GOVTECH DECODED
EPISODE 7
UNLOCKING THE POWER OF DATA IN AN ORGANISATION

Host: Alicia Lee and Andre Ng
Guests: Ghim Eng YAP and James Teo
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[Ghim Eng] When something is free of charge, it just means that you are the product.

(Intro music)

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

[Andre] I'm GovTechie Andre, and we're your hosts for today's episode.

[Alicia] Today, we'll continue to talk about data and AI with Andre and two new guests.

[Ghim Eng] Hi everyone, I'm Ghim Eng. I lead the Data Practice as well as the Data Products team in GovTech.

[James] So I'm James. I'm a Data Engineer in the Data Practice team. I've been here for about two years, so it's a short time compared to everyone here. What I do is to build central tools for everyone to use in the Whole of Government.

[Alicia] We've actually covered quite a bit about data and AI in our recent episode, from the GenAI boom to prompt engineering. So maybe taking a step back, do you know when data and AI first came about?

[James] Yeah, so AI actually first got popular back in the 1950s. It was when Alan Turing published a book called The Machinery and Intelligence, which proposed a test on how we can define machine intelligence. It's called The Imitation Game.

[Ghim Eng] Some of you may know it by the name of the Turing test instead. Actually, it's very simple. It's just designed to answer one very fundamental question - Can machines even think? Back then, Alan Turing and the scientists believed that machines would never be able to attain human intelligence. So they compromised. They said, can a machine trick you to the point that it can't distinguish it from a human chatting with you over maybe an X interface, and that is what we are talking about with the Turing test.

You all still remember when ChatGPT was introduced to the world? When I chatted with ChatGPT, I could not even tell that it's not some human sitting in America trying

to answer my questions on the spot. I was too amazed, so I immediately ran to my wife in the living room and told her, 'Hey, I got this new thing'. She always asks me what I do, right, this thing will show you. It's not a human, by the way. Yeah, and she was blown away! Since then, we have been planning all our holidays using ChatGPT.

[Andre] These days, you know, this AI thing is everywhere. I recently bought a rice cooker and it claims to have AI also. I don't know how it works, frankly, but you know, the rice turned out fine.

[Alicia] Well, it sounds like AI has been around for like decades. So why did it suddenly get so popular overnight?

[Ghim Eng] We have been introduced to the concept of the internet, and we have been doing social networks for a long time, right? It's only until recently where people have found a way to get all this data into one place and then to learn on it.

To learn on the data, you need two things. You need the data, obviously, and then you need the infrastructure, you need the computing powers. In recent years, the rise of GPUs, right now it should be a common term to everybody. We used to know CPUs, everybody knows CPUs, RAM, but GPUs is like a common terminology now for the industry. So until recently, researchers were not able to train on this huge amount of data because they don't have the infra. But this has changed overnight. Of course, not forgetting what I mentioned just now, the intuitiveness of the ChatGPT interface. The fact that I can whip out a phone and talk to some AI that is like hosted millions of miles away.

That said, power is in the hands of everybody overnight. And the rest is really history. So for the first time, AI, instead of being a scientist tool, has become a power tool in the hands of the common man.

[James] So from my experience, when I shared this with my other friends and family who are non-technical, they were able to just use it with no problems. This is very different from sharing other types of technical tools, where some people will not actually get it. But for ChatGPT, everyone got it, and I think the simplicity helped ChatGPT to reach a million users within just five days, just because it's so simple to use. This rapid adoption actually caught the attention of a lot of different people and businesses, and that's why massive financial investments started pouring into the AI space. I think this is what has driven the incredible growth that we are seeing today on AI.

[Andre] That brings me to my next question. There is a prediction that 70% of the world's government will use AI to enhance their administrative decisions by 2026. Being the head of the data practice, what role do you think data and AI will play for the Singapore government?

[Ghim Eng] Glad you asked. I'm very happy to share about this. So I haven't met 100% of those governments, but for those that I've met 100% actually said yes, they are using AI. So anecdotally, I can say that 100% of whom I've met, the world leaders and the tech leaders of the government, they have recognised the

importance of having the right data and having the right AI terminology in place for them.

So for me, I'm more down to earth. So as public officers, what do we do every day? We help citizens to make the right decisions, and our decisions can have a huge impact, our decisions can make a difference to whether somebody gets the grant. So it's very important that we have the right data at the right time, and we use it in the right way to make the right decisions. Now, data is the fundamental for which AI models are being trained. So the right quality of this data is very important also, so that we can automate some of this complicated decision process by training the AI models and making them augment our ability to make decisions quickly.

[James] I think data is an important enabler for decision-making, like you said.

[Ghim Eng] Yeah, indeed…and it may sound easy in hindsight. Everything is very easy in hindsight, but actually, it's not that easy to achieve. As I explained just now, the right stars have to align. We need to have all the things in place. Now that we have democratised AI to the hands of the common man, innovation is flourishing. So when people are excited, we also need to have the data infrastructure like I mentioned just now. We need to be able to use these AI tools in a reliable and secure manner.

So this may seem like a long time ago, but when COVID-19 struck Singapore, during the nationwide contact tracing, it was only because we had the right data engineering and infrastructure in place that we could connect all our agencies and businesses and act swiftly to enable livelihoods to go on.

[James] Whenever we think about data and AI, we always think about the cool use cases such as fraud or detecting scams. But all these use cases are not possible without the right people and the right data, in the right place. And in fact, with most data and AI use cases, the majority of the time is actually educating people and finding the right people for this and also settling the data infrastructure behind the scenes before we even start training the AI model.

[Alicia] So what are some examples of how data and AI are used in the government? Can you shed some light on this?

[James] In my team, we use some of the central AI tools such as Pair Chat, which is the ChatGPT for government offices, and they use it for drafting emails, budget paper, and et cetera. So that's the most basic level of how we use productivity tools within the government.

Apart from simple productivity tools, we also build custom tools, and my team specifically designs and builds all these custom data and AI tools for our agencies and also our other GovTech teams. We will talk to our developers and users to find out what problems they are facing. But our goal for using these tools with everyone is that everyone gets better at managing and protecting and using their data for public good. In fact, I think a more appropriate role for me is like the data enabler rather than just a normal data scientist or data engineer. We just work very closely with agencies to enable their data and AI use cases.

[Alicia] That's very impressive. Can you share an example with our audience of how you have enabled these other agencies?

[James] Of course, of course. I can share more about my work in [MAESTRO](#). So MAESTRO is a central product that provides MLOps capabilities for the whole of Government. This capability means that agencies can do faster model retraining and also deploy endpoints to other agency networks. We help to settle the nitty gritty things behind the scenes like security and other stuff, so that you yourself when you're using this platform, can just focus on building your own AI use cases without worrying about other things.

One of our customers is actually MOM. [The Ministry of Manpower actually deployed this application called MOM Sensemaker](#), and this Sensemaker is actually used to extract insights from large volumes of text. This is very useful for MOM in their work because they need to manage employment. You can imagine they need to read through large amounts of documents about employment-related things and then use this to feedback their policymaking. So Sensemaker helps with that, and SenseMaker is estimated to save over 2,000 man-hours in over just three months, and improved the user's ability to extract insights by almost 60%. So in addition to the technical MLOps capabilities, we also engage agencies directly and we advise them on how to do best practice for their own AI use cases and share our existing codebase to help them improve or help them productionise their models even faster. And we make sure that agencies have all the help that they need to navigate the complex world of AI.

So for any public officers that are listening, do reach out to us if you are keen on productionising your data and AI use cases.

[Andre] Put his email address.

[Ghim Eng] A major part of our mission here in the centre of government, is to help the wider agencies leverage this cool new technology to improve the services to their citizens and businesses. Most importantly, we have to do it without compromising security. As adoption of data and AI increases across the government, my team also looks at ensuring that we scale this responsibility.

[Andre] Oh, so government services like Singpass and Healthy365?

[Ghim Eng] Yeah, those are examples. I can share more concrete examples that we are doing that are actually helping the whole of government in doing this, and scaling. For example, we have a Whole of Government secured data sharing platform, and this is not just limited to government agencies sharing data to one another. It's actually for the public and private sectors to share data securely and reliably. We play on the word trust, so the platform name is called [enTRUST](#). So we have this secured data exchange platform that enables the public and private sector to come together in a place that guarantees that it (the data) will be used for the right purpose, by the right people. A lot of interesting research has blossomed because of this, some of which are even trying to find cures for cancers, for example. So as you can see, by combining the data from the public private sector, this is the kind of work

that actually makes me really excited and really inspired to continue working in this data and AI field.

Last but not least, I want to add on that our team takes data privacy very seriously. So we have a dedicated product called [CLOAK](#). Cloak, as in the thing that you veil for yourself. We choose the name because we want it to convey the sense that we need to protect personal data, and it needs to be something that we think about before we use the data or share the data. We need to protect it so that when we do the sharing, for example, through the enTRUST platform, we are sure that we're not leaking information unnecessarily.

[Andre] It's cool to see Singaporeans using AI to improve work and services. And in our first episode, we actually spoke about using AI in cybersecurity as well.

[Alicia] In our episode on TechStacks, we also touched on how AI is changing software development and how people code. But despite the rapid adoption of AI across sectors, there are people who are still skeptical and wary about AI. Would you tell them not to be worried or do you have any concerns as well?

[James] Yeah, I would actually tell them they are absolutely right to be skeptical. It's only natural, right, It's only natural for people to be wary of things they do not understand. AI, just like any other tool, has the inherent danger that it can be used to hurt either yourself or even other people if you do not know how to use it properly. But in today's world where data and AI is everywhere and it's so integrated in everyone's lives, it's something that you can't really avoid anymore. Unless you move to a deserted island.

[Alicia] Even then, you still got internet access.

[James] GPS still can see you, right.

But yeah, to mitigate this risk, I think what we need to do is to actually improve our education and awareness of AI, so that we can all be cognisant of what AI can really do, and then after that, we can fully leverage AI's full potential.

[Ghim Eng] Yeah, I agree, James. So I myself have two young kids, and I worry often about their online activities. Instead of trying to change behaviour, I'm trying to make the world safer for them. So they are already exposed to AI, all the technology you spoke about just now. Maybe less so of the AI rice cooker, but maybe more of the ChatGPT type. Because schools are encouraging them to use those for presentations, to write their reports, their essays. It's a fact of life, and it actually makes them better students. So I have no complaints about that.

But in our line as public officers, I would think that we have the responsibility to our citizens to deal with a multitude of complex factors and technical concerns. In such a way this can actually impact lives, if you're not careful. So while I agree that AI is exciting, it's a very strong enabler of innovations, I will also caution that AI is not a silver bullet to all kinds of problems. When we are dealing with human life and human beings like you and me, we really need that human touch in the really important decisions. That is why I often refer to AI as augmented intelligence rather

than the more sexy term artificial intelligence. I also offer one final precaution, if I may. So there is actually a theory called no free lunch, there's no free lunch in this world. When we use ChatGPT, when we use supposedly free services like Facebook, Instagram, TikTok, even this Xiaohongshu, all these things, we may think that it's all FOC, it's free of charge. But actually when something is free of charge, it just means that you are the product, you. They are learning as we interact with the tools how to target us better, more precisely, and to target the people around us, our social network more precisely.

 [James] My personal tip for listeners is that you should never ever send your personal data to these chat services and always make use of the principle of least privilege. Only share data when you really need to. And in the most secure case even, you can host your own open source AI model on your own devices instead of using other people's online chat services. So that your data remains on your device rather than someone else's service.

[Andre] What about ethical considerations?

[Ghim Eng] For the agencies that we work with, they always have a common question to us – Whether the AI models are fair, how do we know that, how do we guarantee that the model predictions are correct and they are not actually hallucinating?

So we have a team in GovTech that looks at precisely this, the guardrails for AI deployment. We have some products, still in the works, specifically designed to detect toxicity in Singapore's context. You can imagine that most of the LLMs in the world are trained on English corpus. But you and me, we grew up here, we speak Singlish, right? All the lah, the lor. Then it confuses the models a lot, and malicious players can use this as a loophole to trick the LLM to inject malicious or toxic replies. Imagine this happens when you try to use a government chatbot. It's really unthinkable. Hence we have these teams that their full-time job is to look into this problem and see whether we can mitigate the risk of doing so.

[Alicia] I'm really glad that we're committed to using AI responsibly, like just hearing from the both of you. However, the future of AI is still unfolding and we could see it becoming more integrated in our daily lives. One last question before we end. How do you see AI shaping the future?

[Ghim Eng] There's something fresh in my mind, right? Just at the end of last year (2024), I was the judge of the Prompt Royale finale. Various activities were on the stage ongoing, the contestant, the three of them were on stage doing live prompting…but the tasks they are given are non-trivial. They include things like build a chatbot in eight minutes, and building a website in 10 minutes.

But if you compare it to the previous year's Prompt Royale (in 2023), the questions and tasks (in 2023) were much simpler. Why are we able to do it in a matter of a year to increase the complexity of the tasks and achieve it on the stage? It's because the quality of the tool has improved. So as we continue the trajectory, I actually do not know where we will land at the end of this year.

[James] Over the past few years, or even just months or weeks, we have seen very, very big improvements to how we use AI tools. I myself have been in projects where we think that, you know, we are using very advanced tools such as Retrieval Augmented Generation. Retrieval Augmented Generation has just been out for maybe like the last year or so, but even now, we are already looking at the new type of Retrieval Rugmented Generation using new retrieval methods, such as Knowledge Graph.

[Ghim Eng] Every other week, we see new models that simply blow the previous leaders out of the water. But one thing for sure is that AI will continue to be an important tool as we strive to make our lives better. I'm hopeful that along the way, someone, it may be us, it may be someone else in the world, we will find the right way to control this new technology and make it serve us well.

[Andre] It's been great chatting with you guys. Thank you, Ghim Eng. Thank you, James. We spoke about the fundamental use of AI to boost productivity in the Singapore government, and really, what resonated with me the most was what James shared. It is okay to be skeptical about AI, but instead of being scared, maybe we should aim to understand tech a little bit better. Only then, ultimately, can we unleash the full capabilities of AI.

[Alicia] Well, thanks Ghim Eng and James for your time today. And it's great to see how the Singapore government is leveraging AI both as a general purpose tool as well as making it a national strategic priority.

[Andre] We have come to the end of this episode. If you are keen to find out more about what we've just discussed, you can check out our website at https://go.gov.sg/GovtechDecoded.

[Alicia] If you enjoyed this episode, do support us by sharing it with others and on social media. If you enjoyed the GovTech Decoded series, let us know if you'd like a second season. You can also connect with our speakers on their LinkedIn pages and follow GovTech on our social media platforms at https://go.gov.sg/ConnectWithGovtech. We'll leave the links in the description. I'm Alicia.

[Andre] And I'm Andre. And we'll catch you soon.

(Outro music)