Essay 12 of 13 from the series:
Responsible AI: Your questions answered

The University of Adelaide | Australian Institute for Machine Learning
ATSE Australian Academy of Technological Sciences & Engineering

The $1 billion dollar question

What should Australia's responsible AI future look like?

Kingston AI Group
Australian Professors of Artificial Intelligence

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If Australia invested $1 billion in AI research and development, where should the money be spent and what impact would we see?

ARTIFICIAL INTELLIGENCE (AI) IS now starting to impact every facet of human work and endeavour. AI will likely transform our world far more comprehensively and rapidly than digital technology predecessors like the internet.

Globally, AI is projected to contribute $15.7 trillion to the world's economy by 2030[39] and in Australia, CSIRO's Data61 forecasts that we could boost our economy by $315 billion from digital technologies, including AI, as early as 2028[40].

Public investments in AI are expected to play critical roles in protecting and furthering Australia's economy as well as its defence capabilities; natural resources and the environment; health, ageing, and disability sectors; and cities, towns, and infrastructure.

But Australia, despite its high-quality AI research outputs and capabilities, has been both slow to invest in AI and has invested far less than countries of similar size and wealth. As part of the 2023-24 Budget, the Australian Government announced only around $100 million to support businesses to integrate quantum and AI technologies into their operations[41].

In comparison, in 2021, Canada invested more than A$500 million to support AI commercialisation, standards, talent and research[42]; and the government of Singapore has invested about A$565 million in artificial intelligence research and development over the last five years[43].

Given current strategic investments in AI abroad, it's timely to investigate how a similar investment in Australia would look.

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A national initiative for Australian AI research and innovation

Australia has globally recognised AI research expertise in its universities, but despite this, the country lags behind the rest of the world in building its domestic AI capability.

Many of our top AI researchers leave Australia because of the lack of research funding here. University funding is a catalyst for education and innovation excellence.

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Top researchers supervise numerous PhD students, and design and deliver high-quality curricula to educate thousands of undergraduate students who will form our future workforce. They build smart teams, compete with the best in the world, and do great ambitious things that benefit all of society.

Investment in Australian research is really an investment in people, and we already know it delivers economic results; for every A$1 the Australian Research Council puts into research, it returns A$3.30 in economic output back to the Australian community[44].

So, how do we turbocharge Australian AI research to deliver for the country?

We could start by funding a national AI initiative focused on unleashing the value of our university AI research and ensuring it supports Australia in capturing the benefits of the AI revolution. The centrepiece of this initiative would be a coordinated network of AI research and innovation centres across the country, co-located with our leading AI universities in:

New South Wales / Australian Capital Territory — a centre would be integrated with the Australian National University (ANU), UNSW Sydney, and University of Technology Sydney

Victoria — with The University of Melbourne, Deakin University and Monash University

South Australia — with the Australian Institute for Machine Learning (AIML) at The University of Adelaide

Queensland — with Griffith University, Queensland University of Technology, and University of Queensland

And possibly other states.

'De-risking' AI and developing Australia's AI ecosystems

Universities are key to driving innovation and business development in all high-tech sectors, with knowledge spillover being a vital element of innovation precincts internationally. Many startup unicorns (companies that are valued at US$1 billion or more in a new funding round) have a campus origin.

To extract maximum value from our university research assets, Australia needs more AI entrepreneurs; but we have to de-risk funding tech innovation and create and fund prime innovation systems. The best way to de-risk a technology is for governments to invest strongly and make it as robust as possible. It's what happened in Silicon Valley, in Israel and in other nations, but we've talked ourselves out of doing it here.

Australia's AI venture capital market is smaller than that of other nations. Globally, billions of dollars in venture funding are pouring into AI startups and scaleups with the International Data Corporation expecting funding on AI technologies to increase to $110 billion per annum by 2024, double what it was in 2020[45]. In contrast, Australia has only a few AI-specialised venture funds whose offerings are typically significantly lower than those provided internationally.

Creating ecosystems between universities, startups, and industry that allow for AI innovation should be another goal of this $1 billion dollar investment. Setting up localised ecosystems that have substantive budgets that are committed for at least five to 10-year periods, will help attract and retain the world's most talented people.

These ecosystems will enable leading AI researchers to pursue somewhat unorthodox programs of talent recruitment and training, and to provide medium-term career development options and trajectories that would not be feasible in the current university system.

Creating partnerships and sovereign datasets for critical sectors

Australia's comprehensive public health service is the envy of much of the world, but our centralised health data assets are what can make Australia a leader in medical AI.

If we can look at partnering investments in core research technology with other investments, then we can start to lay out a translational journey of core technology investment in universities that has an impact on the quality of delivery of health care or on our ability to reach disadvantaged communities with digital health tools.

Investing in pooled/shared datasets and dedicated research computing resources will be necessary to drive the ethical, curated development of Australian AI in health, defence, and other priority areas.

These sovereign datasets are integral to the stability of Australia's AI future.

Investing in education and public engagement

AI isn't a discrete standalone technology restricted to a specialised workforce. It's a general-purpose technology that's starting to roll out across all industries and sectors.

Therefore, investment in education and AI literacy from the primary school to university levels is also key to creating the homegrown, sovereign AI capabilities needed for Australia to keep up in an increasingly competitive, AI-impacted global economy.

But it's not just formal education; there is also a need for extensive continuing professional development programs so our current workforce can upskill, reskill and remain occupationally nimble as AI technology disrupts workplaces and industries nation-wide. We are certain that Australia will benefit the most when it is a nation of expert AI creators, not just consumers.

A broad, systematic campaign that targets every sector, with extra depth for priority areas— such as government and primary / secondary education—is paramount to instilling enthusiasm toward AI among the broader public and stakeholders.

Given AI's transformative power to affect an endless array of sectors and industries, everyone must be involved in the conversation around its growth and impact here in Australia.

Essays

SECTION 1: INTRODUCTION

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

SECTION 3: WHAT ARE THE NEXT STEPS?

For acronyms, abbreviations and endnotes please see the composite document with all the essays.

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Your questions answered

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The Australian Academy of Technological Sciences and Engineering (ATSE) and the Australian Institute for Machine Learning (AIML) acknowledge the Traditional Owners of the lands on which we meet and work and we pay our respects to Elders past and present. We recognise the deep knowledge and practices embedded in the oldest continuous culture on the planet. Australia's history of engineering, technology and applied science spans more than 60,000 years.

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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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