Australia’s unfair advantage in the new global wave of AI innovation

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Responsible AI is the commitment to designing, developing, deploying and overseeing AI systems by aligning with ethical principles to prioritise the safety, rights, values, and interests of all stakeholders.

Responsible AI adheres to best practice guidelines, standards, regulations and laws and considers immediate and long-term ecological, social and economic impacts.

It aims to provide technical robustness, making AI systems reliable, secure, resilient and sustainable, and it mandates continuous monitoring, learning and adaptation, proactively addressing biases, adversarial threats and evolving societal needs.

As artificial intelligence (AI) shapes the future, nations worldwide are grappling with significant challenges in seeking to harness its potential and doing so safely and responsibly. Australia has been a leader in AI since the “expert system revolution” in the 1980s, when banks started to invest in developing smarter financial computer systems. But as other countries have scaled their efforts, Australia has lacked leadership in both the public and private sectors and has fallen way behind.

The recent and continuous release of game-changing generative AI technologies by US companies highlights Australia’s lack of capability and capacity to contribute to a world dominated by these technologies. Without a game plan, Australia is at risk of being left even further behind.

Some have argued that Australia is currently in a do-or-die situation and that its lack of focus on the many challenges we need to face is wasting precious time and squandering future opportunities. Focusing on the translation of other nations’ AI technologies and “safe and responsible” AI is not enough; it is critical that we also develop homegrown AI expertise and technologies.

Australia has been lagging in AI space that we could leverage, and it is critical that we also develop homegrown AI expertise and technologies.

However, Australia is the lucky country; the game is not over, and we can still change our trajectory. Technology adoption takes time, and despite AI’s “magical” powers, its widespread adoption will be no different, largely because of the significant risks AI brings to business, society and individual privacy.

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Australia needs to coordinate and integrate approaches that leverage its unfair advantage. As a nation, we have critically important unfair advantages in the AI space that we could leverage, and if we do it quickly, we can get back in the game and lead.

We need to rapidly identify the gaps in capability and capacity, consolidate our societal values, and develop an ambitious vision and strategies to translate into action.

Australia’s unfair advantages important for building AI capability.
WHAT ARE THE NEXT STEPS?

SECTION 3

Figure 2: Risks, challenges and strategies to put Australia at the forefront of developing and using AI tools and technology.

Develop and enforce governance for AI to address all the risks and challenges simultaneously. Australia’s strong democratic principles represent an unfair advantage when confronting the challenges of governance and policy in relation to AI. Democracies are fundamentally about balancing interests and providing everyone with a voice, making Australia’s democratic heritage a solid foundation for navigating policy debates around AI, including questions of privacy, equity and access. Unlike nations, where politics is extremely polarised, or policy may be awayed by a single entity or monopolistic businesses, the Australian approach embodies a wider set of societal perspectives, offering a model for inclusive AI regulation that reflects a broad consensus, which in turn enables rapid innovation.

Australia’s existing legal, economic and political infrastructure constitutes an unfair advantage. Australia enjoys a stable political environment and a strong rules-based legal system, both of which are crucial to enforcing AI regulations effectively and maintaining public trust. Our robust economic structure, characterised by a high level of digitalisation and a strong service sector, makes the economy resilient and adaptable to the integration of AI. This strong institutional framework can attract both domestic and international AI stakeholders, providing them with the security and predictability necessary to innovate and invest.

The cultural inclination of Australians towards technology adoption also serves as a critical unfair advantage. Australians are known for their openness to new technologies, with high levels of smartphone usage, internet penetration and digital services adoption. This readiness for technological adoption can speed up the integration of AI across different sectors, making Australia a potentially attractive testing ground for new AI applications. Furthermore, this cultural trait ensures that the development of AI in this country is driven by a population that is both understanding of AI’s potential and aware of its ethical implications.

Australia has an exceptional education system, which can be leveraged to develop a new generation of AI capabilities. Australian universities are breeding grounds for innovation, offering the potential to uplift the national workforce to embrace and exploit AI-led innovation. The existing strong ties between academia and industry further facilitate the practical application of AI research, turning theory and insights into tangible benefits. This relationship requires more investment to scale. There also needs to be more experimentation to learn how AI can be used to generate value for business and society.

Australia leads in critical industries where we expect AI to have the biggest impact, in particular, financial services, medicine and health. Australia’s rich diversity gives it an unfair advantage in the development of safe and inclusive AI. As one of the most multicultural and harmonious societies globally, Australia can ensure that AI algorithms are trained on diverse datasets, thereby reducing algorithmic bias and improving the fairness of AI systems.

Australia’s democratic principles, robust infrastructure, technological readiness, high-quality education system and multiculturalism are not just assets but provide us with significant ‘unfair’ advantages. Leveraged effectively, these distinctive strengths can enable Australia to overcome the challenges related to AI, and to carve out a global leadership role in AI. This is a path that relies not on matching other countries’ stride for stride, but on leveraging Australia’s unique strengths to create its way in a world increasingly shaped and influenced by AI.

By leveraging its unfair advantages, Australia can not only gain a leadership position in AI but also hone and strengthen these advantages to create a continuous virtuous cycle that sustains our differentiation and competitiveness. For example, to help build a brighter future for all, Australia can improve the inclusion of more diverse societal groups like women, people with a disability and First Nations peoples. Similarly, there is considerable scope to improve our education system, not just in computing but also in many other disciplines. Since AI is a transformative technology, every industry will be affected and will require new workforce capabilities that enable people to utilise AI tools to create business and societal value and benefit.

Australia has distinctive strengths that position it uniquely to address the risks and challenges of AI and to lead in the pursuit of opportunity and national prosperity.
SECTION 1: INTRODUCTION

What is responsible AI anyway?
Professor Jon Whittle — Director, CSIRO’s Data61

10 examples of AI that are here now and have been embraced by the general public
Stela Solar — Director, National Artificial Intelligence Centre

SECTION 2: WHAT DO WE NEED TO BE TALKING ABOUT?

A unique opportunity for Australia: bridging the divide between fundamental AI research and usable, embodied AI
Professor Michael Milford FTSE — ARC Laureate Fellow, Joint Director QUT Centre for Robotics

Responsible AI means keeping humans in the loop: what are other social implications of the mainstream adoption of this technology?
Associate Professor Carolyn Semmler School of Psychology, Faculty of Health and Medical Sciences, The University of Adelaide and Lana Tikhomirov — Australian Institute for Machine Learning (AIML), The University of Adelaide

AI is changing the way people work: how do we skill our future workforce to ensure these new jobs stay on shore?
Professor Katrina Falkner FTSE — Executive Dean of the Faculty of Sciences, Engineering and Technology, The University of Adelaide

Responsible data management: a precursor to responsible AI
Dr Rocky Chen, Associate Professor Gianluca Demartini, Professor Guido Zuccon, and Professor Shazia Sadiq FTSE — School of Computer Science and Electrical Engineering, The University of Queensland

Open the pod bay doors please, HAL
Andrew Dettmer — National President, Australian Manufacturing Workers Union

Innovation needs to create value: how do we tool universities to remain relevant to industry needs?
Professor Simon Lucey — Director, Australian Institute for Machine Learning, The University of Adelaide

An AI-literate community will be essential for the continuity of social democracy
Kylie Walker — Chief Executive Officer, Australian Academy of Technological Sciences and Engineering

SECTION 3: WHAT ARE THE NEXT STEPS?

What are the limits of current AI, and what opportunities does this create for Australian research?
Professor Anton van den Hengel FTSE — Director, Centre for Augmented Reasoning, Australian Institute for Machine Learning, The University of Adelaide

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The $1 billion dollar question: What should Australia’s responsible AI future look like?
Kingston AI Group

What are we doing now to ensure that Australia is recognised as a global leader in responsible AI, and what else should we be doing now and into the future?
Dr Ian Opperman FTSE — NSW Government’s Chief Data Scientist, Department of Customer Service

For acronyms, abbreviations and endnotes please see the composite document with all the essays.
Responsible AI
Your questions answered

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Cover image: An artist’s illustration of artificial intelligence (AI). This image represents the boundaries set in place to secure safe, accountable biotechnology. It was created by artist Khyati Trehan as part of the Visualising AI project launched by Google DeepMind. Source: unsplash
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Your questions answered