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Submission to Department of Prime Minister and Cabinet

ATSE SUBMISSION TO AUTOMATED DECISION MAKING AND AI REGULATION CONSULTATION

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The Australian Academy of Technology and Engineering (ATSE) is a Learned Academy of independent, non-political experts helping Australians understand and use technology to solve complex problems. Bringing together Australia's leading thinkers in applied science, technology and engineering, ATSE provides impartial, practical and evidence-based advice on how to achieve sustainable solutions and advance prosperity.

ATSE welcomes the opportunity to respond to the Department of Prime Minister and Cabinet's Digital Technology Taskforce's consultation on *Positioning Australia as a leader in digital economy regulation - Automated Decision Making and AI Regulation*.

ATSE has previously contributed to the consultation on Australia's Artificial Intelligence Action Plan (Australian Academy of Technology and Engineering, 2020).

This submission proposes solutions for developing Australian capabilities and public trust in Automated Decision Making (ADM) and Artificial Intelligence (AI). In particular, it is recommended to:

1. Regulate the use of data sets in AI and ADM development, including its availability, transparency, validation, and diversity,
2. Introduce compulsory accountability and transparency requirements for government agencies utilising ADM,
3. Increase public investment in research and development to secure future AI and ADM innovation,
4. Invest in high-speed internet, including in rural and regional areas, as supporting infrastructure for AI and ADM,
5. Implement programs to increase the size of the digitally skilled workforce, and
6. Create policies and initiatives to increase employment and retention of underrepresented groups in the AI workforce.

Ensuring the ethical application of AI and ADM

There are many documented incidents globally of biases being embedded into AI (AI Now, 2019). This includes the Australian Robodebt scheme, which demonstrates that the consequences of poorly or unethically designed or implemented ADM can be severe. To establish public trust in AI and ADM, a stringent regulatory framework must be in place so that such an incident cannot occur in future.

As noted by the consultation paper, there are principles and tools such as the AI Ethics Framework and Automated Decision Making Better Practice Guide that can be used by government agencies to assist in checking legal compliance, ethical considerations, and transparency. However, these resources are not compulsory. Building in greater accountability for government agencies using ADM is an essential step for the wider deployment of these technologies. A 'black box' approach to ADM will not be sufficient to meet this need. Agencies' public reporting must include an 'explainability' statement for the solution and also contain a statement of the environmental impact of their use of AI and ADM.

There is also a need to regulate the use of data sets for AI. As training data sets are a potential source of bias for AI and ADM, it is critical to mandate transparency, validation, and diversity requirements for data sets.

Recommendation 1: Regulate the use of data sets in AI and ADM development, including its availability, transparency, validation, and diversity.

Recommendation 2: Introduce compulsory accountability and transparency requirements for government agencies utilising ADM.

Innovating on AI into the future

As noted by the issues paper, other nations are progressing their implementation and regulation of AI. For Australia to be a leader in this space, it is crucial to establish robust and appropriate regulations and infrastructure to support the ethical deployment of AI and ADM.

Moreover, to keep pace with international development, Australia must have sovereign research and development on AI and ADM. The current environment of depressed research spending as compared to other OECD nations does not provide the conditions for continued innovation on AI and ADM. Public investment in basic research (including in humanities, arts, and social sciences) and incentives for research collaboration and translation are critical to position Australia as a digital economy leader into the future.

Recommendation 3: Increase public investment in research and development to secure future AI and ADM innovation.

Establishing the infrastructure for AI and ADM

Many AI applications require the rapid transport and processing of large amounts of data. Reliable, high-speed internet is vital to support the deployment of AI and ADM. This presents a challenge for implementation in Australia due to poor rural internet connectivity and speeds.

As recommended by ATSE's 2020 submission to the AI Action Plan, investment is needed in digital infrastructure to support AI (Australian Academy of Technology and Engineering, 2020).

Recommendation 4: Support investments in high-speed internet, including in rural and regional areas, as recommended by the recent Regional Telecommunications Independent Review of 2021.

Establishing an AI-ready workforce

A digitally skilled and diverse workforce is required to enable Australia to develop and deploy AI and ADM. However, there are shortages in the digital skills workforce. In 2018, there was a need for an additional 200,000 information and communications technology workers in Australia (Deloitte Access Economics, 2018). As the skills needed for AI are even more specialised, a dearth of qualified workers will be a challenge for Australia to become a leader in this space. The global AI workforce – estimated at only 300,000 in 2017 – is insufficient to meet demand (Vincent, 2017). To ensure the development of ethical AI and ADM applications, the workforce must also include those with digital literacies who are qualified in the humanities, arts, and social sciences.

At the same time as increased demand for AI developers, as AI and ADM applications becomes more commonplace, workers in other sectors will need to develop competencies in using these technologies. Users will require some understanding of how AI and ADM applications work in order to feel confident using them and to ensure they are using these applications ethically.

To develop a pipeline for the digitally skilled workforce, interventions must be targeted beginning at the school level. Programs such as ATSE's CS in Schools, which provides resources for secondary school students to learn how to code, build students' interest and competency in IT.

Currently, there is no standard or minimum qualification pathway to become an AI developer. Immigrating ICT professionals may have their experience and qualifications assessed by the Australian Computer Society (ACS), with AI being considered a specialisation under the DigiTech sector. This accredits individuals as being capable of gaining work in their field but does not accredit their qualifications. Some universities are beginning to offer degree qualifications in AI. The lack of a credentialling framework for AI professionals creates the risk of courses being created that do not lead to AI careers or do not cover all essential content. In future, as the number of AI professionals proliferates, the requisite knowledge to become an AI professional – including an understanding of ethical application of AI and ADM – should be interrogated by government, academia, and industry.

Recommendation 5: Implement programs to increase the size of the digitally skilled workforce.

As the AI and ADM workforce grows, it is crucial to foster a diverse workforce to prevent common pitfalls in AI development in which bias may be embedded. Bias is commonly introduced through the data sets that machine-learning algorithms are trained on. For example, an algorithm to identify skin cancer from photographs was trained using a data set with few dark-skinned people, its ability to detect skin cancer on dark-skinned patients is questionable (Zou & Schiebinger, 2018). Having a more diverse workforce provides the opportunity for those working on AI development to consider how different groups will be impacted. Diversity and inclusion initiatives, such as AI4ALL, are one solution to this issue. Businesses and agencies working in AI and ADM development should adopt policies and initiatives that to recruit, train, and retain a diverse workforce. This should include targeting underrepresented groups in the AI industry, including people with disability, Aboriginal and Torres Strait Islander people, women and people of diverse genders, and people with cultural and linguistic diversity. As a good practice example, ATSE has released a resource, the Diversity and Inclusion Toolkit, for science and technology focused small and medium sized enterprises (Australian Academy of Technology and Engineering, 2022). The toolkit provides examples of internal policies to target recruitment, reach, and retention in STEM workplaces.

Recommendation 6: Create policies and initiatives to increase employment and retention of underrepresented groups in the AI workforce.

References

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