

Edward Lichtig

Tech Alliance: How Cybersecurity and Artificial Intelligence enable Strategic Interregional Collaboration Between Australia, Israel, and The UAE

Executive Summary

Background

In a world with increased cyberattacks (Tan, 2020) (Doffman, 2020), particularly with regional threats in the Middle East (O'Flaherty, 2020), it is integral for countries to combat these dangers collaboratively. One example of countries requiring closer ties to combat mutual threats is The United Arab Emirates (The UAE) and Israel. Regional cybersecurity and Artificial Intelligence (AI) cooperation have proven that a UAE-Israel tech alliance allows both countries to benefit diplomatically and commercially (Soliman, 2021). The prospect of Australia's inclusion within this technological regional alliance will align Australia with shared (Donaghy, 2015) or separate threats to Israel and the UAE far beyond the 21st century. However, countries that collaborate on strategic issues also create opportunities to co-invest in the field of AI. A more robust and formalised alliance can create better business and diplomacy.

Benefits

The UAE is becoming a tech leader through digital transformation and smart cities. However, the UAE strategically needs (Reuters, 2020) to turn to more profound technological opportunities such as computing and blockchain offered by Israel.

Whilst Israel specialises in Blockchain technology, AI and cybersecurity, the UAE and Australia represent a market for Israeli technologies, especially considering the UAE is Australia's top trading partner in the Middle East (AL- Monitor, 2021). The UAE's established government framework in AI is a model which Israel and Australia can adopt. For Australia, this unprecedented alliance creates an opportunity to technologically 'catch up' with the rest of the world and utilise these technologies domestically and within the Indo-Pacific region.

In a market for Israeli technologies, each country can use each other as an excellent customer basis for trade and market testing. Enabling the growth of AI across borders and regions channels best practices of global technology transfer to build an industry.

Many companies focus on applying AI in specific cases, delivering incremental change. However, business councils can be at the forefront of identifying business domains where AI can have a significant overhaul (Fountaine, et al., 2021, p. 57), reimagining business models and how people work with each other. Business councils play an integral role in promoting the implementation of strategic AI for trading purposes. The global AI market is predicted to grow by US \$19 billion (AUD 27.3 billion) between 2021 and 2025 (Technavio, 2021), and it is in the interests of business councils to make AI a priority.

To implement AI technology, governments should take radical steps to significantly enhance AI investment and implementation. Significant finance should be raised, and governments, industries and populations need to be educated about the potential to use AI to combat climate change. All technologies must be at a government's disposal to do this. AI is about prediction, measurement and enabling the work to combat climate change with transparent reporting and safe data storage. AI can underpin a low-carbon economy (Carrington, 2021), help report against and predict weather events for poor farmers (Horton, 2022), help monitor desertification (Lu, et al., 2022) and better advise solutions to national energy consumption challenges (Donnellan, 2020).

AI can be rapidly mobilised at scale to achieve net-zero targets. For example, 79 per cent of the UN's Sustainable Development Goals can be achieved using AI technology at scale (Vinuesa, et al., 2020).

We need to see technology as the pathway to our future and understand how to work with it to create a better world for people.

Some of the significant themes in this paper are 1) Fear of the unknown of AI implementation, 2) challenges and opportunities for Australia, Israel, and the UAE in AI, and 3) possible opportunities from which all these countries can learn.

Key Findings: Policy Outcomes

Based on the findings of this paper, the following seven key initiatives are highlighted for policy development:

1. *Demystify* the process of AI through promoting ethical AI usage
2. *Educate* about responsible AI usage
3. *Promote* multi-cultural awareness through ethical AI management
4. *Encourage* collaboration in AI through joint initiatives with start-ups
5. *Invest* in AI unsupervised learning systems
6. *Guarantee* Digital Sovereignty of AI
7. *Take bold risks* with AI

Defining Artificial Intelligence

Before addressing business opportunities within the field of AI, it is integral to first define what *is* Artificial Intelligence.

John McCarthy (McCarthy, 1956) first coined the term 'Artificial Intelligence' in 1956 as the science and engineering of making intelligent machines. In other words, Artificial Intelligence is computer systems developed to perform tasks that usually require human intelligence.

In the 21st century, however, AI has entered various industries that benefit businesses and consumers, such as Health Care, Education, Finance, Law, and Manufacturing.

In this context, AI can be defined as:

A wide-ranging branch of computer science (Buitin, 2022) and a constellation (Accenture, n.d.) of many technologies which mimic (Investopedia, 2021) human actions to enable problem-solving (IBM, 2020) and perform tasks without explicit guidance from a human being (CSIRO, 2019).

Having defined AI more broadly, AI will now be explored through its three stages.

Artificial intelligence has three different **stages**.

Stages of AI

1. **Narrow Artificial Intelligence (Weak AI):** A system designed or trained for a particular narrow task. This is operated in a minimal context, under constraints, performing a single task, including algorithms, limiting intelligence for lives and financial structure. A few examples of the top Narrow Artificial intelligence companies in Australia, Israel, and the UAE for 2022 are:

Australia	Israel	The UAE
Spark technologies ¹⁷ (Running an AI-powered research engine to predict outcomes and generate four million hypotheses for data per minute using AI) Alliance Software ¹⁸ Five2One ¹⁹ (Machine Learning algorithms) Intellify ²⁰ Blackbook AI ²¹	Fayrix ²² (custom software development and Big Data Services) Logz.io ²³ (Machine data analytics built on ELK and Grafana) Cortica ²⁴ (Facial recognition software and self-driving cars), Nexar ²⁵ (Dashboard camera application, recording video, providing situational reconstruction in case of accidents, machine vision and sensor fusion algorithms) SentinalOne ²⁶	Qualcomm AI ²⁷ G42 ²⁸ SoluLab ²⁹ DxMinds Innovation Labs Pvt Ltd ³⁰ Folio3 ³¹

The above companies are examples for potential co-investment or collaboration.

2. **General Artificial Intelligence (Strong AI):** These are machines capable of performing a vast range of tasks, possessing the ability to think and make decisions like humans. It applies intelligence to solve any problem whilst using human-like flexible thinking and reasoning with all its computational advantages, instant recall, and split-second number crunching. This AI can learn and upgrade itself, initiating recursive self-improvement.
3. **Artificial Super Intelligence (Any AI that surpasses human levels of intelligence):** This Artificial Intelligence is where machines pass the capacity of human intelligence. Notably, the philosopher David Chalmers argues (Chalmers, 2010) that artificial general intelligence is the path to superhuman intelligence. Chalmers highlights that AI can achieve equivalence to human intelligence, eventually surpassing human intelligence and can be expanded to dominate humans across arbitrary tasks

¹⁷ <https://www.zdnet.com/article/sparkbeyonds-ai-solution-smashes-4-million-hypotheses-per-minute/>

¹⁸ <https://www.alliancesoftware.com.au/>

¹⁹ <https://www.five2one.com.au/>

²⁰ <https://intellify.com.au/>

²¹ <https://blackbook.ai/>

²² <https://fayrix.com/>

²³ <https://logz.io/>

²⁴ <https://cortica.com/>

²⁵ <https://www.getnexar.com/>

²⁶ <https://www.sentinelone.com/>

²⁷ <https://itwire.com/guest-articles/guest-opinion/new-unified-qualcomm-ai-stack-portfolio-revolutionises-developer-access-and-extends-ai-leadership-across-the-connected-intelligent-edge.html>

²⁸ <https://q42.ai/>

²⁹ <https://www.solulab.com/>

³⁰ <https://dxminds.com/>

³¹ <https://www.folio3.com/>

completely. Bill Hibbard argues, that before AI transitions to super intelligence, people should be educated on Artificial Super Intelligence and its public control over its development (Hibbard, 2002). As seen in this paper, one of the key findings is the importance of public education on responsible AI usage.

The biggest opportunity for future economic growth in the AI landscape is General Artificial Intelligence and the Super intelligence space.

Whilst there are three stages to AI, it is important to distinguish this from the four types of AI.

Types of AI

1. **Reactive Machines AI:** Machines that operate only on present data. This type of AI can form inferences from data to evaluate future actions. Reactive Machines are more trustworthy and react the same way to the same stimuli each time.
2. **Limited Memory AI:** AI which can make improved decisions by studying past data in memory. This AI has temporary memory, that stores past experiences and evaluates future actions. E.g., Self-driving cars use sensors to identify people crossing roads to prevent accidents.
3. **Theory of Mind AI:** AI which focuses mainly on emotional intelligence so that human beliefs and thoughts can be better comprehended.
4. **Self-awareness:** Machines that have their own consciousness and become self-aware (AI which does not currently exist).

The Six Domains of AI

AI can be used to solve world problems in the following six domains (Buitin, 2022): Machine learning, Deep Learning, Natural Language Processing, Robotics, Fuzzy Logic, and Expert Systems

5. **Machine Learning:** The science of allowing machines to interpret process and analyse data to solve world problems.
6. **Deep Learning / Neural networks:** A process of implementing neural networks on high dimensional data to gain insights and form solutions. E.g., The logic behind Siri, Alexa, and Self-driving cars.
7. **Natural Language Processing:** The science of drawing insights from natural human language to communicate with machines and grow businesses.
8. **Robotics:** Focuses on the different branches and applications of robots. AI robots are AI agents which act to produce results by taking accountable actions in real world environment E.g., Sophia the humanoid.
9. **Fuzzy Logic:** Computing based approach that is used in fields to solve complex problems involving decision-making and automating gear systems in cars.
10. **Expert Systems:** An AI based computer system that learns and reciprocates the decision-making ability of an expert, using emotions to solve complex problems, not relying on conventional programming. Particularly used in fraud detection, virus detection and managing medical and hospital records.

The above processes should be considered when developing a collaborative AI strategy across regions, where each region can develop an expertise in one or more of the types, stages, and domains of AI.

Having defined the broader categories of AI, we can now look at AI from a business perspective through three different mechanisms, 1) **Process automation** 2) **cognitive insight**, and 3) **cognitive engagements**.

Firstly, AI can be utilised to improve **process automation**. Robotic process automation (RPA), an inexpensive and easy-to-use cognitive technology, has delivered quicker and higher investment returns. For example, NASA launched four projects in HR, with 86 per cent of transactions completed without human interactions. RPA can complete tasks such as transferring data from email to call centre systems, replacing lost credit or ATM cards, handling customer communication, surveying legal or contractual documents to extract provisions. Process automation can improve government systems and accelerate customer engagement. Business Councils should consider investing in this type of AI to enhance government services.

Secondly, AI can be seen through gathering **cognitive insights**, such as predicting customer buying behaviour, analysing warranty data, and automating ads. General Electric used this technology to integrate its supplier data and ultimately saved \$80 million USD (AUD \$116 million) in its first year, due to eliminating redundant data. This data improves performance on jobs that machines can only complete. Cognitive insights ensure governments and companies can better communicate to their populations.

Thirdly, AI can be perceived through **cognitive engagement** (Ronanki, 2018, p. 110). This includes projects where customers use natural language processing, offering 24/7 services, and internal sites for answering employee FAQs and product and health treatment recommendations. Cognitive engagement can be integral to developing robust government services.

By defining AI, we can better relate it to the purposes of business opportunities around the world.

Cybersecurity and AI Challenges and Opportunities

Understanding what AI is, and where it can be featured, let us now explore cybersecurity and AI challenges and opportunities in Australia, Israel, and the UAE. In this section, each country's cybersecurity and AI policy will be explored. Occasionally, references are made about other countries within each country's section. Each country's challenges and strengths are explored. Following this, opportunities are explored for all three countries, after which seven key findings are deduced.

Israel Challenges and Opportunities

Cybersecurity and Artificial Intelligence

Challenges

1. **Israel trails in AI government strategy:** according to a report by Tortoise (Tortoise, n.d.), Israel remains behind in infrastructure, operating environment, and government strategy on AI.
2. **Capital inconsistency between the state, commercial and private enterprises:** in Israel, there is an inconsistency between the operations on a state level and the large commercial and private enterprises in AI. 2019 saw 42 per cent of total capital raised in the tech sector by Israeli companies (Calcalist, 2021). This mismatch between government expenditure and private enterprise expenditure, reveals that Israel's government may need to align its AI policies to work with the industry in its own country.

Strengths

1. **Global leader and shaper in AI and cybersecurity:** Israel is commonly called the "start-up nation" and is a world leader in cybersecurity and AI. Israel is taking bold steps to boost its AI industry. Israel's AI ecosystem grew from 512 companies in 2014 to 1,150 at the end of 2019, a 120 per cent increase. According to a study conducted by the firm Tortoise (Tortoise, n.d.), which examined the AI capabilities of 54 countries, measuring seven characteristics: talent, infrastructure, operating environment, research, development, government strategy and commercial, Israel was ranked in fifth place overall, improving its ranking from previous years.
2. **Structured government system to combat cybersecurity:** Israel has structured a system for tackling cybersecurity in close cooperation with its Prime Minister's office, as seen here by an NCSO report (Housen-Couriel, 2017). In a three-way alliance, Israel can work with Australia on its cybersecurity structure, allowing Australia to operationalise its strategies better. As a leader in security, Israel can establish communication between various security organisations to avoid duplication of work and coordinate knowledge sharing. One way to implement this can be for a data repository to be created between Australia, Israel, and the UAE. A joint AUSJAEBC and AICC initiative could be a networking series focused on bringing a knowledge sharing repository to life.

UAE Challenges and Opportunities

UAE Cybersecurity

Challenges

1. **Increase in cyberattacks:** The UAE's geopolitical position and importance in the world economy in energy, gas, and aviation means that The UAE is a vulnerable target for cyberattacks. The UAE has seen a 250 per cent increase in cyberattacks since 2020. For example, Password reuse (digital14, 2021) is one of the most common weaknesses in the UAE, alongside malicious codes, phishing attacks, and ransomware.
2. **Lack of cyber risk management framework implementation:** Companies in The UAE have not implemented a comprehensive cyber-risk management framework or performed limited cyber-risk assessments.

UAE Artificial Intelligence

Strengths

1. **Readiness to adopt AI technologies:** A 2019 report placed The UAE at the top of the Arab world in its readiness to adopt AI technologies (Ryan, 2019). The UAE has proposed to adopt an AI curriculum whilst also launching six innovative platforms to integrate technology within the education system. The UAE will be benefiting from its global technology revolution, investing heavily in AI. PwC highlights (PwC, 2020) that the AI field will contribute the most money to the UAE in the Middle East, contributing 14 per cent of its national GDP by 2030. Moreover, the annual growth in AI contribution will be 33.5 per cent of UAE's national GDP between the years 2018 and 2030. Foreign Direct Investment (FDI) is increasingly flowing to the UAE (Iqtait, 2022) by 3.9 per cent to almost AUD \$20.7 billion in 2021, including considerable investments³² made in Artificial Intelligence.
2. **Leader in AI implementation:** The UAE is a leader in AI in Resources & Energy. It is also a leader in Logistics and Transport, notably air and sea hubs, making it a valuable place for piloting new systems. Further, it is leading in Tourism and Hospitality with AI. There is an opportunity for The UAE to become the first in ranking for customer support for AI, creating integrated and personalised services for tourists. The UAE's AI strategy focuses on Smart Public service delivery, using AI sensors for smart traffic, facial recognition to monitor driver fatigue, and chatbots to facilitate customer service. Lastly, The UAE government will play a direct role in designing and enabling AI systems that create the most value for society.

³² <https://www.zawya.com/en/wealth/alternative-investments/uae-attracted-207bln-fdi-in-2021-c6bxncnk?amp=1>

Australia Challenges and Opportunities

Australia Cybersecurity

Challenges

1. **Evolving malicious cyber activity:** Australia faces evolving malicious cyber activity (Australian Government, 2020-2021). Ransomware is one of the most damaging forms of cyberattacks for industry and individuals, having long-lasting and adverse impacts on Australian corporations and businesses. Nevertheless, low industry expectations and difficulty quantifying cybersecurity success disadvantages Australia's strategic response to regional threats. Whilst projects like Project Redspice (Directorate, 2021) will likely be used to set up AI-empowered capabilities, such as automating prevention and detection of predictable cyber, investing AUD \$9.9 billion over the decade, there are still shortfalls within agencies in Australia.
2. **Reskilling the Australian workforce:** There is currently no system (Whyte, 2019) to certify whether individuals in organisations have the correct qualifications to assess cyber risk. Only one agency out of eighteen has met mandated information security guidelines, found in the Interim Report on Key Financial Controls of Major Entities (Australian National Audit Office, 2020).
3. **Unequal training in cybersecurity:** Currently, companies do not provide equal opportunity for genders in AI reskilling. AI implementation should also be ethically operationalised³³.

Australian Artificial Intelligence

According to a recent report (Thompson, 2022), there are four societal AI trends in Australia: 1) The emergence of 'Machine-mates' (Human-AI Teams), 2) the rise of hyper-personalised experiences, 3) ethical considerations in AI and 4) managing disagreement in Australia over divisive issues.

Artificial Intelligence Demand in Australia

In Australia, there is an emerging demand around four key themes of AI:

1. **Object detection:** Real-time object detection recognition, leveraging innovative technologies for law enforcement and national security.
2. **Natural Language Processing:** Primarily used in service delivery and integrated knowledge management. For example, multilanguage speech-to-text is an automated document discovery analysis.
3. **Digital Twins:** Digital representation of physical systems or environments to drive new insights and intelligent operations. This is operationalised through geographical modelling and feedback mechanisms to recreate the physical world. This optimises the system with the energy grid regarding power usage in

³³ Microsoft's new AI3C board should be consulted by business councils (Spencer, 2022). It has been created to ensure that AI solutions have positive societal and healthcare outcomes and track the AI adoption in the industry. It was also created to ensure ethical adoption and utilisation. *Aether*, a Microsoft cross-company initiative, is leading on AI Ethics. Microsoft's research in Medical Health and genomics is upscaling and sits it as a powerhouse_(Microsoft, 2022)_to be consulted

the network. For example, Green Gravity innovates disused mine shafts to drop weights and transfer energy to and from the grid, utilising Digital Twins

4. **Scientific computing in academic research**

Strengths

1. **Australia has prospective to grow in AI:** There is prospective for AI to grow in Australia, driven by its potential to create jobs, and contribute to economic growth. In Australia's AI roadmap (CSIRO, 2019), Australia includes investing AUD \$53.8 million to create the National Artificial Intelligence Centre and providing AUD \$12 million to co-fund 36 grants to develop AI solutions that address local or regional problems.

Challenges

1. **Lack of AI adoption**

Whilst Australia leads in promoting (Government, 2021) AI technologies, it trails in its adoption of bias, privacy, and training. Despite hesitancy in Australia about AI adoption, it should be illustrated that Australian's view the ethical use of AI as prime importance (Tan, 2021).

2. **Australia is trying to keep a pace with AI adoption**

Australia is trying to 'keep a pace' with the rest of the world. Further, Australia is not investing enough in AI (Arboleda, 2022). Most Australian companies use AI as a service technology without building their infrastructure.

3. **Australia is still at the experimentation phase of AI**

As reported in Deloitte's AI Dossier (Deloitte, 2021), 74 per cent of Australian businesses were still in the AI experimentation stage. This means they were still modernising their companies' data for AI and introducing pilot programs and proofs-of-concepts, however, without clear vision to connect strategy and implementation. Deloitte found in its report that only 26 per cent of businesses in Australia emphasise high implementation of AI at scale. Scaled AI across organisations in a production-ready context is relatively rare.

4. **Australia's current AI market is undeveloped**

The current market in Australia is undeveloped with the Australian Financial Review Reporting that there are no current AI laws governing the space (Gillezeau, 2020).

5. **People do not understand what AI is or where they can apply it to their everyday lives** (Dodd, 2021)

6. **Businesses have taken a technological focus rather than a problem-solving focus** (Dodd, 2021)

Companies want technologies to solve individual tasks or initiatives, rather than seeing how the technology can be applied to other work areas.

7. **Organisations struggle to move beyond proof of concept** (Dodd, 2021)

The challenge is not building the AI models but how the developed system is created in production. Organisations focus on the prototype rather than its production.

8. **Lack of skilled resources**

Additionally, Australia lacks skilled workers, with the most acute needs in AI researchers, business leaders, and software developers. According to a 2018 Deloitte report (Deloitte Insights, 2019), an AI

mismatch exists in Australia between perceived levels of urgency and readiness. This was mainly seen with Centrelink's automated income compliance regime, Robo debt (Bonyhady, 2022). Further, according to Deloitte's report, the window for competitive differentiation with AI is closing.

AI Awareness and education are the critical barriers to the adoption of AI in Australia, ethical use of AI, explainability, security and its privacy. An AI Australia campaign should focus not only about creating awareness but also changing company behaviour surrounding AI importance through government fiscal initiatives.

9. Lack of acceptance of AI ethnicity and its use in the community

The fundamental barrier to AI in Australia is an acceptance of business leaders, the tech community and the broader community of the ethnicity and the use of AI to benefit the community. The opportunity for a joint initiative to conquer these challenges is too important to ignore.

Having explored the challenges and strengths of AI in all three countries, let us now explore areas of opportunity to collaborate and develop in each country.

For the purposes of this paper, whilst the UAE has two challenges and two strengths, and Israel has two challenges and two strengths, Australia has 12 challenges and one strength. Australia seemingly has many more challenges in AI and cybersecurity than the UAE and Israel. Therefore, this section of the paper will first analyse potential areas for growth in Australia followed by the UAE and ways which Australia can learn from Israel and the UAE.

Following this, a section on joint initiatives will be explored after which key findings will be summarised. As Israel is a leader in AI, it does not have its own dedicated section in this part of the paper. Rather, Israeli initiatives are inserted amongst the Australia and UAE sections to mitigate their challenges to promote co-joint initiatives.

Australia Areas for Growth (Donnellan, 2019)

Natural Resource Management

AI technology would ameliorate economic efficiency and decrease the environmental footprint of mining and environmental management. This is particularly important as Australia's agriculture workforce is shrinking and ageing. For example, the median age of Australian farmers is now 56 years old, up from 54 years a decade ago (ABARES, 2021) and those employed in agriculture have dropped from 7 per cent in 1990 to 2.6 per cent in 2020-2021 (University of New England, 2022). Since the agriculture workforce is decreasing, AI can be more highly regarded as an industry which can reduce differences in field shortage. The implementation of this may include, but is not limited to, robotics on farms to enhance seeding, soil, monitoring crops, removing weeds, pest removal and chemical treatments. By implementing AI robotics on farms, farming techniques can be enhanced and more precise.

In the mining industry, site operations can be automated to include extraction, digging and drilling with the use of robotics and AI technologies. AI can enhance the environmental management sector, improving weather forecasting with machine learning and predicting spatial weather patterns more accurately.

Health, Aged Care and Disability Services

AI can improve the health and wellbeing of Australians. Since the COVID-19 pandemic, the Mental Health Care portfolio has grown from AUD \$3.3 billion to an estimated AUD \$6.8 billion in 2022-2023 (Australian Government, 2022). The global digital healthcare market is expected to exceed AU \$521.22 billion by 2024 (GMI, 2018). There is strong evidence for demand in joint collaborations for healthcare solutions and utilising AI can help get us there quicker.

Towns, Cities, and Infrastructure

AI can be utilised for built cities by improving efficiency and safety of transport. In 2018, it was reported in Australia that there were 1,123 road deaths in Australia, an increase (DIRDC, 2022) of 2.6 per cent from 2020. It is estimated that the annual cost of road crashes in Australia is AU \$27 billion (DIRDC, 2022). Moreover, traffic congestion costs Australia AUD \$19.0 billion. Without the necessary infrastructure investment in cities, a report conducted by Infrastructure Australia estimates this cost to reach AUD \$39.8 billion dollars (Infrastructure Australia, 2019).

A study conducted by AlphaBeta, now known as Accenture, illustrated that by 2028, data-driven urban management will be an AUD \$20-30 billion global market (AlphaBeta, 2018).

Automated vehicles can be invested in to develop cities. According to the ATIC (ATIC, 2018), the vehicle market is estimated to reach USD \$249.6 billion (AUD \$359.4 billion) by 2030. A study conducted by AlphaBeta and CSIRO's Data61 found that those digital technologies which include AI are worth AUD \$315 billion to the Australian economy by 2028 (AlphaBeta, 2018). Australia could invest in vehicle-to-vehicle communication to improve traffic. The increasing rate of urbanisation worldwide will mean there is high demand for AI solutions to better enhance cities.

UAE Areas for Growth

Adopting UAE's Mature AI Strategy as best practice

The UAE has a mature AI Strategy. The strategy was the first of its kind and supported AI application through an array of nine sectors, including transport, health, space, renewable energy, water, technology, education, environment, and traffic. In 2017, the UAE established a ministry of AI. It is a government body that works with the Ministry of Education to include AI in its national curriculum, preparing and training people for future jobs. The ministry implements laws and legislation that govern AI and endeavours to be a global hub for Artificial Intelligence. The UAE launched a campaign in 2019 called 'Think AI'³⁴, aiming to accelerate AI adoption in the UAE. The UAE hosted roundtables, workshops, and panel discussions in this campaign, including field experts in AI worldwide. The UAE's AI strategy can be showcased to Israel and Australia to enhance their own AI strategies.

³⁴ <https://www.arabianbusiness.com/industries/technology/414918-think-ai-how-the-uae-sees-the-future>

Utilising AI in education, healthcare, and the public sector

The UAE is including AI in its healthcare and education. The importance of UAE AI incorporation in the education sector can be seen through its partnership with Alef education³⁵, a global education technology company in Abu Dhabi. Alef Education has integrated (Alkhalisi, 2019) its digital education platforms into a myriad of schools in Abu Dhabi and Al Ain. Alef's technological capabilities amplifies student learning at school. Using Artificial Intelligence, Alef assesses students' understanding of concepts and recommends more reading material (Shabdaar, 2019) for students to improve their studies. The partnering with Alef was part of an experiment that saw 240 Grade 6 students in Abu Dhabi facilitate their studies with AI.

As part of the experiment, student's English scores improved by 27 per cent, and Maths scores improved by 78 per cent. AI can recommend lesson plans for teachers based on different student capabilities and learning habits. Studies like these show best practices in the field of AI. The UAE has also indicated (Government, n.d.)_their strategy that uses AI and robots to automate different surgeries and procedures. It has also outlined how different robotics can replace elements of the public service and the police force, accelerating data entry, rapidly transforming the public sector, and keeping its country safe whilst maximising human resources in other areas of operation.

Integrating AI into the aviation and transport industries

The UAE is integrating AI into the aviation and transport industries. Emirates, The UAE's airline carrier, has developed AI-powered assistants to support customers pre- and post-flights. The UAE is also seeking to incorporate the use of AI in its country's air traffic management (Arabian Business, 2018). There are plans to launch robots (Essah, 2018) to detect criminals' faces or report suspicious activity. The UAE is looking to industrialise flying taxis (Time Out Dubai, 2019). The UAE aims to automate around a quarter of its transport systems by 2030.

The opportunity is to share cross-border initiatives of a similar vein as the above examples.

Joint Initiatives between Australia, Israel and the UAE

The opportunity to connect between regions and co-design future AI landscapes, thwarts threats and combines collaboration between Australia, Israel, and the UAE's tech strategies. Utilising joint strengths will garner geo-political resilience.

The following are joint initiatives for which the three countries can engage in:

#1 Provide Grants

The Israel Innovation Authority in 2019 provided grants in AI infrastructure and underfunded sectors to 219 companies working on the field of AI technologies for roughly 415 million Shekels (AUD \$175.6 million). Providing

³⁵ <https://www.alefeducation.com/our-profile/>

grants, but particularly to invest in collaboration with other countries for AI usage, encourages opportunities in the AI sector and promotes creativity and business.

#2 Cybersecurity Iron Dome

Currently, Israel prioritises joint ventures on ransomware (PYMNTS, 2021) with the United States in an alliance which connects these two regions. Israel is looking at building a cybersecurity Iron Dome (CyberSecurity Connect, 2022). Similar AI and cybersecurity projects with Australia and The UAE would connect Australia to a cybersecurity hub and funnel business between Australia's biggest trading partner in the Middle East (AI-Monitor, 2021). Israel is the Middle East Cyber Guarantor (Alhalwany, 2021) and now is the time to include Australia in its digital partnerships, given its solid and supportive stance on Israel (Narunsky, 2022)³⁶.

#3 For the creation of a Centre of Excellence

This is another opportunity where Australia, Israel and the UAE AI knowledge can collaborate under the Centre of Excellence initiative³⁷, between the three countries. By joining together, Australia and Israel can mitigate the UAE's challenges.

#4 Implement proactive capability

It is recommended that the Australian government implements a proactive capability to detect adversaries trying to take down Australia's systems. Australia should collaborate with Israel's pursuit of its cyber Iron Dome.

#5 Create a new cyber minimum standard in Australia

A new cyber minimum standard (Tan, 2020) should be implemented with validation breaches, empowering agencies, and mitigation strategies against immediate threats.

#6 Reskill and train equally in cybersecurity

Australia should reskill and train equally across the sexes. Currently, companies do not provide equal opportunity for genders in AI reskilling. AI implementation should also be ethically operationalised.³⁸

#7 UAE investment in Australian AI industries

The UAE can use the techniques used from Australia's mining industry to transfer and apply some of the mechanisms to UAE operations in different sectors. The transferability of strategy and process can maximise

³⁶ Particularly see Prime Minister's comment on Australia's support for Israel in the United Nations: "in the UN, where I've ensured that Australia's position has been fully reversed and moving from abstain to reject on those usual motions that are put up every year"

³⁷ See Policy #1 Demystify the process of AI through promoting ethical AI usage, CoE

³⁸ Microsoft's new AI3C board should be consulted by business councils (Spencer, 2022). It has been created to ensure that AI solutions have positive societal and healthcare outcomes and track the AI adoption in the industry. It was also created to ensure ethical adoption and utilisation. *Aether*, a Microsoft cross-company initiative, is leading on AI Ethics. Microsoft's research in Medical Health and genomics is upscaling and sits it as a powerhouse_(Microsoft, 2022)_to be consulted

other industries such as space, energy, and health care. Australia can increase its economic cooperation with the region as it diversifies its trade and investment partners (Global Business Outlook, 2020).

#8 Skin Cancer joint initiative

One joint challenge that faces Australia, Israel and the UAE are its hotspots for skin cancer in its populations. Australia has the highest skin cancer rates in the world (World Cancer Research Fund International, 2022), with Israel placed 13th (Richard David Kann Melanoma, 2019) and the UAE (Omnia Health, 2019) having skin cancer as the most common male malignancy, with a prevalence rate of 14.5 per cent. A joint initiative can be approached whilst using AI systems (Esteve, et al., 2017) to match human dermatologists to better identify skin cancer more quickly. This will allow for lower cost and earlier detections of skin cancer, improving survival rates of patients. Countries recovering from the COVID-19 pandemic in hospital systems which are understaffed and overwhelmed (Newswire, 2022), can also benefit from AI technology to ensure healthcare is delivered in a cost-efficient manner.

#9 Traffic solutions in Australia

An Israel company, Mobi (Mobi, 2022), can work together with Australia to establish to create solutions for managing transportation networks in a joint country initiative. The company uses AI to predict traffic congestion locations, installing wireless solar-powered sensors throughout a smart city. As the UAE is also a leading initiator in smart cities, it can also equally gain from its partnership with Mobi.052333

#10 The Big risk. Waiting to adopt AI

Countries should endeavour to move quickly with AI adoption. AI takes substantial time to develop into systems, including training data. In most cases, AI supports individualised tasks rather than entire business processes. Therefore, businesses need to be reorganised for successful AI implementation, and such an initiative should be conducted together by Israel and the UAE to enhance Australia's AI

#11 Mitigating AI risk in Australia

Proactively increasing awareness, and the ethical and safety implementation amongst senior leaders, business leaders and the community of AI will ensure a better readiness to invest and adopt AI. Some sectors, such as mining, embrace and drive change using AI. Nevertheless, in Australia, there is a lag in adopting AI to real-world problems. The core of this is that there is a lack of understanding of AI's business applications to transform businesses. People struggle to see its value. In Australia, there is a lack of success stories and tangible metrics on return of investment to justify a significant investment in AI. Australia needs an immediate overhaul of its software and skilled workers in AI, which should be pursued with extreme care and transparency.

Key Findings

Having explored a few joint initiatives between Australia, Israel and the UAE, the following policies can be extracted:

POLICY #1 Demystify the process of AI through promoting ethical AI usage

Practically understanding one's data is a foundational element to enable organisations to use AI responsibly. Instead of using buzzwords such as 'AI', it is essential to see beyond this by implementing AI. The more AI is generalised, the more people see this, the more it is understood and demystified, and the less it is feared. The Hollywoodisation of AI has warped people's perception of AI (France-Press, 2022). Business councils could play a role to demystify populations through educational trade missions, targeted networking events, and dual collaborative workshops.

There is much fear around the ethics of AI. When designing and developing AI, it should be trustworthy on several dimensions. A reliable AI framework would entail being:

- Transparent and explainable.
- Accountabilities for the creator of the system and AI decisions.
- Have an organisational structure around AI.
- Models should be robust and secure from cyber, with well-managed privacy.
- According to a recent report (Thompson, 2022), employees and customers will work with brands actively implementing ethics, accessibility, and fairness.

A joint ethics initiative by the Australia UAE Business Council and the Australia Israel Chamber of Commerce can harness this work by promoting ethical AI as a trade incentive. The inclusivity of AI in the government system is integral. International cooperation is vital for nations collaborating with shared values to work together on opportunities.

To further demystify AI, an **AI Centre Of Excellence (CoE)** should be created.

An AI CoE (Rosenthal, 2021) develops internal capabilities to educate employees about AI technologies, facilitating processes and organisation. A group of technical experts can be assembled to large-scale AI projects so they can be performed at their highest potential. Such a centre can help filter projects that will be of value to businesses or countries and provide technical advice. This can range from workshops to supporting AI pilots and amplifying employees' understanding to implement AI. The CoE can be created with cross-council or chamber collaboration. It is essential to ensure decisions are informative and costs developments are responsibly pursued. For example, The Data Science Group (The Data Science Group, 2022) offers consulting in a CoE service, an Israeli company that has opened its offices in Victoria, Australia. More of these initiatives can be encouraged through the establishment of a joint CoE for AI collaboration, channelling top talent to the table to solve real world problems.

POLICY #2 Educate about responsible AI usage

Governments should look to launch initiatives that promote understanding of AI. For example, the UAE launched an "AI and Robotics Award for Good" (Halaweh, 2018) in 2015 to encourage innovative research in AI. This award increased awareness among the public of Artificial intelligence opportunities. The UAE's Sheikh Mohammed, the ruler of Dubai and UAE Prime Minister, launched a "One Million Arab Coders Initiative" in 2017, providing training to young Arabs in computer programming.

The OECD created an AI computing task force (OECD, 2018) whose primary mission is to create a simplified explanation for AI capacity per country. Ministries should engage in these task forces and then simplify task force policy to disseminate the purposes of it to their own populations through launching nationwide campaigns about AI. A basic understanding of AI should be heavily incorporated into school and university curriculum.

POLICY #3 Promote multi-cultural awareness through ethical AI management

Create an Institutional Review Board (IRB)

A joint initiative could include creating a governing body between all three countries which unites policy for companies through an institutional review board (Blackman, 2020). This encourages discussions of AI ethics following a flawed formula with biased "fairness". For example, a stakeholder may be racist, but this personality trait cannot be derived from an ethical decision from stakeholder input. More comprehensible ways are needed to discern ethical risks with AI. Review boards approve, deny, or advise changes to research projects. However, to systematically identify AI risks, an IRB needs to be a diverse team of experts with different backgrounds and knowledge of fields of lawyers. An IRB creates communication and a culture of ethics and trust in AI. Business council and chambers of commerce can promote the importance of an IRB in government levels.

POLICY #4 Encourage collaboration in AI through joint initiatives with start-ups

For the emergence of a new type of firm in the market, one where AI is the primary source of value creation and delivery (Lakhani, 2021, p. 15). The challenge is that AI-driven operating models are creating faint lines that once would distinguish industries and rules of businesses. As start-ups and countries upskill in Artificial Intelligence, it is critical to understand AI's incredible impact when pursued collaboratively.

POLICY #5 Invest in AI unsupervised learning systems

The applicability of AI-based systems is still relatively narrow³⁹. An Image system may be able to translate a language but unable to express the meaning behind the character. Machines should be exhibiting general intelligence across diverse domains. In machine learning, there are supervised learning systems and unsupervised learning systems. Systems can be robust through unsupervised learning systems. In that case, they will open many doors to look at complex problems in new ways that are beyond human capacity of which we are currently unaware.

³⁹According to Erik Brynjolfsson, a professor and senior fellow at Stanford Institute for Human-Centred AI and Andrew McAfee, co-founder of the initiative on the Digital Economy in the MIT Sloan School of Management

POLICY #6 Guarantee Digital Sovereignty of AI

In all three countries, there is an immediate need to ensure that whilst enablement of technology is pursued, and data privacy should be immediately addressed, Digital Sovereignty should be guaranteed. One way of overcoming the challenge of digital sovereignty is for countries to receive multiple technologies from multiple countries, where each country can share the same set of values. Data sovereignty, using platforms such as Blockchain, can be used for assurance and security.

For example, the government of the UAE has built its digital sovereign cloud, and based on that model, other countries can emulate it. This removes any hesitation about privacy issues; instead, every government and entity that is a recipient of this technology operates under its sovereignty. A multi-layered cloud, therefore, becomes an airport of multinational values. This is a project that the company G42 (G42, n.d.) is pursuing. When this cloud is operationalised, nation-states can then license AI.

Policy #7 Take bold risks with AI

The UAE and Australia can encourage its private sector to embed more risk-taking, which it can obtain from Israel's manner of doing business, known as "Chutzpa" (Press, 2018). To maximise AI utilisation, firms and companies should understand which technologies to prioritise based on the best business needs. More importantly, AI should be embraced, especially in Australia, to increase its uptake to an implementation stage of AI.

The Future

In line with the seven policy initiatives highlighted, (Demystification, Education, ethical awareness, Collaboration, Investment, Digital Sovereignty and Taking Bold Risks), there are significant strategic business and trading opportunities for Australia, Israel and the UAE when collaborating in cybersecurity and AI. An alliance between the three countries opens new markets for the Pacific region, Gulf Countries (GC) and the Middle East North Africa (MENA). The UAE and Israel's strengths and capabilities complement each other (Zaken, 2021) and create the plausibility of a super-powered technological partnership to open global scalable markets for cross-regional industry expansion.

Israel can refine its institutions and regulations whilst promoting its technologies. The UAE is poised to be an adopter of AI technologies from Israel and a conduit of best practices for Israel. Australia can invest in these Israeli technologies and be vaulted into an alliance of future investment and opportunities. Australia can thrive and prosper with AI and cybersecurity to conquer its regional and strategic threats.

For Artificial Intelligence, the following is clear: The most agile and adaptive companies and countries will thrive. Indeed, countries that harness this as a return on investment and respond to opportunities will seize AI's advantages. Governments should strive to build by adopting AI strategies. They should be willing to experiment and be ready to move quickly. Countries should experiment with new ideas and be willing to take risks. Countries should work together to take better risks to have better AI. Countries and communities have the capacity to better embrace AI. It is in the joint hands of councils and chambers of commerce to assist governments and corporations to achieve more of these opportunities through regional cooperation initiatives.

References

- ABARES, 2021. *ABARES*. [Online]
Available at: <https://www.awe.gov.au/abares/products/insights/snapshot-of-australias-agricultural-workforce>
[Accessed 4 April 2022].
- Accenture, n.d. *Accenture*. [Online]
Available at: <https://www.accenture.com/au-en/insights/artificial-intelligence-summary-index>
[Accessed 7 April 2022].
- AL- Monitor, 2021. *AL Monitor*. [Online]
Available at: <https://www.al-monitor.com/originals/2021/12/uae-australias-top-trading-partner-middle-east>
[Accessed 24 December 2021].
- Alhalwany, I., 2021. Israel is becoming a cybersecurity guarantor in the Middle East. Here's how.. *The Atlantic Council*, 18 November.
- Alkhalisi, Z., 2019. Abu Dhabi startup is using AI to transform how kids learn. *CNN*, 5 March.
- AI-Monitor, 2021. UAE is Australia's top trading partner in the Middle East. *AI-Monitor*, 8 December.
- AlphaBeta, 2018. Digital innovation: Australia's \$315B opportunity, Sydney: AlphaBeta.
- Anon., . *Bar Hillel Artificial Intelligence Research Machine Translation*. [Online]
Available at: <https://www.theguardian.com/technology/artificialintelligenceai>
[Accessed 28 6 2022].
- Arabian Business, 2018. UAE signs deal to explore AI in air traffic management. *Arabian Business*, 16 October.
- Arboleda, N., 2022. *CRN*. [Online]
Available at: <https://www.crn.com.au/news/australian-govt-not-sufficiently-investing-enough-in-artificial-intelligence-research-institute-boss-579899>
[Accessed 13 May 2022].
- ATIC, 2018. Connected and Automated Vehicles. Australian Trade and Investment Commission, Canberra: Australian Government.
- Australian Government, D. o. H., 2022. *Australia 2022-23 Budget*, Canberra: Department of Health.
- Australian Government, D. o. H. A., 2020-2021. *Cybersecurity*. [Online]
Available at: <https://www.homeaffairs.gov.au/about-us/our-portfolios/cyber-security/strategy>
[Accessed 8 March 2022].
- Australian National Audit Office, 2020. *Interim Report on Key Financial Controls* , Canberra: Auditor General.
- Blackman, R., 2020. If Your Company Uses AI, It Needs an Institutional Review Board. *Harvard Business Review, Special Issue*, March, pp. 147-151.
- Bonyhady, N., 2022. From 'no case' to \$1.2b settlement: How robo-debt scheme went so wrong. *Sydney Morning Herald*, 6 March, pp. <https://www.smh.com.au/politics/federal/from-no-case-to-1-2b-settlement-how-robo-debt-scheme-went-so-wrong-20201119-p56g2k.html>.
- Builtin, 2022. *Builtin*. [Online]
Available at: <https://builtin.com/artificial-intelligence>
[Accessed 7 April 2022].
- Calcalist, 2021. *Calcalist*. [Online]
Available at: <https://www.calcalistech.com/ctech/articles/0,7340,L-3886022,00.html>
[Accessed 1 May 2022].
- Carrington, J., 2021. *World Economic Forum*. [Online]
Available at: <https://www.weforum.org/agenda/2021/09/how-ai-is-transforming-decarbonising-and-cleaning-up-the-grid/>
[Accessed 5 February 2022].
- Chalmers, D., 2010. The Singularity: A Philosophical Analysis. *Journal of Consciousness Studies*, Volume 17, pp. 7-65.
- CSIRO, 2019. *Artificial Intelligence Roadmap*, Canberra: Australian Government.
- CyberSecurity Connect, 2022. Israel Orders Telecoms to Build 'Cyber Iron Dome'. *CyberSecurity Connect*, 6 May.
- Deloitte Insights, 2019. Future in the balance? How countries are pursuing an AI advantag, s.l.: Deloitte.
- Deloitte, 2021. *The AI Dossier*, s.l.: Deloitte.
- digital14, 2021. UAE enterprises must act now to avoid financial and reputational costs from cyber attacks. *digital14*, 31 May.
- DIRDC, 2022. *Road Trauma Australia—Annual Summaries*, Canberra: Australian Government.
- Directorate, A. S., 2021. *REDSPICE : A Blueprint for growing ASD's Capabilities*, Canberra: Australian Government.
- Dodd, K. N. a. E., 2021. Artificial Intelligence Part One - AI 101 with the Deloitte AI Institute Australia. s.l.:Deloitte.
- Doffman, Z., 2020. *Forbes*. [Online]
Available at: <https://www.forbes.com/sites/zakdoffman/2020/01/04/soleimani-revenge-this-is-why-irans-most-dangerous-cyber-weapons-will-stay-hidden/?sh=675aeeb054ee>
[Accessed 15 March 2022].
- Donaghy, R., 2015. *Middle East Eye*. [Online]
Available at: <https://www.middleeasteye.net/news/revealed-mercenaries-commanding-uae-forces-yemen>
[Accessed 5 January 2022].
- Donnellan, A., 2019. *CSIRO*. [Online]
Available at: <https://algorithm.data61.csiro.au/ai-for-australia-its-current-and-future-impact/>
[Accessed 7 April 2022].
- Donnellan, A., 2020. *CSIRO*. [Online]
Available at: <https://algorithm.data61.csiro.au/machine-learning-reveals-new-insights-about-energy-consumption-in->

- australia/
[Accessed 5 February 2022].
- Essah, M. B., 2018. Dubai airport to launch robot that can detect and report suspicious people. *StepFeed*, 4 April.
- Esteva, A. B. et al., 2017. Dermatologist-level classification of skin cancer with deep neural networks. *Nature*, 542(115).
- Fontaine, T., McCarthy, B. & Saleh, T., 2021. Getting AI to Scale. *Harvard Business Review*, Special Issue Winter 2021 (How AI Is Changing Work), p. 57.
- France-Presse, A., 2022. *The Manila Times*. [Online]
Available at: <https://www.manilatimes.net/2022/04/27/news/uae-vows-responsible-artificial-intelligence-rollout/1841443>
[Accessed 28 April 2022].
- G42, n.d. G42. [Online]
Available at: <https://g42.ai/>
[Accessed 7 April 2022].
- Gillezeau, N., 2020. Why Australia is falling behind on AI. *Financial Review*, 12 February.
- Global Business Outlook, 2020. *Global Business Outlook*. [Online]
Available at: <https://www.globalbusinessoutlook.com/the-beginning-of-ai-revolution-in-uae-healthcare/>
[Accessed 8 April 2022].
- GMI, 2018. Digital health market size to exceed \$379bn by 2024, s.l.: Global Market Insights.
- Government, A., 2021. *Australia's Artificial Intelligence Action Plan*, Canberra: Australian Government.
- Government, U., n.d. *The United Arab Emirates' Government Portal*. [Online]
Available at: <https://u.ae/en/about-the-uae/digital-uae/robotics-and-ai-applications>
[Accessed 7 April 2022].
- Halaweh, M., 2018. Artificial Intelligence Government (Gov. 3.0): The UAE Leading Model. *Journal of Artificial Intelligence Research*, Volume 62, pp. 269-272.
- Hibbard, B., 2002. *Super-Intelligent Machines*. s.l.: Kluwer Academic/Plenum Publishers.
- Horton, M., 2022. *nvidia Developer*. [Online]
Available at: <https://developer.nvidia.com/blog/global-ai-weather-forecaster-makes-predictions-in-seconds/#:~:text=New%20weather%2Dforecasting%20research%20using,6%20weeks%20into%20the%20future.>
[Accessed 5 February 2022].
- Housen-Couriel, D., 2017. *National Cyber Security Organisation: ISRAEL*, Tallinn: NATO Cooperative Cyber Defence Centre of Excellence.
- IBM, 2020. *IBM Cloud Education*. [Online]
Available at: <https://www.ibm.com/au-en/cloud/learn/what-is-artificial-intelligence>
[Accessed 7 April 2022].
- Infrastructure Australia, 2019. *Urban Transport Crowding and Congestion*, Canberra: Infrastructure Australia.
- Investopedia, 2021. *Investopedia*. [Online]
Available at: <https://www.investopedia.com/terms/a/artificial-intelligence-ai.asp>
[Accessed 7 April 2022].
- Iqtait, S. A. a. A., 2022. Why the Middle East matters to Australia. *The Interpreter*, 24 May.
- Lakhani, M. I. & K. R., 2021. Competing in the Age of AI. *How AI is Changing Work*, Harvard Business Review Press, March, p. 15.
- Lu, G., Xu, D. & Meng, Y., 2022. *Dynamic Evolution Analysis of Desertification Images Based on BP Neural Network*. [Online]
Available at: <https://pubmed.ncbi.nlm.nih.gov/35341196/>
[Accessed 10 April 2022].
- McCarthy, J., 1956. *Professor John McCarthy*. [Online]
Available at: <http://jmc.stanford.edu/artificial-intelligence/what-is-ai/index.html>
[Accessed 10 April 2022].
- Microsoft, 2022. *Microsoft*. [Online]
Available at: https://www.microsoft.com/en-us/research/research-area/medical-health-genomics/?facet%5Btax%5D%5Bmsr-research-area%5D%5B0%5D=13553&sort_by=most-recent
[Accessed 7 April 2022].
- Mobi, 2022. *Mobi*. [Online]
Available at: <https://www.mobilityinsight.net/>
[Accessed 7 April 2022].
- Narunsky, G., 2022. 'I've never had an each way bet on Israel'. *The Australian Jewish News*, 24 February.
- Newswire, A., 2022. *Deniliquin Pastoral Times*. [Online]
Available at: <https://www.denipt.com.au/national/health-crisis-could-risk-patient-safety-2/>
[Accessed 11 June 2022].
- OECD, 2018. *OECD*. [Online]
Available at: <https://www.oecd.org/innovation/oecd-creates-expert-group-to-foster-trust-in-artificial-intelligence.htm>
[Accessed 1 May 2022].
- O'Flaherty, K., 2020. *Forbes*. [Online]
Available at: <https://www.forbes.com/sites/kateoflahertyuk/2020/01/06/the-iran-cyber-warfare-threat-everything-you-need-to-know/?sh=2b35325215aa>
[Accessed 10 April 2022].
- Omnia Health, 2019. *Omnia Health*. [Online]
Available at: <https://insights.omnia-health.com/medical-specialities/skin-cancer-growing-public-concern-uae>
[Accessed 7 April 2022].

- Press, V. S., 2018. *NoCamels*. [Online]
Available at: <https://nocamels.com/2018/10/daring-chutzpah-israel-blockchain-frontrunner/>
[Accessed 7 February 2022].
- PwC, 2020. Which regions will gain the most from AI?, s.l.: PwC.
- PYMNTS, 2021. US, Israel Partner on Cybersecurity Issues. *PYMNTS.com*, 14 November.
- Reuters, 2020. *Reuters*. [Online]
Available at: <https://www.reuters.com/article/us-israel-gulf-emirates-cyber/uae-israeli-cyber-chiefs-discuss-joining-forces-to-combat-common-threats-idUSKCN26F2UK>
[Accessed 5 January 2022].
- Richard David Kann Melanoma, 2019. *Richard David Kann Melanoma*. [Online]
Available at: melanomafoundation.com
[Accessed 7 April 2022].
- Ronanki, T. H. D. a. R., 2018. *Artificial Intelligence for The Real World*, s.l.: Harvard Business Review.
- Rosenthal, D. G., 2021. *The Data Science Group*. [Online]
Available at: <https://dsg.ai/strategies-for-ai-success-ai-center-of-excellence/>
[Accessed 9 April 2022].
- Ryan, P., 2019. UAE ranked top in Middle East for AI readiness. *The National News*, 21 May.
- Shabbaar, A., 2019. UAE bets on AI in education. *Khaleej Times*, 26 February.
- Soliman, M., 2021. *Middle East Institute*. [Online]
Available at: <https://www.mei.edu/publications/how-tech-cementing-uae-israel-alliance>
[Accessed 15 December 2021].
- Spencer, M., 2022. *Microsoft AI Powering into Healthcare*. [Online]
Available at: <https://www.linkedin.com/pulse/microsoft-ai-powering-healthcare-michael-spencer/>
[Accessed 5 February 2022].
- Tan, A., 2020. *Computer Weekly*. [Online]
Available at: <https://www.computerweekly.com/news/252484955/APAC-still-hotbed-for-cyber-attacks>
[Accessed 14 March 2022].
- Tan, A., 2020. Why Security Validation Matters. *ComputerWeekly.com*, 21 March.
- Tan, A., 2021. Australian organisations lack maturity in responsible AI. *Computerweekly.com*, 5 October.
- Technavio, 2021. *Cision*. [Online]
Available at: <https://www.prnewswire.com/news-releases/artificial-intelligence-based-cybersecurity-market-grows-by--19-billion-during-2021-2025--technavio-301315494.html>
[Accessed 5 February 2022].
- The Data Science Group, 2022. *The Data Science Group*. [Online]
Available at: <https://dsg.ai/strategies-for-ai-success-ai-center-of-excellence/>
[Accessed 7 April 2022].
- Thompson, Z., 2022. *IT Brief*. [Online]
Available at: <https://itbrief.com.au/story/ai-colleagues-to-be-commonplace-in-australia-by-2030-report>
[Accessed 31 May 2022].
- Time Out Dubai, 2019. Quarter of all transport in UAE 'will be automated' by 2030. *Time Out Dubai*, 13 February.
- Tortoise, n.d. *The Global AI Index*. [Online]
Available at: <https://www.tortoisemedia.com/intelligence/global-ai/>
[Accessed 22 May 2022].
- University of New England, 2022. *Hidden agricultural workforce revealed*. [Online]
Available at: <https://www.une.edu.au/connect/news/2022/01/hidden-agricultural-workforce-revealed#:~:text=Employment%20rates%20for%20the%20industry,2.6%25%20in%202020%2D21.>
[Accessed 4 April 2022].
- Vinuesa, R. et al., 2020. Nature Communications. *Nat Commun*, 13 January.223(11).
- Whyte, S., 2019. A weakness built into this system': govt cyber security not keeping up. *The Sydney Morning Herald*, 22 March.
- World Cancer Research Fund International, 2022. *World Cancer Research Fund International*. [Online]
Available at: <https://www.wcrf.org/cancer-trends/skin-cancer-statistics/>
[Accessed 7 April 2022].
- Zaken, D., 2021. *Al-Monitor*. [Online]
Available at: <https://www.al-monitor.com/originals/2021/01/israel-united-arab-emirates-abraham-accords-investments.html>
[Accessed 7 February 2022].