

GOVTECH DECODED

EPISODE 6

RIDING THE WAVE OF GENAI

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Guests: Lim Hock Chuan, Kenneth Ong, and Nicole Lee

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[Hock Chuan] Okay, should I win again?

[Alica] Yes. *(Guests laughing)*

(Intro music)

[Alica] Hi everyone and welcome to GovTech Decoded, where we decode technical speak. In this series, we will discuss hot tech topics and how the Singapore government leverages technologies to build tech for public good. I'm GovTechie Alicia and I'm your host for today.

We have Nicole, Kenneth and Hock Chuan back with us again. Welcome back, maybe a quick introduction for those who didn't join us the first time round.

[Kenneth] Hello, I'm Kenneth and I lead the Empower programme in GovTech.

[Nicole] Hi, I'm Nicole and I'm also part of the Empower team.

[Hock Chuan] And I'm Hock Chuan, I lead the Launch Innovation Initiative in GovTech.

[Alica] So welcome to GovTech Decoded. In our previous episode, we decoded the ins and outs of prompt engineering and spoke about how GovTech is upskilling public officers with skills to leverage the power of GenAI. Since we have our three AI experts here, can we talk a bit about the difference between machine learning and AI?

[Kenneth] Sure. I think this is a common question that people often have and they mix machine learning or ML or even use it interchangeably with AI. So AI actually refers to a family of methods to make machines more like humans. And for ML, it's actually a subset of AI that specifically involves training algorithms and using statistical models to analyse and draw inferences from patterns of data. Like training a computer to learn and adapt without giving it specific instructions.

So one example is like how Netflix gives you recommendations, and it does so based on patterns of viewing history of other users similar profile to you, and then it gives you a recommendation of the shows or the next Korean show to watch.

[Nicole] So I think like machine learning is different from traditional programming also. So in traditional programming, the developer sets the rules, the logic, and the flow, which gives the programme specific instructions on how to behave.

[Alica] Okay. So it's like giving, kind of a framework that the machine then learns around, instead of actual rules to follow.

[Kenneth] That's right.

[Alica] And then another term that we frequently hear is LLMs. So could you decode then what the LLM is and how it works?

[Hock Chuan] Sure. LLM stands for large language model. So a large language model is an AI model that is trained to understand, generate and manipulate human languages. So this gives the model an ability to read and understand your intention better. So for example, the LLM is able to reply you in a more human-like way, engaging in more engaging natural conversation, and answering questions and providing explanations.

So for example, in the past, when you search on Google or Yahoo right, it's mainly based on keywords matching. But right now with AI, these engines can actually comprehend the questions and give you better answers.

[Kenneth] For example, if you want to go to a restaurant for a meal and instead of what we normally do, put in a term, some places, for example, on a Google search, and then you have to go through a bunch of information, recommendations or pages and all that. Right now, you go through an LLM, you put in a prompt and it gives you a response. Much like a human friend or even a concierge that gives you direct answers to your question in a more human-like manner.

[Alica] Yeah, a mini concierge that knows everything.

[Kenneth] Correct, correct. And it communicates with you just like a human.

[Nicole] It's true. There was this study that was conducted in 2015 by the researchers at the University of Cambridge and Stanford. So they found that Facebook actually knows you better than your friends, and can predict your behaviour more accurately. So Facebook is something you have to invite to your birthday party now.

[Alica] Oh wow, that's super creepy. Like have a thing for Facebook there saying 'Happy birthday to you...'

[Nicole] 'I know you so well...'

[Alica] But how does Singapore use AI then?

[Hock Chuan] Yeah, that's a great question. So from Kenneth's example, you can see the power of AI, even in the small parts of our daily life. So in the Singapore government, we recognise the power and benefits of AI too. So at GovTech we want

to help more agencies leverage AI to improve the way they work or improve service delivery for citizens. So we recently developed an AI-powered tool called **Matchmaker**. And it's a great example of how we are using AI to improve efficiency within the public sector. So Matchmaker is designed to help public officers find relevant technology solutions for their day-to-day challenges.

[Nicole] You see, many public officers often face difficulties when trying to find the right tech solutions for their work. So it can be time consuming, it can be overwhelming due to the vast amount of information available. And sometimes they simply might lack the technical know-how to assess the different options that they have.

[Hock Chuan] That's where Matchmaker comes in. So public officers can simply key in their problem statements into Matchmaker, and the AI will search and find the most relevant technology for their needs.

[Alica] I'm going to use that tool.

[Hock Chuan] Please, please do!

[Kenneth] And I think many people and organisations today actually already know about AI and recognise its benefits. But when it comes to implementation, adoption or quantifying the ROI, that's what we see them commonly struggle.

[Hock Chuan] Yeah, and therefore to help, right, actually we had an initiative called [Launch. And under this initiative, we have Launchpad](#), which is a platform for public officers to brainstorm ideas, experiment with AI tools available out there, and to learn about what are the common AI applications. Besides that, we also run hackathons every two months regularly. This is where we invite agencies to submit their problem statements and we work with them to solve it using AI solutions. So for instance, one of our most recent projects is focused on the generation of translation across the four different languages. So during the hackathon, we developed an AI-powered application that not only stores, searches, as well as retrieves past translations across the four official languages in Singapore. And this very convenient, easy-to-use database contains vetted translation, and that's very important.

[Kenneth] Yeah, so consistency is actually key in translations for us to communicate messages clearly to the public. For example, if a name of a particular scheme is translated differently across different materials that's put out by the government, then the public might find it confusing and will probably even hinder the effectiveness of the message.

[Nicole] Actually, when I talk to officers from other agencies, they often say that they lack resources, like some of them have to pay for their own subscription to AI tools.

[Kenneth] Yeah, and I think that's the reality for many teams and organisations as well. The lack of resources and knowledge is a blocker. Part of what we do at GovTech is then to actually drive digitalisation across the Singapore government. So the launch initiative really acts as a stepping stone for agencies to start transforming themselves one step at a time.

[Hock Chuan] Yeah, I'm proud to share that over one year, we have around 3,000 monthly active users, and have sparked over 1,000 ideas on Launchpad.

(All clapping)

[Hock Chuan] Yes, thank you. It's very rewarding to witness the innovation that's happening across the agencies at these hackathons.

[Alica] So these hackathons aren't just for tech experts, they're also for officers who might not have the technological background?

[Hock Chuan] Exactly. So one of the key benefits of this hackathon is that we hope to create this space for public officers to understand how AI can work for them to solve the real-world challenges that they face in their daily work. So to facilitate this, we ensure that every hackathon team has at least one business user, and this business user will work very closely with the engineering experts. This ensures that the prototypes that we build are not built in a vacuum, and increases the ownership of these ideas by the business teams as well.

[Nicole] I think the rise of no-code and low-code platforms also helps.

[Hock Chuan] Yeah, for sure, yeah.

[Alica] Okay, so now is a good time to take a break with a game!

(Transition music)

[Alica] So everyone, we are going to play Tech Trivia. Are y'all good at it?

[Nicole] Who knows? Let's find out!

[Alica] Okay, there's a twist. We'll be doing a tic-tac-toe edition. When you answer one right answer, you get to place your tile. We'll be playing two rounds in total to determine the winner. You will first play a round of scissors, paper, stone to figure out who will automatically go to the final round.

Scissors, paper, stone. Okay, Nicole, you go straight to the second round. Hock Chuan and Kenneth, let's do round one, tic-tac-toe! Okay, first question - What does AI stand for? Raise your hand. Okay, Hock Chuan, first.

[Hock Chuan] Artificial intelligence.

[Alica] Very good. Self-explanatory, guys. Artificial intelligence is AI. Please put your tile.

Okay, second question - Who is considered the father of artificial intelligence? Raise your hand. Okay, Kenneth.

[Kenneth] D, Geoffrey Hinton.

[Alica] No. Okay, go Hock Chuan. Alan Turing.

[Hock Chuan] No? Okay.

[Alica] Okay, it's actually B, John McCarthy. He's widely regarded as the father of artificial intelligence, coining the term in his 1955 proposal for the 1956 Dartmouth conference, the first AI conference. Oh, that was so long ago. AI was already around. Okay, that's so cool.

Question three - What is the primary language used for artificial intelligence programming? Yes, Hock Chuan.

[Hock Chuan] Python.

[Alica] Yes, very good. It's the most popular language for AI due to its simplicity and versatility, and it has a robust set of libraries specifically tailored for AI.

Question four - Which of the following is a technique used to teach AI without explicit programming? Yes, Kenneth.

[Kenneth] A. Supervised learning.

[Alica] Yes, supervised learning. It's a type of machine learning where the model is trained on a labelled data set, allowing the AI to learn to predict outcomes based on input data.

Next question - What technology underlies Bitcoin and has applications in AI for secure transactions? Yes, Hock Chuan.

[Hock Chuan] Blockchain.

[Alica] Yes, correct. Blockchain tech is used for creating secure immutable records, beneficial in AI applications that require secure data sharing like in healthcare.

Okay, last question, guys. What is commonly used AI tech for recognising human faces in photos? Yes, Hock Chuan.

[Hock Chuan] Quite obvious, right? Facial recognition.

[Alica] Okay, good. It uses AI to identify or verify a person's identity using their face, (and is) commonly used in things like smartphones as well. Put your tile. Yay!

Alright, now we're on round two with Nicole and Hock Chuan.

[Nicole] Try our best.

[Hock Chuan] Okay, all the best, guys. Okay, first question - Which AI capability involves understanding human language as it is spoken or written?

[Nicole] Me first. Natural language processing.

[Alica] Correct. NLP allows machines to understand and interpret human language, enabling applications like chatbots and virtual assistants.

Second question - Which type of AI is capable of more than just specific tasks, and can understand and reason about the world generally? One, two, three. Okay, I go with Hock Chuan.

[Hock Chuan] Okay, okay. Thanks, thanks. Is it artificial general intelligence?

[Alica] Yes. AGI refers to a type of AI that has cognitive abilities across a broad range of tasks akin to human intelligence. Very good.

Okay, question three. Which technology is used in AI models to predict outcomes based on historical data? Nicole.

[Nicole] Okay, machine learning.

[Alica] Yes. Okay, machine learning is a subset of AI that trains a machine how to learn and make predictions or decisions by analysing data.

Okay, question four - What kind of AI is used to detect and identify objects in images uploaded on social media platforms? Hock Chuan.

[Hock Chuan] Image recognition AI?

[Alica] Yes, correct. Image recognition AI is used extensively... **[Hock Chuan]** Block.

[Nicole] We'll be here till tomorrow, guys.

[Alica] It's used extensively in social media platforms to detect and identify objects in images which helps in automatic tagging and content filtering.

Okay, number five - What is the AI term used to describe the process of teaching computers to make decisions from data? Yes, Hock Chuan. Not sure, but still try.

[Hock Chuan] Learning?

[Alica] The correct answer is learning here. Okay, the process where computers learn from data and make decisions based on the data they process is commonly referred to as machine learning.

[Hock Chuan] Okay, should I win again?

[Alica] Yes! Okay, so congratulations, Hock Chuan. Two-time champion across both episodes. Definitely our reigning AI king here right now. Let's head back to our discussions and learn a bit more from everybody as well.

(Transition music)

[Alica] So we were talking about the adoption of AI in the Singapore government. So I'm curious to know, did you guys face any challenges in getting public officers to adopt AI in their day-to-day work?

[Kenneth] I think one observation that I have is that there are still public officers who have not even used any of the GenAI tools before. This is probably due to their lack of awareness of its potential and some of the use cases. One common perception could be that these technologies could be complex and having to navigate tech jargons can be quite daunting to them as well. They're also fears about how AI might displace jobs that currently us as humans hold today. While these views are very real and understandable, we need to help them alleviate these concerns and we do so through making fun initiatives like the DAT* that we shared in the previous episode as well. (**Data and AI Tournament*)

[Hock Chuan] Yeah, when we work with the different hackathon teams, one of the concerns that was brought up was data security. To address this, we have put in place rigorous measures to protect the data when we deal with LLM in collaboration with the cloud service providers like Azure and AWS. Our agreement with them is built on strict protocol. They are designed to prevent data logging, and to ensure that the data is not utilised for training their AI models. One of the focus areas for our AI practise group is also on responsible AI practises. They will introduce tools that will help public officers develop, evaluate, deploy, and monitor AI systems in a safe, trustworthy and ethical manner.

[Nicole] I think for me, I feel the most important part of all of this is culture building. I think it applies to any organisation, not just governments. By creating an innovative culture, you really encourage your staff to be willing to try new things. They're excited to try, excited even to fail, and it's okay, because this trait is important. Technology will continue to change, and it's not about having the skills or the knowledge, but a mindset of constantly being willing to improve.

[Alica] Yeah, I agree that culture plays an important role. If we have the right mindset, are willing to keep learning, then even with all these new developments in technology, we'll still be able to adapt because we can still continue to learn.

Okay, and to end off this episode, where do you guys see the future of AI?

[Kenneth] I think no one can really say what the future of AI will be. But one thing is for sure - AI has and will continue to change the way we work and the way we deliver public services more effectively.

[Hock Chuan] One of the trends we see, is how do we make AI available for everyone through open sourcing, so that people will be able to train and fine-tune their model for their own use cases. So when it comes to government adoption, we also need to embrace AI cautiously. Governments have to consider the issue of data security, sovereignty, carefully. One of the advantages of open source AI is that you're able to run the model where you want to run it and have the assurance that the data will stay within the country, and you'll be able to host it locally in Singapore.

[Nicole] That's right. So while we wait for the logistics of deploying AI safely, we should continue to upskill public service officers in AI-related fields. So this way, we can ensure that when AI becomes ready for full-scale implementation, officers are not only familiar with it, but fully equipped to run it. So rather than waiting for the technology to mature, we should begin preparing for it right now.

[Alica] Well said, guys. Thank you for sharing so many great insights today and it's super exciting what the future holds for us. Maybe soon we'll have our very own Jarvis.

[Kenneth] I wouldn't mind that!

[Alica] Okay, so thank you, Hock Chuan, Nicole and Kenneth for joining us today. If you're keen to find out more about what we have discussed, you can check out our site at <https://go.gov.sg/GovtechDecoded>.

[Kenneth] And if you enjoyed this episode, do support us by sharing it with others and on social media. You can also connect with us on our LinkedIn pages and follow GovTech on our social media platforms at <https://go.gov.sg/ConnectWithGovtech>. We will leave the links in the description.

[Alica] Thanks for joining us and we'll catch you in the next GovTech Decoded. Bye!

(Outro music)