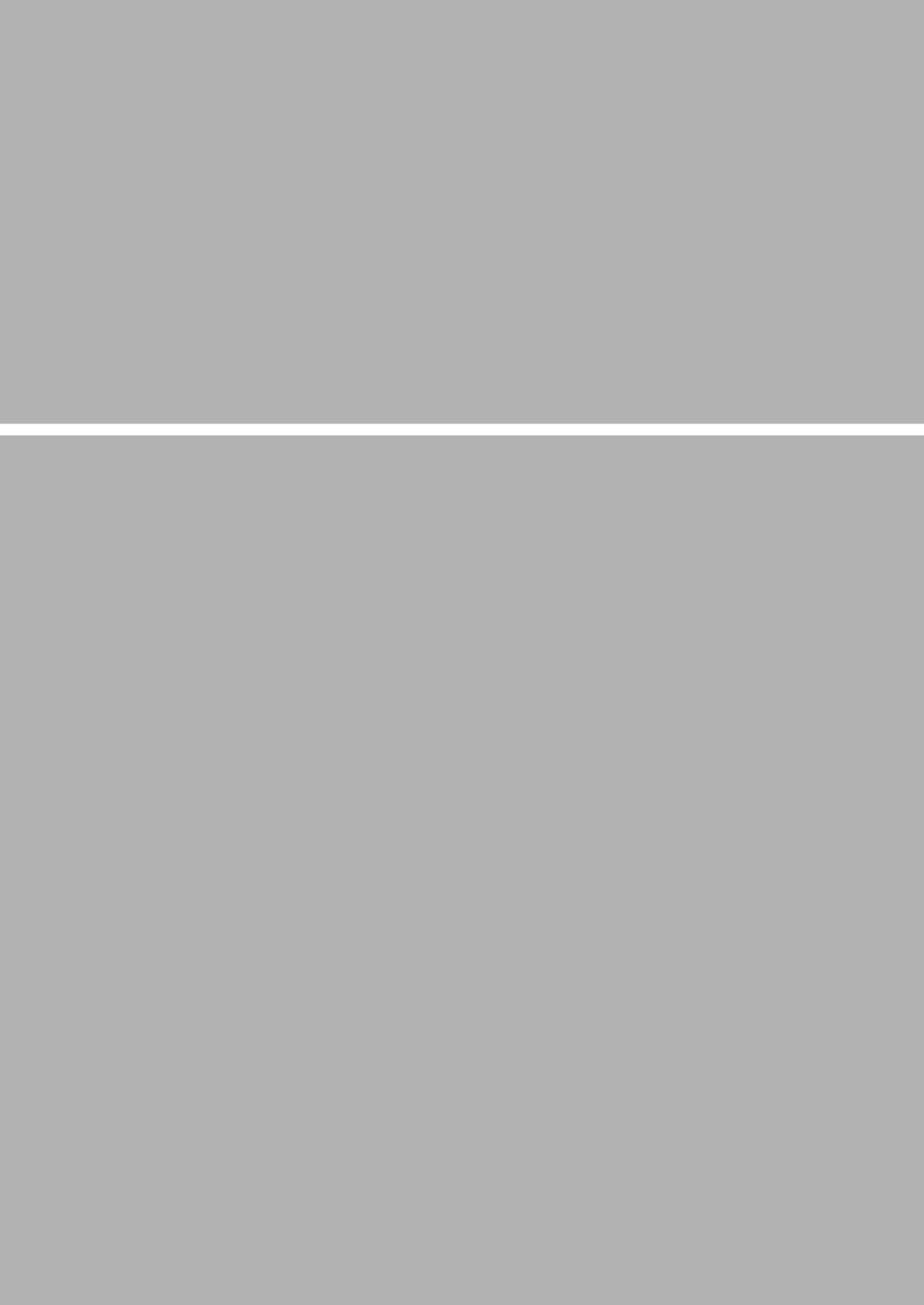




Introduction

One Day in AI Singapore

ONE DAY IN AI SINGAPORE

Sat on a zoom call at an AI training session run by AI Singapore (henceforth AISG), the government owned company tasked with educating the public on AI, I listened as they described a day in the life of AI. “Imagine,” they prompted, “you wake up in the morning, and you say hey Siri, put on my morning playlist. Then you head to work checking the weather as you do, which Siri tells you looks fine, you leave the umbrella. At lunch you use Google Translate’s image function to translate the menu at the hawker centre¹. After a long day, you arrive home, your smart fridge has ordered some groceries as it noticed you were running low. You head to the couch and open a streaming app, which suggests the latest shows you might like based on your watching habits. You head to bed, hardly having noticed the AI which followed you through each step.” This description fits neatly with the definition of AI which the Singaporean Government proposes, “a computer program that can sense, reason, act and adapt.” The AI in this imagined day, listens to your voice, it feels the weather, sees the menu, and adapts to your preferences for food and entertainment.

Such descriptions of everyday AI have become almost as commonplace as the AI interactions they describe. In Elliott’s (2019) “Culture of AI”, he opens with a similar description of a hypothetical day in AI. However, these AI days refer only to the visible AI which many people voluntarily engage with on a daily basis. This in my view, is only the tip of the AI iceberg, especially in Smart Nation Singapore where AI enabled technologies abound. The other AI, below the water line, is the AI of governance which this thesis is primarily concerned with. These are AI systems which see Singaporeans as they walk through the streets, that store people’s personal information, and which inform and sometimes even write policy. In particular, I am interested in how such systems are brought to bear in the governance of Singapore’s Muslim minority. These systems are also inside the mosque, tracking the number of congregants, translating the service, and perhaps soon informing religious rulings. In other words, these systems shape the everyday in Singapore, particularly for some of its more marginal communities, and in so doing construct their future.

¹ A hawker centre is a food court common in Singapore. The centres are owned by the government with individual vendors owning stalls within the centre. I assume this use of AI for translation was aimed at the several lifestyle migrants (expats) in the zoom call including myself.

So, at the risk of engaging in cliché, I want to propose a different day in AI, one in which AI is ever present but slightly less than visible. In a sense, therefore, these are snapshots of when the AI governance system of Singapore asserts itself, becoming, if only for a moment visible.

Arriving at Singapore's terminal 3, I head towards the immigration expecting a long wait². Instead, I am greeted by a row of automated gates. I present my passport and my face is scanned. This is cross referenced with my biometrics, iris, and fingerprint scans, which I provided on my first visit to Singapore. Simultaneously, the system compares this information with the data on my e-arrival card which I filled out online yesterday. There is not a human immigration officer in sight. If I were Singaporean, I would not have even needed to provide my passport, as the ICA's (Immigration and Checkpoint Authority) new passport-less clearance system uses AI facial recognition to verify the identity of permanent Singaporean residents. That facial scan data is likely cross-referenced with each person's identity card which lists not only their name, date of birth and nationality, but also their race, as one of the four racial categories of the nation, Chinese, Malay, Indian and Other³. At the moment of arrival in Singapore, AI systems are categorising and sorting people. From there, the data dips below the water line becoming invisible again. What happens to those facial scans is unclear.

From there I head toward the MRT (Mass Rapid Transport) station which is handily located in the basement of the airport. As I do I pass by a MATAR (Multi-purpose All Terrain Autonomous Robot police) robot. First deployed in 2019, these robots, equipped with 360-degree cameras, sensors, and a speaker for shouting orders, are named for the Malay word for eye (mata) which is also colloquially used in Singapore to refer to police (mata-mata⁴). Indeed, these robots live up to their name, given their placement in Changi airport to assert a police presence. Given that they are equipped with sensors and cameras, it is likely that they are using AI assisted facial recognition software. Perhaps using the data provided by

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- 2 This 'day' is a composite of various days experienced across my fieldwork in which I caught glimpses of AI. However, I would argue that it is entirely possible to have a day in which all these instances of AI are experienced.
 - 3 Race as we will go on to explore is often conflated with religion, therefore, being Malay on an identity card is often conflated with being Muslim. According to 2020 census data, a hair under 99% of Singaporean Malays are Muslim (Department of Statistics Singapore 2020). However, 23.8% of Singaporean Indians identify as Muslim as well. A significant percentage of the Singaporean Muslim community are therefore non-Malay.
 - 4 In Indonesia mata-mata translates to something like spy, which speaks both to the intentions of these machines, and to the strained relationship between the Singaporean State, and the Muslim community.

immigration checkpoints. During the pandemic, these MATAR robots were mostly deployed around migrant worker dormitories in order to enforce social distancing guidelines. Given the predominance of their use in that context, and the illusion of their name, these robots are perceived by some of my interlocutors as roving enforcers of state oversight, predominantly used to keep minority groups under watch⁵. MATAR, the eyes of the state able to move anywhere.



Figure 1–MATAR Robot on patrol.

As I descend the escalators towards the MRT, I see a ring of cameras facing in all directions. I am reminded of the many times I approached MRT stations with my friends and they hesitated. On one occasion Iskandar, who we will meet repeatedly throughout this thesis, asked to stop our interview, and put away the microphone before we approached an MRT station which we were not even entering. As I packed my things away, he said, “You see how the body becomes really reflexive of this because MRTs are known to be very surveilled.” These cameras, which abound around MRT stations, are the most visible part of the nationwide, Smart Nation sensor platform. Thousands of cameras and sensors which track everything from

5 What is particularly telling about this, is that whilst Singapore enjoyed low covid rates, thanks in part to technological intervention, migrant workers felt the brunt of the pandemic. Confined to dormitories and patrolled by MATAR, Migrant workers made up 88% of nationally confirmed cases of Covid-19 (Koh 2020). Just one of many ways Singaporean minorities feel the burden of the countries Smart Nation ambitions.

crime rates to weather conditions have been installed across Singapore since late 2014 (Kong and Woods 2018, 687). The data captured by these technologies is then sent to the government's tech office where AI is used to parse and sort it for policy insights. I pass beneath the cameras wondering whether this one is using facial recognition, and which government spreadsheet my data will end up on.



Figure 2– Mosque translation

I ride the MRT as far as Bugis station, then impulsively decide to alight. I check my watch; it is a bit before 1pm. If I am quick, I can grab a pastry at Mother Dough and still make it in time to listen to the Azan at Sultan Mosque, the only mosque in Singapore which is permitted to project the call to prayer outside its walls⁶. Having retrieved my lunch from the bakery I took a seat outside the mosque within view of the big screen translating the Friday sermon from Malay to English in real time. I wondered to myself whether this task is being done by hand, or if the transcription and translation are being managed by AI software. At that moment, a few errors appeared in the next sentence as the Imam spoke, but were they made by a harried Mosque volunteer, or by machine misinterpretation?

My thoughts turned to the sermon itself, it is well known that these speeches are written centrally by MUIS, the Islamic religious authority in Singapore, and then distributed across the 69 mosques which the statutory

6 Sultan Mosque is permitted to project the call to prayer because it is located in Kampong Glam, the neighbourhood which was the traditional seat of the Malay royal family in Singapore. A young man in Sultan Mosque explained to me that because the land under Sultan Mosque was still owned by Malay royalty it was exempted from laws which prevented other mosques from playing the Azan over loudspeakers.

board governs⁷. But had the MUIS staffer who wrote this week's sermon used ChatGPT? Or perhaps just used the LLM (Large Language Model) to check their grammar? I thought of my interlocutor Husain, a writer and nurse, who told me that he had long suspected that these sermons were now being written, at least in part, using generative AI. Another interlocutor Ahmed, a coder who runs a Muslim tech mutual aid group, told me that he was certain ChatGPT was behind these sermons. Although in his view it hardly mattered, they came out bland either way. On that Friday afternoon, I wondered if I was watching an AI transcribe the words of another AI within the mosque, with a human being intervening merely to communicate between the two.

The sermon ends and the congregation streams out onto Muscat Street. As they do, I recognise a young man who volunteered in the mosque explaining Islam to tourists. I wave hello and we walk together towards my bus. Thinking of the possible AI sermon, I ask him what technology he uses in his daily religious practice. He shows me the MuslimSG app, an app created and maintained by MUIS but tells me that he only used it for prayer times and Qibla direction. The articles, he tells me, are a bit boring. For him, if he wanted to learn more on a topic, he watches Islamic scholars from Indonesia and Malaysia on YouTube. I wonder how the YouTube algorithm, another kind of AI, is shaping his Islamic learning.

We reach Bugis train station, where I get the bus, and we part ways. As I wait for the bus, I see a man walking around the entrance to the MRT with a large plasma screen strapped to his back. The screen advertises a Skills Challenge @libraries course which offers an Artificial Intelligence skills curriculum. These sessions I had learned were offered as part of SkillsFuture, a government subsidised education programme for lifelong learning. The slogan of SkillsFuture is "When jobs evolve new skills are needed. Secure your future by acquiring the right skills." This scheme is part of a wider emphasis in Singapore that all citizens must be upskilling in order to keep up with the development of new technologies. There is no point in a Smart Nation without Smart Citizens working within it. And working is the operative word in neoliberal Singapore. As is often repeated in Singapore, AI will not take your job, but someone using AI might.

7 It is widely speculated that these sermons are written in conjunction with the Minister of Muslim Affairs, who add government talking points. For example, Ahmed told me that this frequently happened during the pandemic where sermons repeated government talking points. This is hardly surprising given that MUIS is part of the Singaporean state. However, it adds to the general perception that these sermons do not come from the heart of the Imam and are generally formulaic. See chapter three for further discussion of this trend.



Figure 3– AI skills training advert.

I take out my phone to check Instagram while I wait for the bus, using some of the Singtel⁸ provided internet which I am accessing with a local sim. As I tap through my friends' stories, I am delivered an ad from the Singapore government which reads, "Smart Citizens don't gatekeep." An advert which seems to encourage open data sharing with the government. Then a few taps later I got an advert for a story on themuslimvibe⁹ about a Quran app. In the comments there was a passionate debate going on, comments ranged from excitement to horror, while some extolled the virtues of reading the original texts and gathering with others to discuss them, others speculated about the possibilities of this new technology, "If this continues now we can [k]now what [Prophet] Mohammed actually did on [sic] his life but the real truth of it." With my bus approaching I take some quick screenshots and board the bus.

The bus drives through the downtown past Marina Bay 1, an anonymous office building a stone's throw from the city's mascot, the Merlion where tourists queue to have a photograph. However, this is not just any office

8 Singtel is a government owned telecom company, and yet another way for the state to Hoover up the data of citizens and visitors of the country. Singtel. 2025. "Share Information" Accessed: 1 December 2025.

9 Themuslimvibe is a media platform started by British Muslim entrepreneurs Salim Kassam and Haseeb Moosa with the aim of reclaiming the narrative around Islam. The platform was popular with several of my interlocutors.

building, but one of 118¹⁰ data centres all around Singapore. This one, owned by Microsoft, is more of a rarity given its location right by Marina Bay, but regardless of where you are in Singapore, you are never far from a data centre. Though you could just as easily pass through the entire city without ever noticing one given their anonymous appearance. I wonder as we pass by how much of my personal data from the cameras and sensors I already passed today is rattling around inside that building.

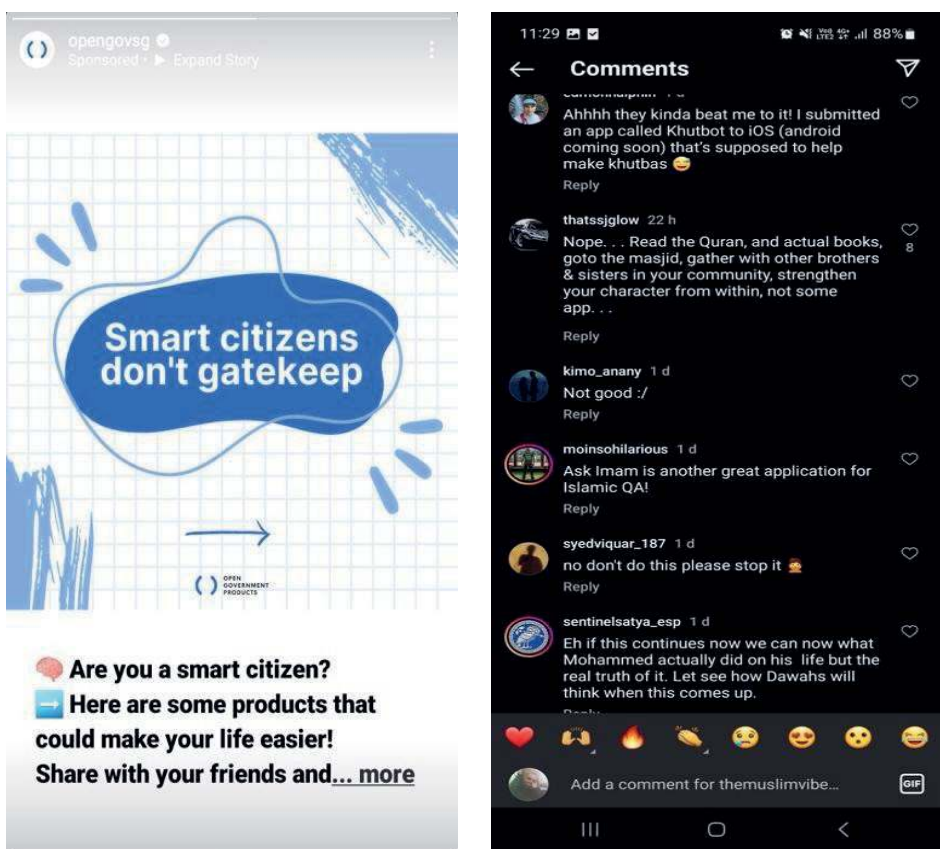


Figure 4– Government Smart Citizen advert, Comments from themuslimvibe on Instagram

10 This is an estimate, in many presentations I have said that there are over 70 data centres in Singapore, but because many are protected government buildings which are not officially listed online it is hard to give a precise number. Some data centre mapping websites now estimate 122, but the number could be even higher. This data is drawn from datacentres.com a data centre directory for entrepreneurs looking for data centre services. Datacenters. 2025. "Singapore Data Center locations" Accessed: 1 December 2025.

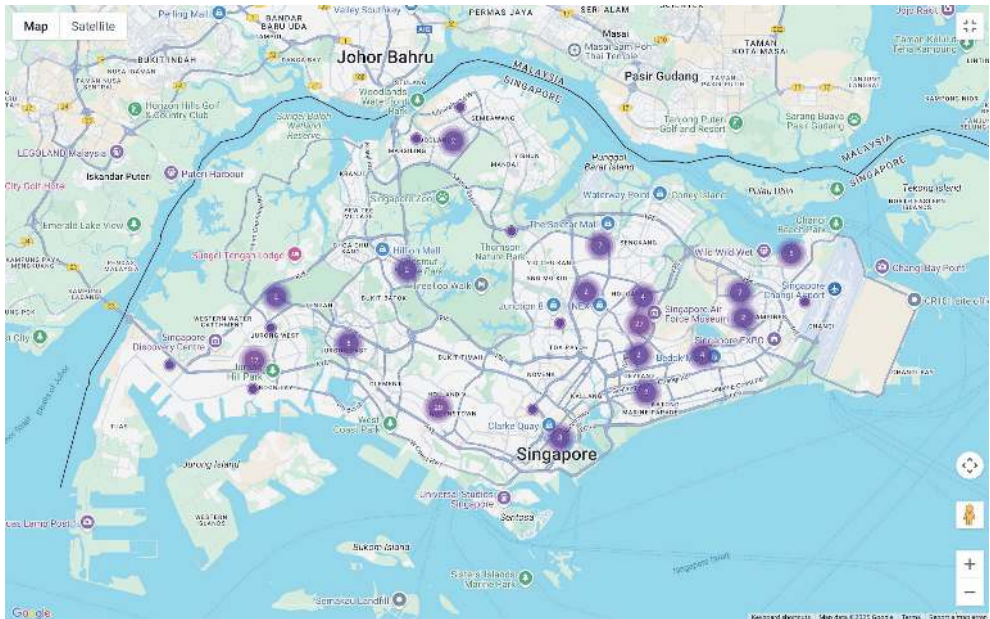


Figure 5– Map of Singapore data centres. Source: <https://www.datacenters.com/locations/singapore>

As the bus approaches my stop, I get out my Winnie the Pooh MRT card¹¹ and head to the doors. Posted there is a sign reminding passengers that they must tap in and out with their cards as is standard on most public transport. However, these signs do not only request tapping to guarantee proper payment, but also to make sure that the data tracking of my journey is accurate. A feature of public transit systems now common to most cities. I tap out, ensuring that the Singaporean government knows exactly how I travelled from the airport to my hostel, an address I gave them on my e-arrival card. I step out of the air-conditioned bus into the humidity of Singapore beside Maxwell Hawker centre. However, I decide in the moment that I would rather have Xiao long bao from the Chinatown food centre. I cross the street and cut through a back road where I pass by one last reminder of the AI future in Singapore. On the side of one of the shops in this back alley, someone has pasted a picture of two AI generated skyscrapers which curve in architecturally impossible ways. Though as I look up at the skyline dominated by strangely shaped skyscrapers, I wonder if these images are the future at all, and not just a regurgitation of the present.

11 A public transport card with a picture of Winnie the Pooh on it.

In Singapore, AI technologies are so pervasive as to become quotidian even when they are visible. Despite reconstructing a day in which my data was extracted at least three times, where I listened to a sermon perhaps composed and transcribed by AI, and where AI was advertised to me twice, I told my supervisors that AI was not really visible on an everyday basis in Singapore. All these AI infrastructures simply blur into the background. Even to me, when it is my literal job to notice them. This opaque AI is further enhanced by the fact that much AI is in some cases truly invisible, composed of wires underground, software installed in the computers of civil servants, and hidden within anonymous grey buildings. What makes my day in AI distinct from those of Elliott (2019) and AI Singapore is that at no point did I choose to engage with AI. It is this interaction between state AIs and Singaporean Muslims which I am most interested in. A relationship in which Muslims do not choose to be, but remain, embroiled with the socio-technical systems of AI. The core question of this thesis then is, “What futures are imagined by Muslims in a Singapore dominated by AI enabled technologies?” Consequently, this is not a study of Islamic AI but rather an exploration of how Muslims in Singapore experience being governed by AI systems. Perhaps then it makes most sense to begin by explaining how my interlocutors define the AI which persistently intervenes in their daily life.

REGURGITATION: DEFINING AI IN SMART CITY SINGAPORE

There is an ongoing problem with defining AI. It is a blurry term which can cover all manner of sins, from algorithms, which have existed for some time, to machine learning, and generative AI which are relative newcomers. Early in this PhD project our team even had a lengthy debate about whether a vending machine could be considered AI¹². Consequently, I expected then that my interlocutors’ definitions of AI would vary widely. Yet, in all my interviews, my interlocutors were remarkably consistent despite coming from diverse backgrounds.

Whether I was meeting with Ustaz, tech workers, journalists, artists, or students, they consistently argued for AI as a regurgitation of its data set. At a restaurant, below an apartment building in Singapore’s heartlands an architect and member of several MUIS boards, explained it like this,

12 I maintain that a vending machine is an AI because it artificially replicates the labour of human beings, and because it works via a cybernetic feedback loop where data entered by a human user effects the machines outputs.

“Right now, AI is a very linear tool, whereby you enter the data, and it has a sandbox where all the information has already been put to teach the computer how to do what it needs to do, then you get the output.”

Over kopi in Kampong glam the artist bani haykal, who we will meet again later, put it more bluntly, “These algorithms are not things that are meant to communicate but to regurgitate information.” Meanwhile, during an interview in mall on Orchard Road, a journalist told me “AI will not have material to synthesize anything interesting because it is a loop, if you don’t put in anything new, then how does anything new come out?” Linear, regurgitation, a loop, this was how my interlocutors defined AI. It is from these comments that I draw the title of this thesis, and the main conceptual framing of AI as a regurgitation machine which reproduces existing ideas.

In some ways, this represents the success of Singapore’s public education on AI. AI is widely and realistically understood within the government paradigm. While this is undoubtedly true, these definitions of AI vary widely from those of AISG the State-Owned Enterprise which is tasked with sensitizing the public to how AI works. When AI Singapore was founded by the government in 2017, they had two goals in mind. First, to encourage Singaporean businesses to embrace AI and embed the technology into their processes. The second was to train both government officials and the public to use AI technologies which were quickly becoming part of their everyday. Speaking at a sustainable AI event in the summer of 2024 the director of AI innovation, Laurence Liew, stated that in the beginning, AISG focused on one-to-one sessions with small and medium enterprises in order to understand their needs. What they found, he said, was a desperate need to demystify AI. They wanted to explain what AI can do, and how those results are achieved.

With support from the government’s lifelong learning scheme SkillsFuture, AISG designed two courses, one called AI4E (AI for everyone) and AI for Industry Literacy in AI. These courses were made available for free to the public and made mandatory for all Civil servants. Having taken them, permanent Singapore residents may go on to further courses in AI development designed by AISG and subsidised by SkillsFuture. Since its launch in 2015, SkillsFuture has been a cornerstone policy of the People’s

Action Party¹³ (henceforth PAP), with the aim of upskilling citizens to prepare them for the digitised economy of the Smart Nation (Ng 2018, 125). It was at a SkillsFuture funded AISG event that I became AI certified and learned how AI was conceptualised by the Singaporean state.

At this event, AI was described as being able to create a perfect model of reality, upon which policy could be tested and refined to produce objective policy. This perfect model could only be produced in their view if copious amounts of data were collected. This helps to explain why the extraction of data is so widespread and normalised in Singapore. The argument was that with enough data, or parameters, AI can be used to objectively predict the future. Consequently, all social, political questions can be recast as technical problems solvable by tinkering with algorithms, and data sets.

However, much of the literature on how these systems work contradicts this description of AI. As both Cearns (2024) and Joque (2022) argue, AI systems like the one described by AISG do not produce objective answers, but answers which are ‘good enough’ based on the currently available data. This process owes much to Bayesian probabilities in which a best guess is repeatedly updated by new data. However, most AI systems are not truly Bayesian, they are still broadly probabilistic systems which update their estimates when new data is provided. Despite this, the idea of objective AI persists in the public imagination. As Cearns (2024) shows, several of her interlocutors took the outputs of ChatGPT¹⁴ to be fact, including one who believed that AI had uncovered previously unknown information about their family members, when it had in fact fabricated these details. Joque (2022) argues that this objectivity assigned to AI outputs is therefore not objective in the sense of representing indisputable facts, but rather in the sense of being made an object because it is processed by a machine.

This idea of an ‘objective’ AI has deep roots within cybernetics and computer science. As Hayles (1999) shows it can be traced right back to

13 The PAP (People’s Action Party) is the party which has ruled Singapore since 1959.

14 Whilst my definition of AI remains intentionally broad, this thesis does largely focus on ChatGPT. This is because the Singaporean State has an ongoing relationship with OpenAI with intentions to purchase a large portion of the company. Furthermore, it is ChatGPT which has been installed in the word processing software of Civil servants. Even propriety State AI software is often built on top of a base of ChatGPT. For example, the “AI Fatwa Bot” being built by MUIS, which we return to in chapter 3, is built on a base of ChatGPT. Consequently, ChatGPT is central to the AI systems of Singapore.

the Macy Conferences¹⁵ where the study of cybernetics began. At these conferences, the aim was to understand the human mind as a means to creating computer systems which could replicate human reasoning, and information transfer. To this end academics at the conference constructed ideas like the neural net and binary information transfer as simplified metaphors of the human mind.

For example, at the Macy conferences Shannon and Wiener (Hayles 1999) proposed a system of information theory in which words were encoded into numbers, the values of which did not change based on context. Their aim was to produce a system by which information could be transferred efficiently across systems. There were several attempts throughout the Macy conferences to propose systems which considered the context of words, but these were seen as making the process too complex. Consequently, ideas like binary encoding of language without context were seen as expedient simplifications. However, Hayles (1999) argues that across the Macy Conference, these expedient abstractions began to become reified, and by their close in 1953, it was widely held by members of the Macy Conferences that neural nets could be considered representative of the human mind.

These ideas persist into current day AI systems. Generative AI, like ChatGPT, are built on these reifications like neural nets and have become so accepted that Artificial General Intelligence (AGI), in which machines will be able to apply their knowledge across a range of tasks, is believed to be just around the corner. In fact, these reified ideas are so dearly held in AI circles that it has become hard for these concepts to be reclaimed for their original purpose. In their paper “Reclaiming AI as a Theoretical Tool for Cognitive Science” Van Rooij et al showed that producing general intelligence with neural nets is computationally intractable (van Rooij et al 2024). In other words, AGI based on neural nets would require amounts of data and computing which are simply not available. This seems common-sensical given that the foundation of these ideas was known to be a simplification, and we know from observation that human brains are extraordinarily complex systems which require significantly less data than AI systems for learning. Despite this, the paper’s authors received significant backlash on twitter where they were repeatedly ac-

¹⁵ The Macy Conferences were a series of interdisciplinary conferences with the aim of fostering cross discipline communication. The most well-known of these meetings were those on cybernetics which were held between 1946 and 1953. These meetings laid down the basis of our current understanding of cybernetics built around models of the human mind.

cused of not understanding AI systems. The reified neural net, which is capable of replicating, and even surpassing, the human brain has become the social imaginary of AI systems.

This is the prominent imaginary of AI, that objective reflections of reality can be produced by machines which are based on reified metaphors which do not replicate the complexity of reality. The flaws of this idea are repeatedly demonstrated by the unethical and biased outputs created by AI systems. For example, in 2018 there was a scandal in the Netherlands when algorithms were used to try and predict fraudulent claims for childcare benefits, these systems were widely condemned. Despite this, in 2023 the Amsterdam government made the baffling decision to try and produce a new AI system which would check for fraud in welfare applications. However, this time things were to be different, this new system named Smart Check would follow all the best practices laid out in various AI ethics guidelines. Despite their best efforts, when it came time to test the system, it continued to produce bias mostly against non-Dutch men who were claiming benefits. The system was reweighted to attempt to manage this bias, and the system became biased against Dutch women¹⁶. As Amoore has argued, three years before the Amsterdam Smart Check project even began, such an outcome was predictable, “One could imagine a world in which the deep neural networks used in cities...are scrutinized and rendered compliant with rules and yet continue to learn to recognize and misrecognize people and to infer intent, to generate rules from the contingent and arbitrary data of many past moments of associative life on the city streets, to refine and edit the code for future uses in unknown future places” (Amoore 2020, 7). No matter what guidelines are put in place, when the reified outputs of AI are put back into material contexts, they produce biased outcomes. I would argue this is because, as AI outputs come back into contact with materiality, they lose their reified objectivity.

This contradiction is managed by AI advocates by arguing, as they did at AI Singapore, that more data, or more ethical guidelines will produce better outcomes next time around. Consequently, objective AI is deferred, both within its own probabilistic epistemology, and in its societal construction. The probabilistic nature of AI processing means that AI is perpetually one more piece of data away from producing an objective answer. Meanwhile, these ‘good enough’ probable answers produce

¹⁶ Guo. E, Geiger. G and Braun. J.C., (2025) “Inside Amsterdam’s high stakes experiment to create fair welfare AI”. MIT Technology Review. Accessed: 7 November 2025.

unethical and biased outcomes when they move from the reified space of computation to the contextual space of lived reality. However, this failure is often explained by AI's proponents as resulting from insufficient data, and the need for more ethics guidelines. As one of the architects of the Smart Check system in Amsterdam argued, "Perhaps it is also simply the case that it is not yet ... the time to use Artificial Intelligence for this goal¹⁷." AI therefore is stuck in a perpetual present, or in other words regurgitation, where its true ability, to predict the future objectively, is just one patch away.

DEFERRED FUTURES AND THE MUSLIM COMMUNITY

The relationship between Singaporean Muslims and the state is likewise defined by deferred futures. However, to understand the situation Singaporean Muslims find themselves in, it is worth briefly exploring the political history which led up to and motivates the anxieties of and about the state.

Since 1959, Singapore has been ruled by the People's Action Party (PAP) under a governance style widely referred to as competitive authoritarianism. The People's Action Party (PAP) version of Singapore history is linear and simple. Stamford Raffles arrived in 1819 marking the beginning of colonisation and modern Singapore. It remained a British colony until 1942 when Singapore fell to the Japanese during Second World War. The island returned to British rule after the war. Singapore then received independence in 1959 before establishing full self-rule in 1965 under the leadership of Lee Kuan Yew and the PAP. As Hong and Huang argue "a Martian with only the official script would think that there is only one political movement – the PAP; two important personalities in Singapore – Stamford Raffles and Lee Kuan Yew; and three dates – 1819, 1942 and 1965 – that are worth remembering" (Hong and Huang 2008 15). It is important to remember that this is the history of Singapore as written by the ruling party which skirts some uncomfortable parts of their history to support their political aims. However, by starting earlier and delving deeper into the colonial era it is possible to uncover a history which is much more tangled up with the region. This entanglement can help to explain some of the political anxieties of modern-day Singapore.

¹⁷ Ibid.

The colonial era, starting in 1819, was characterised by frequent changes in rulership of the Island. In 1824, Singapore became a crown colony until two years later when it joined the Straits settlements along with Penang and Malacca under the rule of the BEIC (Mutalib 2015, 49). The Straits settlements then became a crown colony again in 1867 incorporating Labuan in North Borneo. In 1895, British Malaya was centralised, with several states of what is now Malaysia and the Straits Settlements all being administered from Kuala Lumpur. British Malaya remained in place until 1942 when Japan invaded and took control of the peninsula. This defeat was one of the worst in British colonial history and “fore shadow[ed] the end of colonial dominance” (Wu 2010, 117). The decade following the reclamation of Singapore by the British in 1945 was certainly characterised by agitation against colonialism (Wu 2010).

In post-Second World War Singapore, pre-colonial connections with the Malay peninsula and Indonesia continued to be politically significant. In 1945 the Malay National Party (MNP) was formed to support the formation of a greater Malaya with Indonesia and Malaysia (Wu 2010, 121). A year later the British colony went in the opposite direction, giving partial self-rule to the Malay peninsula states but not to Singapore. This change and Indonesian revolution of 1945 heightened the agitation of Malay political groups (Wu 2010, 115). The increase in political action for a united Malaya in Singapore was also motivated by “anxieties that their dwindling population...might compromise the Malay position as ‘favoured sons’ of the British” (Wu 2010, 121). These anxieties would be prescient. In 1948 the British disbanded the MNP concerned by its political agenda. Then in 1954 the PAP was formed, a Chinese majority political party which would go on to dominate post-colonial Singaporean politics.

In 1953, the British announced a commission to organise Singapore’s first elections in 1955 (Mauzy and Milne 2002, 14). However, most legislative powers would not transfer to the resulting government but remain with the British. In those first elections the PAP only contested four seats, winning three. The Labour Front party won the majority of seats. The leader of the PAP Lee Kuan Yew argued that it was unwise to contest more seats in this first election because “History has shown that those who take office before Independence never take office after it” (Mauzy and Milne 2002, 15). Yet another prescient moment in Singaporean History¹⁸.

18 Labour Front lost all its seats in the 1959 election and then disbanded in 1960.

At the next elections in 1959, which would select a fully self-ruling government, the PAP won forty-three of fifty seats. Lee Kuan Yew (LKY) became the first post-colonial prime minister of Singapore. There have only been two prime ministers since Goh Chok Tong and LKY's son, Lee Hsien Loong. While the PAP was formed on a platform of socialist policies and decolonisation (Fong 1980, 14/21) after the 1959 elections the PAP would begin the political manoeuvre away from these goals towards policies which would cement the party's power and its centrist, pragmatist policies.

The British watched carefully as yet another former colony was taken over by an ostensibly socialist, decolonial movement (Hong and Huang 2008, 17). It is here that Raffles makes his re-emergence in the Singapore story, this time as a symbol. Singapore's Dutch economic advisor¹⁹ recommended that the Raffles statue remain in place as a gesture signalling an acceptance of the British colonial legacy (Hong and Huang 2008, 17). LKY agreed, and the statue remains in place to this day, a symbol of Singapore's unique post-colonial position, separate from but oriented towards the UK and the US.

Further, the party's socialist policies started to appear instrumental as well. The early PAP was a coalition between middle class, English educated, Chinese professionals and socialist Chinese educated trade union leaders. This coalition was seen as necessary to win over the "largely working-class electorate" (Hong and Huang 2008, 18). In February of 1963, 100 left wing PAP party members were arrested and detained on the grounds of being communist subversives. This mass detention effectively eradicated the party's socialist wing (Hong and Huang 2008, 18). Hong and Huang even suggest that the merger with Malaysia, which had happened just a few months earlier, was pursued because the conservative, right wing Malaysian government would not hesitate in detaining leftists. However, this merger with Malaysia would not last long.

In 1964, following the merger of Malaysia and Singapore, ethnic tensions boiled over into violence between Malay and Chinese Singaporeans. Accounts differ, but Malay nationalist groups from both Malaysia and Indonesia have been blamed for stoking the violence. Despite a multitude

¹⁹ Interestingly, this advisor was a Dutch economic advisor named Albert Winsemius sent by the UN as part of an Expanded Programme for Technical Assistance team whose role was to assess Singapore's potential for industrialisation. I point this out because of the obvious neo-colonial implications, of a European, sent by the UN, to advise a newly independent country to remain economically loyal to their former coloniser.

of other disagreements between the two countries, including around a shared currency²⁰, both Singapore and Malaysia point to these riots as the root of their separation in 1965. The riots also made race the “primordial fault line” (Hong and Huang 2008, 22) in Singapore. A common theme throughout Southeast Asia.

Consequently, Singapore arrived at full independence after its separation from Malaysia in 1965 with two major political anxieties. First, that the population of this new country was almost entirely made up of people with a migration background. Second, Singapore was surrounded by two much larger nations who shared a racial heritage with the country’s Malay minority. The assumption among the PAP was that few Singaporeans would have loyalty to the fledgling nation, and that the Malay minority would in particular feel loyalty to Malaysia and Indonesia because of their shared religious and racial heritage. For these reasons, the PAP moved to construct a Singaporean identity and to minimise the risk of Malay loyalties to their larger neighbours.

This prompted a policy of multi-racialism by the Singaporean state (Chua 2003) wherein the boundaries of racial identity are carefully managed. As Abdullah argues, multi-racialism differs from multiculturalism in that it “begins with the idea that ethnic and religious diversity is a problem that needs to be conscientiously managed” (Abdullah 2016). Therefore, Singaporeans are assigned a race at birth based on the four largest racial identities in the country, Chinese, Malay, Indian and Other (CMIO). Each of these identities is constructed not only as a racial category but is also tied to religious and cultural assumptions²¹. As Chua puts it “all Malays are supposed to be steeped in Islamic knowledge and cultural practices and every Indian in his/her religious linguistic and regional cultural traditions” (Chua 2003, 60). This alignment between race, culture and religion is so ingrained and promoted that many Singaporeans feel they can tell someone’s racial background simply by looking (Babcock 2023). However, whilst these racial identities are important in Singapore, Chua (1995) argues that they should be hyphenated with the Singaporean part first e.g., Singaporean-Chinese. With these identities established, the state argued that they should be kept separate to ensure that the racial violence of the 1960s is not repeated.

20 Orchard, F. 2021. “Second Separation” . Accessed: 1 December 2025.

21 It is this idea, along with the percentage make-up of the Muslim community in Singapore which leads to the conflation of Malay and Muslim in Singaporean society. However, as Tschacher (2018) shows there are many Muslims who are not Malay, and Malay who are not Muslim.

The pressure to conform to the Singaporean hyphenated identity was particularly intense for Malays because of their perceived divided loyalties. For example, this mistrust of Singaporean-Malays manifests in a reluctance to have Malays in positions of authority within the military, especially in the early years of independence. As Lee Kuan Yew argued it was a “tricky business for the SAF (Singapore Armed Forces) to put a Malay officer who was very religious and who had family ties in Malaysia, in charge of a machine-gun unit’ (Chua, 2003, 65). For much of the first forty years of Singaporean independence, Singaporean-Malays who were mostly Muslim were held in a deferred future where their racial heritage could ignite both violence within the state, as in 1964, or through war with the country’s neighbours. During this time, Singaporean-Malays were held as outsiders within the state whose integration could not be fully trusted.

However, it was another religious group who would first experience the PAP’s ire. In 1987, sixteen Catholic activists were arrested under the same legal mechanism as PAP members had been in 1963, the Internal Security Act (ISA). Under the ISA, these activists were arrested and accused of being communists who were using the Church as a front to undermine racial harmony in Singapore. These arrests prompted the introduction of the Maintenance of Religious Harmony Act (MRHA) which made it an imprisonable offence to say anything which would harm the religious or racial feelings of another Singaporean (Abdullah 2021, 19). Over the intervening years, this law would be used to curtail any discussion of race or religion in the Singaporean public sphere.

In 2003, the religious authority in Singapore MUIS introduced, at the behest of the state, the SMI (Singapore Muslim Identity). This document which listed ten attributes of a good Singaporean-Muslim citizen became the new deferred future for Singaporean-Muslims. So long as the SMI remains in place, the Muslim community is held in suspicion, watched by the state to see signs of failure to integrate and be good Singaporean citizens. Such failures to integrate can be as innocuous as the failure to say merry Christmas or refusing to eat with non-Muslims in the hawker centre (Abdullah 2017). All signs that one may be sliding toward extremism (Abdullah 2021). As Barr (2013) argues, this mistrust of the Malay and Muslim communities leads to tangible systematic marginalization in education and work outcomes²².

22 Similar, though inverted, situations occur in Malaysia and Indonesia, where the Chinese minority are often discriminated against.

Whilst here, and at several other points in this thesis, I have talked extensively about the conflation between Muslim and Malay, many of my interlocutors were in fact not Malay. As Torsten Tschacher (2018) points out, there are many non-Malay Muslims in Singapore including a sizeable Indian Muslim population. This is represented by my interlocutors, many of whom are of Indian descent. However, the history of bias against Malays remains important when writing about all segments of the Singaporean Muslim community. This is because of the conflation between Islamic faith and Malay ethnicity, which means that even non-Malay Muslims in Singapore are viewed through the lens of bias which has been historically levelled at Malays.

The result of the PAPs persistent discrimination against Malay-Singaporeans, and since 2001 Muslims more generally, is one in which their full participation in Singaporean society is deferred. While the AI future perpetually holds new promise in the immediate future, the Muslim community by contrast represents a risk to the racial harmony of Singapore. In fact, as this thesis will explore, because of the nature of AI as a regurgitation machine, AI reinforces and repeats the negative stereotypes about Singaporean-Muslims which have kept the community trapped in a perpetual present enforced by the state.

REGURGITATION, RISK, AND THE FORECLOSED FUTURE IN SINGAPORE

Both these futures, of the Muslim community and AI represent futures, which are about to happen, but which never do. AI is one patch away from being objective, its probabilistic epistemology just a bit more data from being accurate enough. Meanwhile, Muslim futures are defined by a racial violence which could occur any time, but which never arrives. So far, I have referred to these as deferred futures. However, throughout this thesis I rely heavily on Laura Bear's (2016) term "foreclosed" to describe these futures. Bear (2016) argues that time can be used to assert certain narratives which she calls 'episteme'²³ of the future. She suggests that these narratives about the future often come in the form of dangers. For example, a government might argue that immediate threats of violence, such as terrorism, are so pressing, that discussion

23 In Bear's article she also discusses time as techne, and time as ethic. However, whilst these are generative avenues for thinking about the construction of the future, this thesis is focused on narratives about the future, and how it is imagined.

of longer-term threats, like climate change can be deferred. Bear argues that if these narratives are repeated enough, and others are sufficiently suppressed, other narratives become impossible to imagine. As Collins argues, in such situations the constant churn of managing emergencies creates a presentism in which “the state of perpetual change is the same as perpetual stasis” (Collins 2008, 3).

There are two historically intertwined dangers which shape the episteme of future in Singapore with significance to this thesis. First, given Singapore’s small size, and lack of access to natural resources, there is a widespread belief in the “imperative to be smart” (Calder 2016) in which the nation, and its citizens must engage with new technologies. This imperative is one which I saw in my “day in AI” in the advertisement for AI training courses. This techno-anxiety (Chong 2021), in part motivates the belief in the deferred futures of AI in Singapore. Singapore needs AI technology to continue its financial success. The reliance on technology to remain competitive in the region is tied to the second danger of invasion from Singapore’s much larger neighbours Malaysia and Indonesia. This fear, as already shown, motivates the marginalisation and surveillance of Muslim identities in Singapore. Consequently, these two epistemes of AI and Islam, stem from the same imagined future risk of internal and external destabilisation in Singapore.

As I will go on to show, and have already argued, AI tends to reproduce what is within its data set. As we will see, LLMs (Large Language Models) like ChatGPT, can be described as a complex form of autocorrect. Consequently, it reproduces the most common narratives which already exist. This is what I refer to throughout the thesis as AI Regurgitation. In a Singaporean context then, it is likely that what ChatGPT produces will confirm the dominant episteme of the future in which the risk of internal and external destabilisation is emphasised. In the words of Bear (2016) they become foreclosed. This makes any other future, where Muslims are not construed as a risk, and AI is not construed as Singapore’s economic saviour, become hard to imagine.

In this thesis, I aim to show how these two foreclosed futures are not only parallel, but that the regurgitation of AI systems in fact reinforces and reifies the existing biases against the Muslim community. The use of AI by the Singaporean state has a significant impact on how the future is imagined by Muslims in Singapore.

REGURGITATING THE PRESENT, FORGETTING THE PAST: GOLDEN MILE TOWER

Just a few minutes' walk from Sultan Mosque in Kampong glam is an old shopping mall called Golden Mile. Completed in 1973, Golden Mile was a hub for the Thai community in Singapore with numerous Thai clubs, supermarkets, and restaurants. It was also the primary bus terminal for buses to Malaysia. Despite being described by some politicians as a vertical slum (Parliamentary debates 2006²⁴) Golden Mile holds a special and nostalgic place in many Singaporeans hearts. It is an iconic modernist building with one side devoted to a terrace of apartments, and the other a tower block of commercial buildings. Despite being an icon of the Singaporean skyline, Golden Mile was sold in 2021 to an investment group who planned to turn the tower into luxury flats. The residents were given until May 2023 to leave the building and either relocate or shut up shop for good.

In April 2023, I had just arrived in Singapore for fieldwork and joined a 'last look' tour of the building organised by the publisher Ethos books. Our group of around twenty walked through the halls of the now half abandoned mall. The Singaporeans among the group swapped stories. People remembered trips to Malaysia fuelled by Thai snacks, others remembered grandparents dragging them around the building for ingredients and some even recalled nights out in the karaoke bars which dominate the upper levels. By now most of the shops had been shuttered, but the sound of some final parties in the karaoke halls echoed through the building. On every shutter were signs reminding people that their last days were looming, some put the address where they would relocate to, but others simply said goodbye or thank you. Stretching across the shops which had already closed their doors for the last time was a red tape printed with the words 'Golden Mile Complex', but which had become torn and in places now just read 'go', ex and in one spot 'ex...ile'.

24 Singapore Government (2006) PARLIAMENTARY DEBATES Accessed: 6 November 2025.



Figure 6– Abandoned letterboxes at Golden Mile

Many of the shops within Golden Mile would survive in new locations. The façade of the iconic building would also be preserved²⁵. However, as the signs on each of the shops reminded, the community which once occupied this building was being dispersed, and with it their memories. Small old malls like Golden Mile are dotted around Singapore. My personal favourite is Peninsular Plaza, affectionally referred to as little Myanmar, which is just across the street from the modern Funan Mall. A friend took me there for dinner and I ate Burmese pickled tea salad for the first time. These little malls are a reminder of the communities in Singapore who do not fit into the monolithic categories of CMIO. They are also a reminder of a Singaporean past which was a little more haphazard, a little less technological, and maybe less corporate. Replacing these malls with luxury flats, and modern shopping complexes means instead of a diverse city with pockets of unique communities, Singapore becomes a homogenous mall filled with chains and corporate sponsors.

Stories of these places being closed, demolished, and dismantled are common. Ask a Singaporean and they will have memories of a mall that held meaning to them. It is not just malls, Ng Kok Hoe’s (2023) “they told

²⁵ Zhuang, J (2022) *Golden Mile Complex: Five Decades of an Architectural Icon*. National Library of Singapore. <https://biblioasia.nlb.gov.sg/vol-19/issue-2/jul-sep-2023/golden-mile-complex/> Accessed: 23 February 2026.

us to move” charts the loss of community when Dakota housing estate on Old Airport Road closed. In Esther Vincent’s (2021) essay “The Field” she reminisces about a patch of grass from her childhood now gone, and in “Kampong, Nation, Fire” Loh (2009) describes how Malay villages were dismantled and their residents spread across Singapore in the 1960s and 1970s. The constant urban churn of Singapore is another version of the presentism that motivates the pursuit of AI futures in Singapore. The sound of construction is a constant companion, and with each new building an old one and its memories must make way. Whatever does not get regurgitated in these new buildings, and these new technologies gets lost in the episteme narrative of Singapore’s urban, techno-future. Instead of a diverse future, built on a diversity of pasts with pockets of alternative visions which serve unique communities and individuals, it is replaced by a homogenous foreclosed future. The removal of memories within the city leaves less possibilities for imagining alternative futures.



Figure 7- Ex shop number 03-14 Golden Mile

CHAPTER OUTLINES: THE MANY FACETS OF AI REGURGITATION

The core question of this research is, “What futures are imagined by Muslims in a Singapore dominated by AI enabled technologies?” However, as we have seen AI systems have many facets, not all of which are tangible on a daily basis, and yet which impact the everyday. Consequently, in order to gain a full picture of how AI interacts with the lives of Singaporean Muslims, I approach AI in five distinct ways, as epistemology, policy, archive, imaginary and infrastructure. In Chapter 1, I further explain this approach to exploring AI in a diversity of ways. For now, I will explain how each chapter approaches one aspect of AI to create a partial composite image. Using this composite image, I argue that AI is a techne used by the Singaporean state to assert a particular vision of future, which regurgitates existing biases of the state towards the Muslim community. However, I ultimately conclude that these epistemes can be undermined by creating alternative narratives as they challenge the notion that only one story is possible (Bear 2016).

In Chapter 1, I explore how using co-laborative²⁶ methods allowed me to create contexts where my interlocutors could re-encounter AI and challenge its regurgitation. This approach allows me to acknowledge the power of these AI systems in the daily lives of Singaporean Muslims, and their importance in the decision making of government entities whilst also ensuring that I do not present AI systems as indisputable. AI and the Singaporean state have an enormous role in defining the future of Singapore’s Muslim community, but that future can still be challenged. This approach to AI, the future and the state is reflected in the structure of the remaining thesis.

In the Chapter 2 “AI Epistemology in Singapore”, I outline how we might approach AI as an epistemology which supports the State’s narrative about the future. In this chapter, I make two arguments about the Singaporean state’s imagined AI future. First, that AI is a twin concept in Singapore which can only exist in collaboration with Singapore’s Smart Nation initiative. As I show, the AI technologies of the state are reliant on large amounts of data which are primarily produced by the Smart Nation project. Consequently, the AI future of Singapore is tied to conceptions of the Smart City, namely that these projects are able to

²⁶ This spelling derived from Niewöhner’s article on ethnographic practices of collaborative labor, hence co-laborative which are described in depth later in chapter 1.

solve any and all urban policy problems. Second, I show that these ideas about the Smart City regurgitate the existing neoliberal ideals asserted by the PAP. Namely, that citizens can be reduced to data points which act in predictable ways. Further, I show that this perspective is tied to the governance approach of Singapore's ruling PAP which prioritises 'pragmatism' over ideology, and economic survivalism above all else. It is within this chapter that I show how AI is a way of producing knowledge which transforms citizens into computer readable data points to produce 'objective policy'. Not only is this approach to governance a regurgitation of existing governance paradigms, but it also reduces citizens to simplified versions of their identities.

In Chapter 3, I explore how State AI epistemologies get translated into the policy plans of MUIS. As the Islamic religious authority within the Singaporean state, it is the role of MUIS to govern the Muslim community through the paradigms of the state. This is done explicitly, for example, when government messaging on Covid was included in Mosque sermons. However, it is also done implicitly through the integration of AI into future MUIS religious policy. Consequently, whilst MUIS was initially resistant to the idea of digitalisation, and anxieties about its potential to fragment the religious community, it has embraced AI. As I will explore in this chapter, they have even begun development on an AI Fatwa bot which will be used to speed up religious decision making within the organisation. We see here how AI is a policy which is asserted by the PAP state and implemented by its statutory boards like MUIS. This chapter explores how MUIS engagement with state epistemology, circumvents engagement with citizens by closing down discursive space, and consequently regurgitates State ideology. Here we see how AI turns from an epistemology to a policy which must interact with the messy realities of governance.

For example, as I go on to show in this chapter, these AI technologies clash with the goals of MUIS as a religious authority. As this chapter demonstrates through ethnographic examples and the work of Alatas (2021) religious authority in Islam is drawn from the dialogical process of making the Quran relevant to the community. Due to the fact that MUIS reflects the policies of the wider government, such dialogue rarely happens. I further argue that this monological approach is entrenched by the organisation's approach to technology like AI. I show how in this case, AI is seen as a way to ensure MUIS' proclamations are seen as authoritative, objective positions allowing a reassertion of authority. Authority which,

in a digitalised world has become increasingly dispersed. Ironically, however, this bid for authority may in fact pull the organisation further away from dialogue and with-it religious authority.

The AI fatwa bot being designed by MUIS which is discussed in chapter three is built on top of ChatGPT software. Therefore, in Chapter 4, I attempt to return some discursive space to these religious processes by creating a context in which my interlocutors could respond to ChatGPT assertions. I did this by prompting ChatGPT to imagine the future of the Muslim community in Singapore then invited my interlocutors to annotate the text²⁷. This exercise revealed two things. First, that ChatGPT regurgitates biased ideas which show that it replicates state misunderstandings of the Muslim community and its concerns. Second, my interlocutors could easily spot and criticise these errors. It is this second fact which reveals AI as an archive. The ‘errors’ which my interlocutors noticed were often biased ideas which have been repeated by the Singaporean state about Muslims. This suggests that far from producing objective truths, what AIs like ChatGPT produce is the regurgitation of past ideas, including their biases.

However, most significantly for the overall argument of this thesis, what ChatGPT produced was a singular image of the Muslim community. This demonstrates once again AIs tendency to reduce people to less than the sum of their parts, merely data points, rather than containing multitudes. By creating a context in which my interlocutors could challenge the assertions of AI, I show that the “Muslim community” is a blurry concept and cannot be represented well by AI systems. By using annotation this chapter explores what we can learn when thinking of AI as an archive which regurgitates ideas from the past.

However, alternative representations of the Muslim community already exist throughout Singapore. In Chapter 5, I focus on the work of three Muslim artists whose work challenges both the fixed state notions of Islamic identity and the logics of the Smart Nation and AI. Through their works I explore how they resist the futures asserted by the state through AI and its infrastructures. In Singapore, a lot of art is censored by the state who use policy mechanisms to prevent public criticism. This censorship

27 The full prompt is explained and its limitations explored in chapter 4.

particularly targets work discussing religion²⁸, under the argument that these topics upset the delicate social harmony created by the state. This social harmony is in part achieved by ensuring different ethnic groups are well defined and separated. A process Abdullah (2016) calls “multi-racialism.” I argue that AI systems which perpetuate racial stereotypes, as argued in Chapter 4, and reduce citizens to their component parts, as shown in Chapter 1, intensify the racialisation of Singaporean Muslims. Not only this, but the panoptical effect of the Smart Nations sensors and cameras enhance systems of surveillance and censorship.

Despite this, artists find ways to skirt the authority of the state by ‘blurring’ their critique. As I explain in this chapter, artists find creative ways to ‘blur’ their work in ways which allow them to be unclear publicly. This approach allows them to avoid surveillance and simultaneously critique the racialisation of Singaporean Muslims by blurring the boundaries of the category Muslim. In so doing, they undermine the state imaginary that Muslims, along with other citizens, are merely data points. In this chapter I explore how AI enforces the codification of Singaporean Muslim identities, attempting to ensure their regurgitation and how Muslim artists blur the lines of these categories to resist the reduction of their identities.

The work of these artists described in chapter five, therefore, are an example of what Bear (2016) argues, that the foreclosed can be resisted by proposing alternative epistemologies. In Chapter 6 I focus on the alternative futures which emerge from alternative ways of knowing. To explore these alternative epistemologies, I begin with an alternative way of experiencing AI – sound. In this chapter, I explore, in discussion with my interlocutors, how we might interact with AI as an infrastructure, not just an output. However, the challenge, as explored throughout this thesis, is that AI is ephemeral, it's infrastructures are invisible and yet it is ever-present. We are encouraged to think of AI as the barest of interactions which we have with their interfaces, websites like ChatGPT or Dall-e. However, as shown in chapter 2, AI is on every street corner of Singapore, constantly intervening in urban life, if you know how to see it, or in this case hear it. Inspired by the data walks of Powell (2018) and the electrical walks of the artist Kubisch (2004) I walked with my

28 This is in part of the MRHA law; however, it is never completely clear where the line of discussing religion, and offending religions lands. This ambiguity is purposeful giving the state power to censor any speech it deems ‘offensive’ and therefore curtailing public discussions of race (Babcock 2023). For more on this see Chapter 5 “Act Blur, Live Longer”.

interlocutors through an area of Singapore which made them think about the future. As we walked, we explored the cityscape for invisible traces of AI using an electro-magnetic microphone. Simultaneously I would ask them to reflect on the future of Singapore.

Surprisingly, despite being surrounded by the electrical sounds of AI, none of my interlocutors imagined an AI or technological future. Despite so much of Singapore's future being contingent upon and imposed by AI systems, my interlocutors consistently imagined alternative futures. This chapter aims to show how AI is an infrastructure which surrounds Singaporeans. However, whilst we might expect that fact to enforce AI futures, when encountering AI infrastructures, Singaporean Muslims reached for other futures by engaging with the past. As with Golden Mile, my interlocutors remembered a Singapore which is now faded. A past not regurgitated by AI, but an alternative past which haunts Singapore's techno-future. Throughout this research my interlocutors told me they were not interested in an AI future. Whilst the state may assert the AI future as the only way forward, many of the Muslims I met in Singapore persisted in imagining otherwise. In my conclusion I explore how the futures contingency on the past makes this possible. I show how AI regurgitates the past in ways which reduce the complexity of peoples lived experience.

Between Chapters 2 and 3, 4 and 5 and 6 and the conclusion there are interludes. These interludes serve to draw the attention of the thesis back to the question of the future. Interlude one explores how the epistemology of AI within the Singaporean state, demonstrated in chapter two, produces particular visions of future. Interlude two looks at how the racial management of race within Singapore reinforces those visions of future. Finally, interlude three reflects on how these narratives can be resisted by imagining otherwise through reflecting on alternative pasts.

I do not believe that AI is a democratising force. However, the patent failings of AI systems to describe the Muslim community undermines its claims to produce objective, pragmatic knowledge. The way in which these systems foreclose futures, and datafy individuals therefore dissuades Singaporeans from accepting the futures proposed by the state. Instead, when I created contexts for my interlocutors to engage with AI through annotation and electromagnetic listening, they reached for other pasts not regurgitated by AI or perpetuated by the state. By reaching for these alternative Singaporean pasts, they blur the linear, singular nar-

ratives of time which are proposed by the state. By being in discussion with a plethora of different pasts, my interlocutors created space for a pluriverse of futures to be imagined.

This research was carried out as part of the NWO funded One Among Zeroes research project. Along with two other PhDs and two post-doctoral researchers we set out to study the discourses, practices, and imaginaries of Artificial intelligence in Singapore, Malaysia, and Indonesia. Across ten months of fieldwork in Singapore, I conducted over forty-five in depth interviews, four electromagnetic walks, and had my interlocutors produce ten zines about their imaginaries of AI and future. Alongside these elicitation activities, I conducted participant observation in which I attended public talks, AI training sessions, industry conferences, exhibitions and reading groups. These sessions were run by a number of actors in the Singapore AI space including student groups, artists, government departments including MUIS and Govtech, and private individuals. By the conclusion of my fieldwork period, I had become AI certified by the State-owned AI education and implementation company Singapore AI, I had been invited by MUIS to present on AI and Islamic authority and become an active contributor to a leftist library and art technology lab. Not all of these experiences are presented in this thesis, but they all contributed to shaping my understanding of AI, and Islam within a Singaporean context.

In particular, my approach in this thesis was shaped by relationships within the arts community of Singapore. I was able to meet and build a relationship with many Singaporean Muslim artists thanks to the help and support of Nurul Huda Rashid, who initially introduced me to several artists and art spaces across the city. For example, it is through Nurul that I came to meet, bani and Iskandar who appear in chapter 5. In the course of our collaboration Nurul was invited to speak at our projects conference in Jakarta on her work about the circulation of images of Muslim women online. This work, and its ties to the One Among Zeroes project led to her becoming the second post-doc of One Among Zeroes.

NOTE ON POSITIONALITY

Why Are You Interested in This?

In the Summer of 2023, I went to Singapore. A few days after my arrival I organised my first interview, a coffee meeting with an Ustaz, and

member of the Asatizah Youth Network (AYN) created by MUIS. Her day job is at one of the world's largest social media companies and in her spare time she counsels young Muslims online and offline about questions of Islamic faith. The interview went well-ish, although in my attempts to come across as a serious researcher I stuck a little too closely to my pre-planned questions, and perhaps created something of a stilted conversation. As we packed up to leave the coffeeshop which was across from her office she asked, "Why are you interested in this research?" It was not the first time I had been asked this question, and it would not be the last, because I am neither Singaporean nor Muslim, it is a reasonable question.

My answer to this question usually goes something like this. Originally, it was the topic, not the region which brought me to this research. For my undergraduate degree I studied religion at the School of Oriental and African Studies (SOAS) in London. It is one of the few universities in Europe where all its degrees focus on a non-European context, and it is one of the most politically left Universities in the country. It was this latter reason which originally attracted me to SOAS. Whilst there, I began studying Islam, mostly in minority contexts including the UK, something of a rarity among my peers. I was attracted to these studies in part because this was the era of "prevent" at UK universities. Prevent is part of the UK government's wider counter-terrorism policy named CONTEST. As part of this policy, prevent aimed to identify those at risk of becoming extremists by monitoring mosques, schools, and universities. This included my classes on Islam at SOAS, a school whose leftist student body was frequently protesting the UK government and its Islamophobic, anti-immigrant policies.

It was in this political milieu that I studied Islam as an undergraduate. I studied Islam within a curriculum which aimed to debunk the Islamophobic and racist assumptions which were common in the UK. Further, it was as part of a student body which linked discrimination of Muslims to other political struggles, including the use of Islamophobia and anti-immigrant sentiment as tools to divide the working class. Yet, despite this generally radical environment, SOAS remains an institution built on a colonial legacy. Founded during the First World War as a language school to train spies for infiltration into foreign countries, it remains to this day an institution which the British secret service regularly recruits from, despite the student bodies supposed anti-state sentiments. Despite its apparent commitments to radical politics, SOAS, like many universi-

ties, remains susceptible to political contradictions and failings. I was no different, despite learning about positionality, and the flaws of Malinowski's claims to have 'gone native' in anthropology classes, I often did little more than pay lip service to these ideas, and perhaps never truly struggled with the question of my own role within the historic, structural violences of racism and colonialism.

It was with all this surrounding me, that I attended a class in my final year about the role of the internet and British Islam. For the class we read an article which talked about the importance of CD-ROMS in the distribution of Islamic knowledge in the UK (Mandaville 2003). CD-ROMS! It was 2017. So, with the confidence of an undergraduate, I decided my thesis would address this gap in the literature. Consequently, I wrote about the role of what we now call filter bubbles on the strengthening of far-right, Islamophobic sentiments online. It was from this research that I became deeply interested in the ways technology changed long standing social structures like religion, and the public sphere. Therefore, when several years later I saw a PhD advertised which considered these questions but now in relation to the newest technology AI, I applied. However, I never really considered, during this time, my role within this research. Why was *I* doing this research? And how did that change the research I produced?

Why Am I Doing This Research?

Ultimately, that is what the question of my interest is about. Why should I be doing this research? In the beginning of this PhD, I argued that doing this kind of research can be a challenge for Singaporeans in Singapore. Censorship, as we will return to in chapter five, is common in Singapore and research on religion, which is seen as a topic that can cause social tensions, is generally discouraged. To do research on this topic, therefore, presented risks that my privileged position as an outsider with a British passport could bear. Furthermore, in my research proposal I wrote:

"In conclusion, British colonialism has a long shadow which is insufficiently addressed because of a general silence around the topic in the UK. To dismantle colonialism requires active engagement with that legacy and the logics which it perpetuates. As a British researcher I feel obliged to be involved in that process. To do this research without that intention would be re-creating colonial patterns of a White British person extracting resources. I aim to engage with my positionality in three ways, by engaging with Southeast

Asian literature, by positioning my theoretical work within the discourse of decolonisation and by foregrounding co-creation. All these approaches come with the Asterix that my British background and education mean that I have biases which can derail these attempts. Therefore, my positionality goes beyond this statement and must be something I consistently engage with throughout this project.”

I now consider this argument to be a bit condescending and not borne out by the realities of existing research in Singapore. Plenty of Singaporean academics find ways to conduct research about religion and even publish books and papers which critique the State’s approach to multi-culturalism. Walid Abdullah, whose work appears repeatedly in this thesis has written extensively on the marginalisation of Singaporean Muslims, Chua has written books critiquing the Singaporean state and its approach to religion since the 1990s and that is to name just two of the hundreds of academics from Singapore and the wider region working on these topics. This includes, to name just a few, Ezra Ho, Lily Kong Lily Zubaidah Rahim, Terence Chong, Farish Noor, Muneerah Ab Razak, Nurul Huda Rashid, and Loh Kah Seng all of whom appear in this thesis. Furthermore, as I will explore in depth during chapter five artists in Singapore find creative ways to skirt censorship and make their critiques of the state public.

Whilst I agree with myself from four years ago that the works of Singaporean scholars, should be and remain the theoretical backbone of this thesis, I no longer agree that my work, created as it is within a European University, by a British researcher, can offer much, if anything, to discourses on decolonisation. And certainly, cannot contribute to that conversation for a Singaporean, or Southeast Asian audience. Proof of that is the fact that, as my Singaporean friend who read this thesis put it, “Nothing you have written is a surprise to anyone in Singapore.” Singaporean scholars and activists do not require my insights to untangle the problems which are part of their everyday. Consequently, what I hope this thesis can provide is a compelling synthesis of my interlocutors’ insights.

What then is my argument today for engaging in this research? I would argue that it is worthwhile and relevant to me, because of what I learned at SOAS about how global struggles are interconnected. I want to demonstrate this through one example, the use of facial recognition in policing.

On December 11th, 2005, in the middle of the night, an oil refinery called Buncefield in my hometown of Hemel Hempstead blew up. No one was killed or injured, but the resulting fire was the largest in peace time Europe. Many people's houses were damaged by the shockwave which could be heard in France, and my school was engulfed in oil smoke. One of the buildings adjacent to Buncefield was the headquarters of Northgate Information Solutions a computer company, who among other things did data management for UK police. The staff of Northgate Information Solutions were transferred to their offices in Oxford and Peterborough. The company had backups of their data, but the fire caused a dip in their share price which precipitated their sale and rebranding in 2007 to Northgate Information Systems. Just over ten years later in 2018, the company would be purchased by Japanese Tech conglomerate NEC.

A year earlier in 2017, NEC entered into a pilot programme with the Singaporean Police to install their 90,000 police cameras, installed across the Island since 2012, with facial recognition software. By 2030 the number of police cameras is expected to expand to 200,000²⁹ and it was confirmed in parliamentary questions from 2025, that these cameras continue to use facial recognition software. Minister Shanmugam stated, "To the extent that there are CCTVs available where the crimes are committed, including petty theft, the Police may use facial recognition technology to try to identify the culprits, and follow up as appropriate" (Shanmugam 2025³⁰). This all came full circle when it was announced in early 2025, that UK police would begin using mobile facial recognition vans using software provided by NEC's UK arm³¹, formerly Northgate Information Solutions, who were given a 25 million government contract to provide facial recognition to the police³². This included a trial of the technology by Hertfordshire police, the police department of Hemel Hempstead³³.

This connection is coincidental. However, I would argue it is demonstrative of how governance by algorithms has become a globalised industry which can link seemingly unconnected things together. The export of Singapore's technological expertise is part of a wider policy within Sin-

29 Low, C (2021) "PolCam: Safeguarding Our Neighbourhoods" Accessed: 11 December 2025.

30 MHA (2025) "Whether police deploy facial recognition software to identify perpetrators of petty crimes" . Accessed: 11 December 2025.

31 Coincidentally, I started writing this section on December 11, 2025, the 20-year anniversary of the Buncefield explosion.

32 Borak, M (2025) "UK awards NEC \$25M facial recognition policing contract." Accessed: 11 December 2025.

33 Herts Police (2025) "Hertfordshire Constabulary. Live facial recognition software." Accessed: 11 December 2025.

gapore, where the nation positions itself as a test bed for tech governance innovation. As Kong and Woods argue, “parts of the island [have] become spaces for the incubation of new technological prototypes” (Kong and Woods 2018, 687). Singapore then forges connections, both with foreign governments, and multi-national corporations to export these innovations elsewhere. For example, in 2020 Singapore began a partnership on digitalisation with the Dutch government³⁴. A project which aimed to upskill the Dutch digital economy and share best practices. In this way, Singapore positions itself as a tech hub that can function as a technology-governance laboratory (Koay 2017) for other countries.

The insights gained from the application of these technologies then flow out of Singapore in all directions. As we saw, the use of police facial recognition software is being implemented into UK policing with insights gained by NEC in Singapore. However, this is far from the only example. NEC also sells its facial recognition software, via its local distributor Mitrg³⁵, to Israel. This technology has then been used to surveil Palestinians during the current genocide in Gaza³⁶ including the system tagging civilians as militants who have subsequently been targeted by the IDF. As Loewenstein shows, these technologies are then often marketed and sold in other countries by Israeli companies as “battle tested” (Loewenstein 2023, 11). This includes Singapore, who in 2023 signed a \$14 million 5-year contract with the Israeli digital surveillance company Cellebrite to collaborate with their police force³⁷.

Consequently, how Singapore implements new technology like AI into its governance processes has consequences for the future of governance globally. Some of the experiments with AI governance done in Singapore are likely to appear elsewhere in the following years if they do not already appear. It therefore behoves us to understand how these technologies are being understood and used in Singapore. Further, it is integral to understand how people are resisting these technological developments and imagining alternative futures which do not rely on them.

34 Kingdom of the Netherlands (2020) “Digitalisation & High Tech”. Accessed 11 December 2025.

35 Mitrg (2025) “Home Page”. Accessed: 11 December 2025.

36 Robbins-Early, N 2024 “How Israel uses facial-recognition systems in Gaza and beyond” Accessed: 11 December 2025.

37 Cellebrite (2023) “Leading Singapore Law Enforcement Agency Awards Cellebrite with \$14 Million Agreement for Cellebrite’s Advanced Extraction Solution” Accessed: 11 December 2025.

Often, these technologies are used first on marginalised communities. For example, the MATAR robot who we met in this introduction was first deployed to ensure migrant workers, many of whom are Muslim, remained in their dormitories during the pandemic, leading to high covid rates among the migrant community. As I will argue, the Singaporean Muslim community is one of the communities which has been marginalised, censored, and surveilled by the Singaporean state most since the 1960s. Consequently, they have faced state surveillance for over 60 years, and that surveillance has become increasingly backed by AI enabled technologies like facial recognition. Such developments have only just begun to be rolled out in the UK, including my hometown where police use of Live Facial Recognition officially begins in mid-December 2025, as I write this very sentence. I position myself within this research then as a student of what is to come with regards to techno-governance. In what ways is AI technology used and imagined by the Singaporean State? What do Singaporean Muslims imagine in response to the ubiquity of these technologies? And how might we imagine beyond them?

Research in Dialogue

To quote my supervisor Andrew Littlejohn upon reading the positionality section of my research proposal four years ago, “all this self-reflection is great, but what will it change about what you do?” I position myself within this research as a student in dialogue with my interlocutors. This position has two consequences for how I conceptualise this research and thesis.

First, I do not view this thesis as complete or authoritative. The ideas presented within this thesis are not the entire picture of how Singaporean Muslims think about AI. Neither is it a complete overview of how the Singaporean State conceptualises AI enabled technologies. Rather, it is a snapshot of a particular moment in the development of AI in Singapore, and how the people I met interacted with this emerging technology. In this way, I aim for my thesis to stand in contrast to colonial era manuscripts written about Southeast Asia, like Stamford Raffles “The History of Java”, or early anthropological texts like Malinowski’s “Argonauts of the Western Pacific” which made claims to complete understanding of other cultures and positioned their white European authors as the authority. Furthermore, I occupy this position in order to draw a distinction between the kind of qualitative, and partial claims of my work, and the comprehensive, quantitative claims made by proponents of ‘big data’ (boyd and Crawford 2012).

This thesis then is not the final word, but an opening for dialogue. As Brigitte Vassallo has argued in relation to her work, “I am here to put ideas on the table so that they can circulate, are modified, are worked on, or are thrown out” (Vassallo 2024, 19). I intend this argument not as a shield to criticism, but as an offering, especially for my interlocutors to respond and point out where this thesis goes too far, or not far enough. They of all people, living as Muslims within the Singaporean state will identify the blind spots, and failings of this thesis much more accurately than I ever could.

For my part I strive to engage in this research through dialogue. To this end I assume Freire’s definition of dialogue in which “dialogue cannot be reduced to the act of one person’s depositing ideas in another” (Freire 2017, 62). Under Freire’s pedagogical framework, students do not arrive as empty vessels to be filled with knowledge by an authority, but rather both student and teacher arrive with histories and expertise. Consequently “No one teaches another, nor is anyone self-taught. People teach each other, mediated by the world” (Freire 2017, 53). In practice, this meant that while I arrived in the field with ideas about what might be important with regard to AI, Islam, and Singapore, which I presented to my interlocutors.

I then followed the topics which they engaged with most strongly. As Freire describes this process, “the teacher presents the material to the students for their consideration and reconsiders her earlier considerations as the students express their own” (Freire 2017, 57). In this way, Freire argues that we cannot overcome difference, but instead use it as the grounds for dialogue. I will never occupy the subjectivity of my Singaporean Muslim interlocutors, but my position of difference can present my interlocutors with new questions. To this end I attempted to create contexts in which me and my interlocutors became “jointly responsible for a process” (Freire 2017, 53). Therefore, I created contexts in which they could bring their subjectivities to novel situations, something I return to in my methodology chapter.

Throughout my interviews I would ask about the use of AI by MUIS, and without fail, my interlocutors would relate this to several missteps made by MUIS during Ramadan 2023. For a long time, I could not see the connection between my questions, and their answers. However, in this thesis my chapter on the role of AI, centres on these anecdotes which were so central to my interlocutors understanding. Likewise, my chapter

on annotation stems from a comment made by an interlocutor on how he thought I should approach thinking about AI. Finally, in chapter five I draw the idea of blurring from the emic Singaporean phrase “act blur, live longer” which my interlocutors often used. Further, in this chapter I had the three artists it covers read the article and offer feedback on how to adjust my work to better represent their perspectives. The thematic focus of this thesis, therefore, represents the dialogue I engaged in with my interlocutors.

This discursive approach also has theoretical impact on how I approach Islam in this research. There has long been debate in the anthropology of religion about how to approach Islam, a tradition which finds diverse expression across its global community and yet expresses continuity across that diversity via ideas like the Ummah. This contrast has sparked an ongoing debate in which some argue for an ‘Islams’ interpretation of the faith where each community expresses an alternative interpretation of Islam (El-Zein 1977). This argument came as a response to earlier descriptions of Islam by anthropologists like Clifford Geertz (1968), which tended to flatten the diverse experiences of Muslims under one explanatory frame (Marranci 2008, 36). The advantage of an Islams approach is that it allows for a plurality of expression within Islamic faith.

However, this ‘Islams’ approach has also been criticised as recreating colonial conceptions of Islam which merged race and religion. For example, as Motadel shows, French colonialism invented “the notion of ‘black Islam’ or ‘Islam noir’” (Motadel 2014, 27) in opposition to the “white Islam” of the Arabian Peninsula. By contrast “Islam Noir” was argued to be a mix of local beliefs and Islam which colonial powers argued made it easier to rule and less fundamentalist (Motadel 2014). Accordingly, the idea of ‘Islams’ brings with it a judgement about a Muslim community’s ‘purity.’ This is a particular challenge in Singapore, where the state via MUIS expresses a singular Islam. By taking up an Islams approach in this thesis would be to suggest that my interlocutors who critique the state’s definition of the faith are simply not Muslim enough. A criticism that Muslims of all political and theological stripes are accused of in Singapore (Abdullah 2021).

Instead of either of these approaches, I approach Islam within this thesis as a discursive tradition in line with the arguments of Talal Asad (2009). Asad argued that whilst Islam was a single coherent tradition which could span across the globe and its diverse community, it was also a tradition

developed in conversation between followers, and between followers and their faith. Accordingly, Islamic traditions can differ both at the scale of community, and individual. On the basis of this argument, my thesis is not about the future of Islam like the projects of Sardar (2006), or Inayatullah (2005) who attempt to chart a course for the entire Islamic community but rather looks at the futures imagined by Muslims in Singapore which are in dialogue with their faith. As a consequence of my position, as a non-Muslim myself, this is as far as I feel comfortable to go. Therefore, like with the other themes of this thesis, I followed what my interlocutors considered important. That means I write here about Islamic theology if and when my interlocutors discussed it, rather than trying to artificially, and likely clumsily, lay Islamic theology over what they told me.

In conclusion, I will never occupy the subjectivity of my Muslim interlocutors. However, through dialogue with them, I aim to understand their perspective on the emerging challenges which AI technologies present. Whilst the Muslim community in Singapore has long been grappling with the issue of state oversight, and lately with AI enabled surveillance, this is a reality which is not confined to the borders of Singapore, as techno-governance becomes the policy de jour. Whilst the link between my hometown and the facial recognition software in Singapore is perhaps tenuous, and coincidental, it speaks to how these technologies move easily across state boundaries. What this thesis represents is what I learned with my interlocutors about how they imagine the future living under such techno-governance regimes.