



Submission to the Standing Committee on Science and Research Study on Innovation and Scientific Research Concerning Artificial Intelligence

Submitted by Universities Canada

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Summary of recommendations:

1. Invest in secure, scalable compute infrastructure anchored in public infrastructure, to support discovery, advance participation from all regions of Canada and reinforce Canadian data sovereignty.
2. Invest in AI research talent: Sustained and predictable funding is needed to train, retain and attract top domestic and international AI researchers.
3. Ensure universities remain core partners in shaping AI policy and regulation, grounded in scientific evidence, ethics and responsible research practices.

Introduction

Canada's global leadership in AI is powered by its universities—the source of the research, talent and partnerships driving innovation across every sector. University researchers built the foundations of modern AI and continue to advance breakthroughs that boost health, sustainability and productivity. By investing in research infrastructure and supporting university-based talent Canada can secure its competitive edge and ensure AI innovation strengthens our economy and improves life for all Canadians.

Canada's global leadership in AI research

The talent and expertise at universities underpins Canada's global edge in AI research.

- Canada is a global leader in AI research and is home to the three “godfathers” of modern AI: Nobel Prize winner and University of Toronto professor Geoffrey Hinton, Université de Montréal professor, Yoshua Bengio and University of Alberta professor, Richard Sutton.
- In 2022, Canadian researchers published the highest number of AI papers per capita in the G7¹ and its three leading AI institutions – Mila, Vector and Amii – partner with university researchers across the country to generate AI breakthroughs in areas from health to energy efficiency and industrial productivity.

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





From foundational research to real-world impact

Canada's leadership in AI research rests on decades of fundamental research in neural networks and reinforcement learning. Universities across the country are building on these foundations to refine the capabilities of AI and integrate academic expertise in AI with the evolving needs of industry and society. For example:

- Researchers at Simon Fraser University have developed an AI-powered irrigation device to increase growing efficiency for farmers who operate indoor greenhouses.²
- Polytechnique Montréal and McGill University research have commercialized an AI powered device called SENTRY™ to detect the difference between healthy and cancerous tissues during neurological surgeries minimizing the need for further invasive procedures. The technology is helping patients right now as it is being used in up to five surgeries per week.³

Adapting to industry needs

Canada's universities are already partnering with government and industry to develop impactful AI research. Universities offer bootcamps, mentorship programs and dedicated applied research support to industry stakeholders. These collaborations blend deep academic expertise on AI from universities with industry needs.

Canada's universities and three leading AI institutes – Mila, Vector and Amii – have strong models for academic-industry collaboration. Collectively the three institutes are responsible for over 450 active partnerships with consultancies, start-ups, academic institutions and private firms.⁴

- Mila's Applied Research Program enables industry partners to tap into world-class AI expertise to drive innovation and improve operational efficiency. For example, researchers at Mila collaborated with the airline charter company Nolinor Aviation to enhance its safety incident reporting process using machine learning. The large language model developed through this project analyzes information from employee safety reports and alerts staff when further investigation may be warranted. With support from Mila's researchers Nolinor Aviation reduced its safety incident investigation time by 80%—from 40 hours of manual work to just five.⁵
- 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 enabled healthcare start-up A.I. Vali to create an AI-powered cancer detection device. By applying Vector's Privacy Enhancing Techniques (PET), several organizations were able to train a single model without having to share their data, upholding patient privacy while bringing innovation to the healthcare sector.⁶

² AI-driven sensing robots are learning how to grow food. <https://www.sfu.ca/research/performance-excellence/scholarly-impact-of-the-week/scholarly-impact-stories/2025/05/AI-drivensensingrobotsarelearninghowtogrowfood.html>

³ Will AI make or break Canada? Innovators, researchers call for more guardrails. <https://www.cbc.ca/news/politics/ai-canada-regulations-innovators-researchers-9.6935017>

⁴ Impact and Opportunities: Canada's National AI Ecosystem Report – 2023. <https://www.deloitte.com/ca/en/about/press-room/impact-and-opportunities.html>

⁵ AI Takes Flight: Nolinor Case Study. <https://mila.quebec/en/news/ai-takes-flight-nolinor-case-study>

⁶ How AI Vali helps clinicians improve patient care through Vector's Fastlane program. <https://vectorinstitute.ai/how-ai-vali-helps-clinicians-improve-patient-care-through-vectors-fastlane-program/>





- Amii's team of researchers helped Instrumar, a Newfoundland-based company that produces synthetic fibers for industrial applications, improve the quality of its products using AI. Instrumar worked Amii to incorporate machine learning into its quality assurance process, enhancing client satisfaction and operational efficiency, demonstrating how AI research at universities can provide tangible benefits for businesses.⁷

A Strong foundation at risk without sustained investment

Canada's leadership in AI research is globally recognized—but it is at risk without sustained and strategic investment in the country's research ecosystem.

- Currently, Canada's rate of R&D funding is second to last in the G7.⁸ In contrast, the United States, the European Union and China are investing in AI at a scale Canada has yet to match. These jurisdictions are ensuring stable funding, attracting global talent and linking innovation directly to economic and security strategies.
- AI development is a global endeavour. While Canada continues to punch above its weight in AI research, it relies on partnerships with likeminded countries to advance breakthroughs in machine learning and neural networks. Without predictable research funding and adequate compute infrastructure, Canada's ability to build domestic AI capacity and contribute meaningfully to international collaborations will weaken.

To maintain its leadership in AI, Canada must invest in research infrastructure, recruit and retain top talent and enhance Canadians' expertise in AI technologies. A sustained federal commitment today will ensure Canada remains a trusted global leader in the responsible and innovative development of artificial intelligence.

Universities Canada recommendations:

- **Maintain and expand research infrastructure:** The exponential growth in computational requirements for training state-of-the-art AI models has outpaced the availability of high-performance computing resources. This creates a tiered system where more established researchers are often afforded greater access, disadvantaging smaller institutions and emerging researchers and limiting breakthroughs and innovation. Canada's future AI successes will rely on broad-based infrastructure access for universities across the country.

While progress has been made to expand access to AI infrastructure and improve coordination across Canada through the efforts of the Pan-Canadian AI Institutes and the Digital Research Alliance of Canada, there is still work to be done as many researchers struggle to access computing and data infrastructure—particularly for time-sensitive tasks. Expanding this infrastructure is needed to better help retain and leverage AI experts across the country, regardless of location or university size. Special consideration should be given to public ownership and governance to support secure and sovereign AI capabilities.

⁷ Instrumar: AI to Improve Fiber Production. <https://www.amii.ca/case-studies/instrumar-ai-manufacturing-case-study>

⁸ Statistics Canada. Table 27-10-0359-01. Total domestic expenditures on research and development (R&D) as percentage of gross domestic product (GDP), Canada and provinces, and G-7 countries. <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=2710035901>





- **Invest in research talent:** To fully leverage its AI strengths, Canada must ensure its research eco-system is well supported to fund key research, train and retain domestic talent and seize opportunities to attract the world's best and brightest international researchers.

To accelerate AI innovation and retain a predictable AI ecosystem, the government must implement the commitments made in Budget 2024, including investments in core research funding, future talent via graduate and postgraduate scholarships and key infrastructure, including the Sovereign Compute Infrastructure Program. Where possible, it should look to leverage and expand existing AI talent programs, such as the CIFAR chairs and partner with universities to attract the world's best and brightest students and researchers to maintain Canada's competitive edge.

- **Partner with universities to develop AI policy and regulation:** AI will be a key disruptor in Canada's economy and society. The government should engage universities, as the leaders of Canada's AI research success, in the development of ethical AI policy and regulation beyond this initial taskforce consultation. As AI technology evolves, universities will be pivotal and ethical partners in providing advice to government to ensure that Canada remains a leader in AI research and reaches its full potential for industry application and commercialization.

A coordinated national approach for AI leadership

Canada's potential for mass-scale AI adoption will require a coordinated, multi-pronged approach that maintains a strong research ecosystem, including compute infrastructure and investments in AI research talent, while ensuring Canadian businesses can access domestic technical expertise to integrate AI solutions responsibly and competitively.



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.

