Submission to the Standing Committee on Industry and Technology on the opportunities, risks and regulatory frameworks for artificial intelligence (AI) in strategic industries

Submitted by Universities Canada

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Summary of recommendations

Universities Canada recommends that the federal government:

1. Invest in AI talent and workforce readiness to support responsible deployment across the economy, including by expanding work-integrated learning opportunities and strengthening partnerships between universities and employers to help Canadians develop and apply AI-related skills in real-world settings.
2. Enable domestic commercialization pathways for AI discoveries by creating a dedicated funding stream to help university technology transfer offices cover the cost of developing AI intellectual property, including patent filings, here in Canada.
3. Build on existing investments in sovereign, secure AI infrastructure by allocating dedicated support for university-based research computing and data infrastructure to strengthen Canada's ability to store, process and retain data domestically.
4. Ensure universities remain core partners in shaping AI policy and regulation, grounded in scientific evidence, ethics and responsible research practices.

Introduction

Artificial intelligence is rapidly transforming Canada's strategic industries, including manufacturing, construction and critical infrastructure. As a general-purpose technology, AI is expected to be a key driver of productivity growth and long-term economic competitiveness. Its adoption presents important opportunities to improve productivity, strengthen supply chains.

At the same time, AI introduces complex and interrelated challenges related to data sovereignty, national security, intellectual property and public trust. These challenges are not theoretical — they are already shaping how and where AI systems are developed, deployed and controlled.

Canada's approach must therefore balance innovation with responsibility, while ensuring that the benefits of domestic AI development are more likely to remain anchored in Canada. Universities are central to this effort.

Universities Canada represents 97 institutions across the country that form a national ecosystem of research, talent and innovation. These institutions not only drive AI discovery and adoption, but also operate within robust, publicly accountable frameworks that ensure emerging technologies are developed securely, ethically and in the public interest.

Canada's AI strength — and the challenge of maintaining AI sovereignty

For the purposes of this submission, AI sovereignty refers to Canada's ability to exercise meaningful control over the data, intellectual property, computing infrastructure and governance frameworks that underpin its AI systems. Maintaining this control is essential to Canada's long-term economic security and strategic autonomy.

Canada's global leadership in artificial intelligence is rooted in its universities. Canadian researchers have played a defining role in the development of modern AI, including the foundational work of University of Toronto professor Geoffrey Hinton, Université de Montréal professor Yoshua Bengio and University of Alberta professor Richard Sutton. Canada punches above its weight — in 2022, it produced the highest number of AI publications per capita in the G7.[1]

However, this leadership is under increasing pressure.

Canada's share of global AI talent has declined significantly in recent years. In 2019, approximately 10 percent of the world's AI researchers were based in Canada, ranking second globally. By 2022, this had dropped to three percent, placing Canada sixth. Canada now accounts for only about two percent of the global AI talent pipeline.[2]

At the same time, international competition is accelerating. Governments around the world are making large-scale investments to secure leadership in AI. In 2024, Canada invested approximately $2.4 billion in AI, while other jurisdictions committed substantially larger sums to strengthen their domestic capacity.[3]

These trends point to a more fundamental challenge: Canada's ability to retain control over the technologies, data and intellectual property that underpin its AI advantage.

Stakeholders have raised concerns about the loss of intellectual property, the acquisition of Canadian firms by foreign entities and the growing reliance on non-Canadian digital infrastructure to store, process and commercialize Canadian data. Without stronger domestic capacity, there is a risk that Canadian-developed AI systems — and the data that sustains them — will be governed, monetized and controlled outside of Canada, particularly in the absence of strong domestic capacity and appropriate governance frameworks.

Universities as stewards of responsible and secure AI

As AI systems become more powerful and more widely deployed, ensuring their safe, secure and ethical use is essential.

Canadian universities play a unique role as trusted, publicly accountable stewards of AI development within Canada's borders. They operate within well-established Canadian frameworks for research

[1] Impact and Opportunities: Canada's National AI Ecosystem Report – 2023. https://www.deloitte.com/ca/ en/about/press-room/impact-and-opportunities.html

[2] Digital Archives Project Talent Tracker. https://digitalprojectsarchive.org/interactive/digital-projects/the-global-ai-talent-tracker/

[3] Artificial Intelligence Index Report 2025. https://hai.stanford.edu/assets/files/hai_ai_index_report_2025.pdf

ethics, data governance and cybersecurity, ensuring that sensitive data including personal, commercial and research data is managed in secure environments designed to operate in accordance with Canadian laws and oversight.

Universities are also advancing multidisciplinary approaches to cybersecurity and responsible AI deployment. For example, a cybersecurity training program at Dalhousie University brings together expertise in computer science, public policy, law and ethics to prepare students to address cybersecurity risks in emerging technologies such as generative artificial intelligence, critical infrastructure and next-generation networks.[4] Such initiatives are advancing the frontiers of cybersecurity while building the workforce needed to secure Canada's digital future.

At the same time, universities across Canada are leading research on AI safety, bias, accountability and governance, helping to ensure that these technologies are developed and deployed in ways that are secure, ethical and aligned with Canadian laws and values.

Finally, universities are also preparing the future workforce that will shape how AI is employed across the economy, including through work-integrated learning opportunities that allow students to apply AI skills in real-world settings. Today, approximately 60 percent of occupations are highly exposed to AI.[5] Importantly, many roles requiring a university education, including in medicine and engineering, are more likely to be complemented by AI than replaced by it, underscoring the importance of advanced skills and applied training.[6]

As a result, universities are not only advancing AI innovation but also ensuring it is developed and deployed responsibly. Through secure and accountable research environments, leadership in AI safety and governance and the training of a multidisciplinary workforce, they play a central role in safeguarding Canada's digital and economic future.

From research to adoption in strategic industries

AI adoption is accelerating across Canada's economy and the strategic industries at the centre of this study, manufacturing, construction and critical infrastructure, are among those most affected.

Recent data shows that while 93 percent of Canadian organizations report using AI in some capacity, only 31 percent have fully integrated these technologies into their operations and workflows.[7] This gap highlights a broader challenge: moving from experimentation to sustained, large-scale adoption.

Universities are active partners in bridging this gap for strategic industries. Through applied research, training and collaboration, universities work directly with firms in manufacturing, construction and related sectors to test, validate and deploy AI solutions in real-world environments. These partnerships are particularly important for small- and medium-sized enterprises (SMEs), which often lack the internal capacity to adopt advanced technologies independently. Work-integrated learning initiatives further support this transition by connecting students with industry partners to apply AI solutions in real-world operational contexts.

[4] Dal researchers receive federal grant to launch new cybersecurity training program. Dal researchers receive federal grant to launch new cybersecurity training program - Faculty of Computer Science - Dalhousie University.

[5] Mehdi, T. and Frenette, M. Exposure to artificial intelligence in Canadian jobs: Experimental estimates. Statistics Canada. https://www150.statcan.gc.ca/n1/pub/36-28-0001/2024009/article/00004-eng.htm

[6] Mehdi, T. and Frenette, M. Exposure to artificial intelligence in Canadian jobs: Experimental estimates. Statistics Canada. https://www150.statcan.gc.ca/n1/pub/36-28-0001/2024009/article/00004-eng.htm

[7] Generative AI Adoption Index. KPMG. https://kpmg.com/ca/en/media/2025/11/canadian-businesses-adopting-ai-but-few-are-seeing-roi.html

Canada's leading AI institutes — including Mila, the Vector Institute and Amii — are housed at universities and collectively support hundreds of partnerships with industry and research organizations.

For instance, through its FastLane program, the Vector Institute helps SMEs and start-ups take full advantage of AI by providing them with technical support and academic expertise. The FastLane program hosts a Privacy-Enhancing Techniques Bootcamp, which gave health care start-up A.I. Vali the tools to train an AI model for their cancer detection device without sharing patient data between hospitals. Support from FastLane has enabled A.I. Vali to innovate in the health care sector while ensuring that its AI model is used responsibly.[8]

As adoption accelerates, it will be critical that Canadian firms can access trusted, domestic partners for AI development to reduce reliance on foreign-controlled platforms and service providers.

Scaling Canadian innovation and retaining intellectual property

While Canada has built a strong foundation in AI research, it continues to face challenges in scaling innovation and retaining valuable IP that provides economic benefits here at home.

Many promising technologies developed in Canada are commercialized abroad, acquired by foreign firms or scaled using non-Canadian platforms. This limits Canada's ability to retain ownership and strategic control over key technologies and intellectual property. These outcomes reflect broader structural barriers, including limited access to scale-up capital, fragmented support systems and complex commercialization pathways. The objective should be to create the conditions that make it advantageous to commercialize and retain IP in Canada, rather than restricting international collaboration or partnerships that are essential to research and innovation.

Universities help to address these challenges through technology transfer offices, incubators and startup support programs. However, these mechanisms are often under-resourced relative to the scale of opportunity. Most tech transfer offices operate on modest cost-recovery models despite needing long-term investment strategies to protect and develop IP. The lack of resources limits their ability to work with SMEs and pursue patents and other forms of intellectual property that drive economic growth.

The federal government can directly address this gap by providing dedicated, sustained funding to university tech transfer offices to ensure that IP that is developed in Canada stays in Canada. Increased investment would enable technology transfer offices to expand patenting and licensing activities, support the creation and scaling of Canadian startups, and work more directly with SMEs to bring AI innovations to market.

By strengthening the conditions for domestic IP development at universities, Canada can build a more effective commercialization ecosystem — one in which AI innovations developed domestically are more likely to grow, scale and generate economic benefits within Canada.

Building sovereign AI infrastructure

The development and deployment of AI systems depend on access to advanced computing power, high-quality data and secure digital infrastructure. This is the foundation of AI sovereignty: without domestic infrastructure, Canada's control over its own data and AI systems is structurally limited.

[8] How AI Vali helps clinicians improve patient care through Vector's Fastlane program. https:// SRI vectorinstitute.ai/how-ai-vali-helps-clinicians-improve-patient-care-through-vectors-fastlane-program/ https://srinstitute.utoronto.ca/news/david-lie-nserc-cse-communities-grant.

Canada has made important investments in AI infrastructure, including funding for computing capacity and national programs. However, gaps remain. Notably, Canada is currently the only G7 country without a top 30 global supercomputer.

This gap increases Canada's dependence on external infrastructure for advanced AI development, raising important questions about data residency, security and long-term strategic autonomy. Stakeholders have emphasized the importance of building sovereign infrastructure that supports both research and industrial use, particularly to reduce reliance on foreign-controlled cloud providers and computing platforms.

Universities are essential to this effort. They host and operate a substantial portion of Canada's advanced research computing infrastructure through the national Digital Research Alliance system, providing secure, governed environments for data-intensive research.

Strengthening this capacity will be critical to improving Canada's control over where and how data is stored and processed. However, infrastructure investments alone do not guarantee full data sovereignty, particularly when systems rely on foreign-owned technologies or service providers. Ensuring that AI development in Canada is secure and aligned with Canadian laws and interests will require complementary measures, including strong governance frameworks, procurement policies and data protection standards.

A coordinated approach to responsible AI leadership

Artificial intelligence is being adopted rapidly across the economy and society, including in education, where its use is expected to become standard in the near future.

These trends underscore the scale and speed of transformation underway.

To respond effectively, Canada must take a coordinated approach that aligns research, infrastructure, commercialization and governance. This includes ensuring that innovation is supported by strong safeguards for security, privacy and public trust, as well as clear protections to reduce the risk that Canadian data and AI systems are subject to undue foreign control or influence.

Universities are uniquely positioned at the intersection of these priorities. As research institutions, talent producers, industry partners and infrastructure operators, they provide the full range of capabilities required to support responsible AI development and adoption across Canada's strategic industries.

The four recommendations in this submission reflect that integrated role:

- developing the skilled, responsible workforce that strategic industries will need to adopt AI effectively and safely; including through work-integrated learning opportunities that support applied, real-world AI skills development;
- retaining the intellectual property and economic benefits of AI innovation through creating a dedicated fund for university tech transfer offices to develop the commercial benefits of Canadian discoveries;
- building the sovereign infrastructure that underpins Canada's AI capacity; including through support for university-based research computing and data infrastructure; and
- remaining core partners in shaping responsible AI policy and regulation.

Universities Canada stands ready to work with the federal government and industry partners to advance the responsible development and adoption of artificial intelligence across Canada's economy.

About Universities Canada

Universities Canada represents 97 universities across the country. We are a membership organization that provides universities with a unified voice in higher education, research and innovation. Our member universities are located in communities across Canada, serving over 1.4 million students.