photos. You might hear terms like neural networks or deep learning. That's basically the technologies behind doing computer vision type and language processing.

The fourth way that he talks about stages autonomous AI. And when we talk about autonomous I mean everyone think oh autonomous vehicles. And they're a good example. Autonomous vehicles will be the kind of things that will happen in this space. We think we're a long way off in this space thought. There's a lot of things still to happen before AI becomes fully autonomous. In his book Kai-Fu Lee talks about the impact of jobs. And I guess that's one of the reasons we're here today is to try and understand that. And I like the way that he talked about the impact of it. And he looks at it in a couple of ways. He looks at the risk of replacement of two forms, cognitive labour, which is probably what we consider to be white collar jobs, and physical labour, which might be more those blue collar roles that we have. Although it's not as clear-cut in that space. And he built up a quadrant. And in those quadrants he talks about the ability for automation and the ability for social interaction. And so we're going to focus on a couple of those things in a minute. But it's pretty hard to read that slide so I'm going to have a blow-up version. But let me set a few expectations first. And we probably already worked this out for most of you already. And some of the stuff that Brett talked about.

A small percentage of jobs will face the risk of replacement. Right. We know that. Brett had figures there like 9 to 47% when most people probably think it's going to be in the single digits, certainly for now. A number of jobs will have a percentage of tasks automated. So that's the biggest area to some extent is you won't get rid of the whole job but you will get rid of a percentage of it or you'll improve the way that percentage of the job is done and enable that person to do a lot more. Things like the dull, the dirty, the dangerous and the dear or expensive things are the kind of things that we want to hand across to someone who can do it better. And it could well be a robot in some form. That leaves your staff free to do more. Staff will be able to be retained and re-purposed to something different. The majority of jobs will also be added and augmented by machine learning. So this basically means that I won't get rid of the job, I'll still be doing the things I got to do but I'll be able to do them better, faster and perhaps more accurately. So staff will be better informed. They'll be more productive, provide more services. This is an area we call augmented decision making. So it's basically I'm just getting someone to help me make the decision in that space.

You might also hear the term narrow AI. Narrow AI basically means we're using AI machine learning for a very specific purpose. And the thing to understand with all this stuff is that you have to build this stuff very specifically today. You can't build an AI system that does everything. You can't take, no robot vacuum cleaner's going to stand up tomorrow and start

cooking you dinner. Right. So these things are specific purpose stuff. And that's what's going on in the field today mostly.

The last phase that we're going to talk about, I think I want to mention is human social interaction jobs will be the least impacted. So if you're someone who's involved in a lot of social interaction there's a good chance this stuff is not going to touch you for a little while. In fact you're going to become more important because as other people are affected you're going to have to be helping them out.

So I'm going to run out of time shortly. But just really quickly looking at Hai-Fu Lee's quadrants. He talked about four quadrants. And he put them there, the danger zone, the bottom left, the safe zone at the top right, human veneer, which I think is one of the most interesting areas, and the slow creep at the bottom is basically you know we don't really know what to do with these ones, we think they're going to get affected but we don't know.

Look at the danger zone, bottom left. Telemarketers. Is anyone going to be disappointed if they get out of a job? One challenge might be of course they might get replaced with some sort of robo-dialling facility where you're constantly getting automated prompts through your phone or whatever. So that's a pity.

But who's a CIO? Sorry, CEO? Top right hand corner. Right. You guys are pretty safe if you're one of those. A criminal defence attorney. You'd like to think maybe with technology we could reduce crime. Doesn't sound like it's going to happen. I mean it sounds like we're going to have a need for criminal defence attorneys a long way into the future.

Just moving across to human veneer then. A couple of examples there, teachers and doctors. The job of a teacher is always changing. They're challenged sometimes with technology. As technology, technology's going to help teachers. Cause it's going to mean that they can probably assign tasks and give work to the bright students and know that it's going to get done and spend a little bit more time with students that need help. So the job of a teacher might be slightly less teaching in terms of activity and a lot more around engaging with the student and making sure that they're on a learning path and getting something out of it. And I think that could be a good thing.

Doctors, similar story. If a doctor can get better diagnostic information out of an AI system he can move to that treatment phase faster. So if you walk into a doctor and he said I already know what's wrong with you, here's our treatment plan, that is going to save us all a lot of time. So that's a good thing. The other thing a replacement around physical labour. And again there's ones here and we won't get time to go through it, but look at the top right hand corner, the safe zone, elderly home care. Carers in this world are basically going to be one of the growth industries. And technology may help them, but it won't replace them. They're always going to need it. I've got an interesting story that Kai-Fu has in his book that we can probably cover off in the panel session if people are interested. So I won't go into all of those in massive detail, but you can see that not all jobs are going to get replaced, or not all jobs will be replaced and they won't all be affected equally. But the social interaction ones are the ones that are basically going to be the least impacted.

Very quickly. The drivers for technology use are different between different market segments, particularly commercial. Commercial organisations are usually financially focused. So they're interested in efficiency, reducing costs and improving profit. They want faster, better, more complete service to their customers. Identify and move into new areas if they see that. And of course stay ahead of their competition. Do smarter things. Look at the way that Dominos do

their pizzas today. I mean their whole process is very very clever. I can't guarantee it gives you a better pizza but it does give you better information about where your pizza's coming from.

By contrast government drivers are different. So basically government still need efficiency, they still need to reduce costs. They want better, faster, more modernised service delivery. But governments also have to respond to threats that commercial organisations don't. So public safety, natural disasters, terrorist activity, environmental activity, biosecurity. Most commercial organisations don't have to think about those things when they're looking at technology they deploy, but governments do. And that's why government use of technology and jobs within government will be different and be on a different trajectory to what we'll see in the commercial sector. Sometimes we get frightened by what we see happening commercially saying oh that company's getting rid of people because they're putting technology in. But that can't happen in government, in some cases because the drivers are different.

Brett already covered this off so I won't go into a lot of detail, but there is good news, and that is that AI and machine learning in theory is projected to create more jobs than it loses. Now the competition I guess, or the discussion is still around so what jobs are we talking about and are the jobs that it creates the same jobs that the people who lose their jobs can do. And that's an interesting discussion. But the growth area, data scientists. You've probably all heard a mention of that. Every second job you look at is a data scientist job. Data sciences aren't new, we've had them for years. We called them data analysts 20 years ago. The difference now is there's so much more data that we need to analyse that we just need more of them. So we've given them a new name and we pay them more and we collect a lot more of them.

The drone industry didn't exist 10 years ago. Now we're teaching kids how to fly drones in schools. So the whole area of basically using drones to collect data and do things. But the other thing that drones are being used for, what is it? Delivery. Google have now been approved to run a drone delivery pilot in Canberra. A select area. And you can order food and all sorts of stuff to be delivered by Google drone in Canberra now if you live in that area. So. Uber. Uber are doing, are going to be doing drone flights, unmanned drone flights from Tullamarine Airport into Melbourne. They're starting actually flying the devices next year, taking on passengers they think in 2023. I'm not going to be their first passenger. But I am going to watch what goes on.

Robotics industry. Again, a huge growth area. Queensland Government just last week or last month announced an over 7.7 million investment in an advanced robotics manufacturing facility in Queensland. So we'll see stuff for that. There's a lot of work going on in teaching kids how to do robot programming in schools.

And of course the one I like the most, and Brett mentioned on this, if we have nothing to do with our time cause the robots have taken over maybe the leisure industry now is going to be a growth industry. Personal trainers maybe or just tourism is going to be huge. And that's the big I like. So that's the bit I'm going to be doing.

Thank you and I guess we'll talk some more in the panel section. Thank you