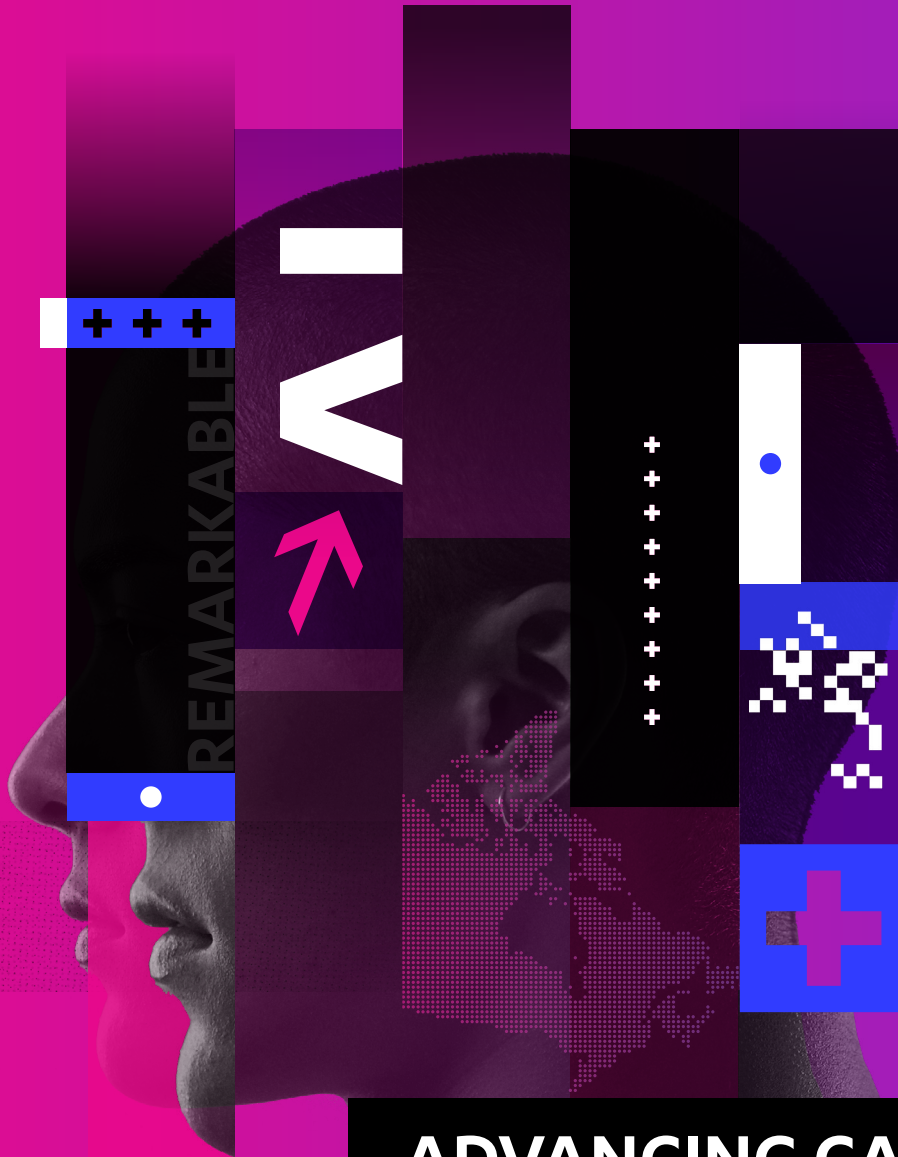VECTOR INSTITUTE | INSTITUT VECTEUR

REMARKABLE

ADVANCING CANADA'S REMARKABLE LEAD IN AI

ED CLARK
Chair, Board of Directors,
Vector Institute

Message from the Board Chair

Generative AI is changing the world — and it's just getting started. Canada has the opportunity not merely to participate in this transformation, but to shape its future. Vector's role is to help lead the way.

AI holds the potential to improve both lives and economies. To do so, it must be developed and deployed responsibly — and in a way where AI progress directly benefits the lives of Canadians and the economy of the future.

The health sector is a great example. Vector helps enable its partners in the health and life sciences sectors to implement leading-edge AI research to support better health outcomes. Indeed, enabling game-changing developments in healthcare, where it can improve patient outcomes while creating key efficiencies, as demonstrated by Vector's partnerships and implementations of AI models in frontline care, AI has the potential to significantly boost productivity not just within healthcare systems, but in the broader workforce as well.
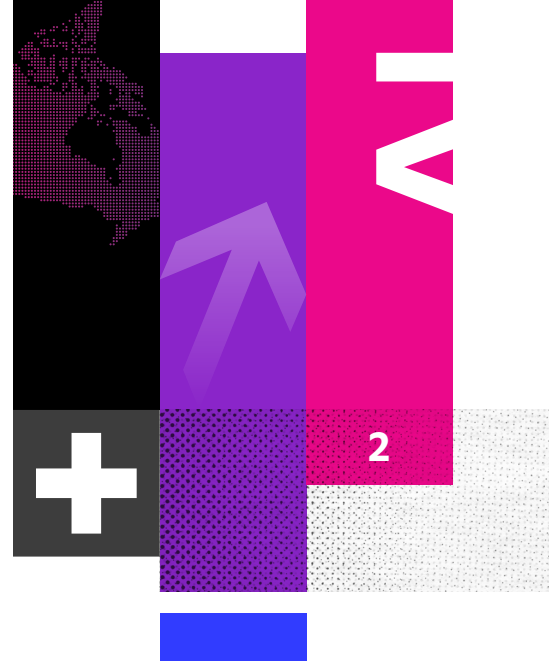
One application, implemented in partnership between Unity Health's GEMINI team and Vector and currently in use at Sunnybrook Health Sciences Centre, uses an AI model to measure delirium rates, enabling quality improvement for patients at risk of poor outcomes. Another model in pre-clinical deployment at UHN is assisting doctors in identifying collapsed lungs from chest X-rays and prioritizing patients for expedited access to care.
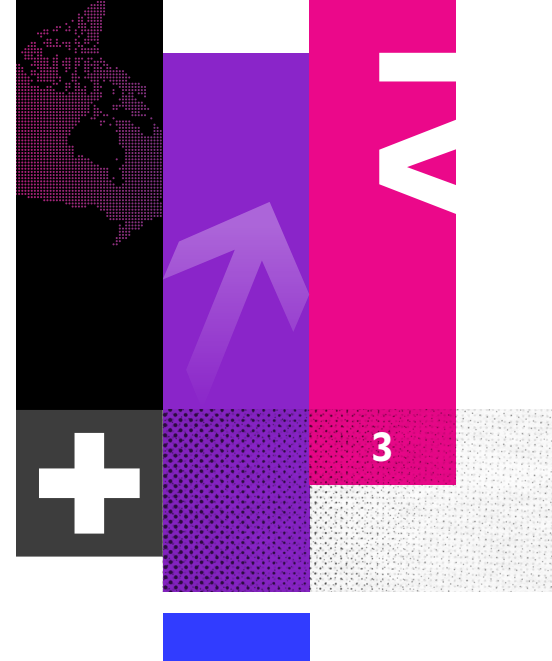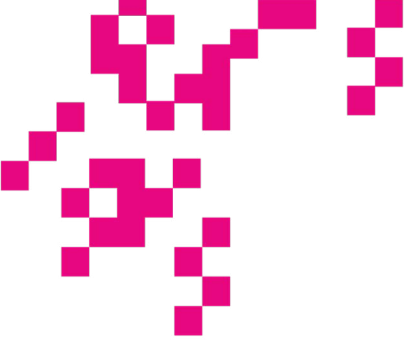
In other areas, a groundbreaking new open-source AI toolkit — developed by Vector's industry sponsors and AI Engineering team — uses satellite image analysis to aid in climate change monitoring and mitigation. In the manufacturing sector, AI technologies developed by Vector and industry sponsors like Hitachi Rail and Linamar that deploy AI and robotics in production lines, are enhancing productivity, and revolutionizing efficiency and output in Canadian manufacturing.

Meanwhile, a recent survey found that Canada's banks, each a partner of Vector, are among the world leaders in adopting AI technologies, a key marker of future strength in financial services, which is one of Canada's most important economic industries.

Vector co-founder Geoffrey Hinton shared the 2024 Nobel Prize in Physics for his foundational discoveries and inventions that enable machine learning with artificial neural networks. As AI research continues, examples of AI's practical and beneficial use are ever-growing in number. Vector stands as a key accelerator, connector, and innovator of Ontario's AI ecosystem, one of three national AI ecosystems across the country.

Around the world, the pace of AI progress is quickening. As things change, one constant will remain: Vector will continue to empower leading AI researchers and support Canadian industries and public institutions as they acquire the people, skills, and resources to be the best at the responsible use of AI for the benefit of all Canadians.

AI HOLDS THE POTENTIAL TO IMPROVE BOTH LIVES AND ECONOMIES. TO DO SO, IT MUST BE DEVELOPED AND DEPLOYED RESPONSIBLY.

VISION

We will drive excellence and leadership in Canada's knowledge, creation, and use of artificial intelligence to foster economic growth and improve the lives of Canadians.
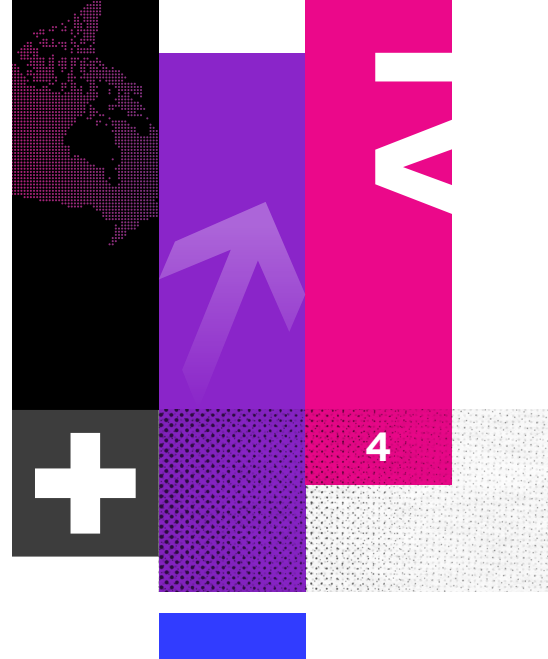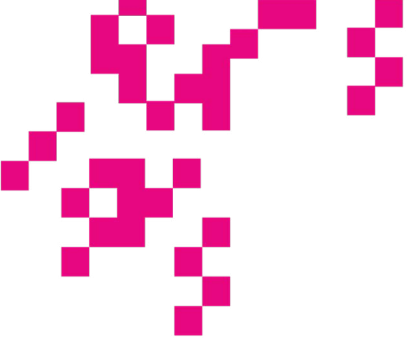
MISSION

We will lead Ontario's efforts to build and sustain Al-based innovation, growth and productivity in Canada by focusing on the transformative potential of deep learning and machine learning.

We, together with our Al partners in other parts of Canada, will work with Canadian industry and public institutions to ensure that they have the people, skills, and resources to be best in class at the use of artificial intelligence.

We will support Canada's innovation clusters in artificial intelligence and focus on helping start-ups grow to become Canadian-based global leaders.

We will attract the best global talent focused on research excellence; our researchers and academic partners will be part of a vibrant community of innovative problem-solvers, working across disciplines on both curiosity-driven and applied research.
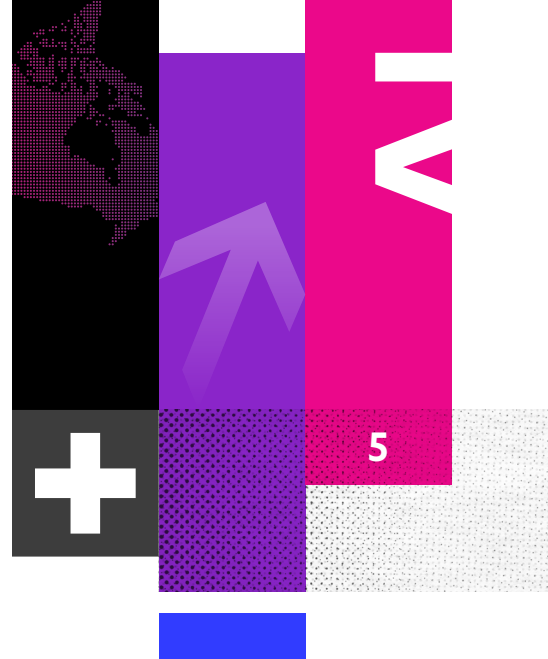
STRATEGIC OBJECTIVES

Since 2017, Vector has established itself as one of the world's leading AI institutes — a driver of ground-breaking research, a pioneer in modern machine learning, and a magnet for top talent.

To build on that advantage and reinforce Vector's place among the world's top 10 AI institutes, Vector will pursue four key strategic priorities.
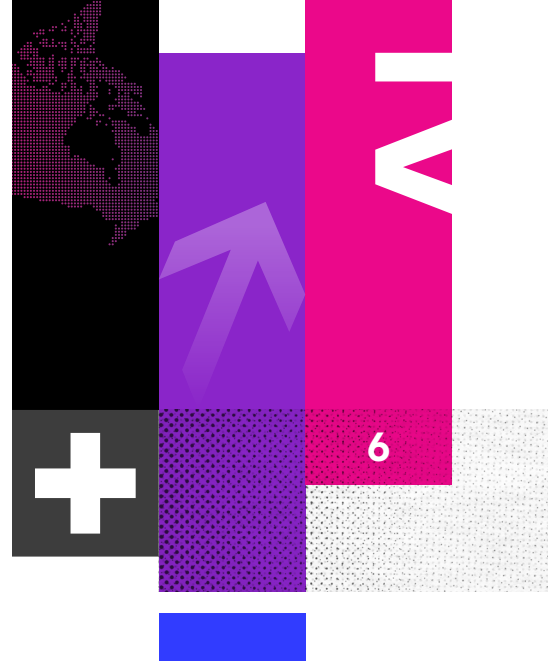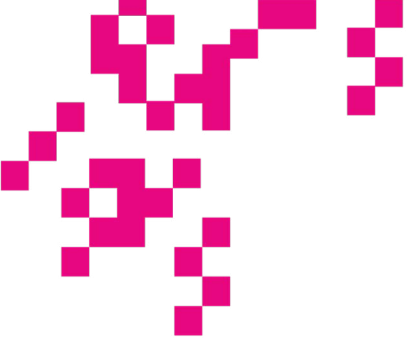
RESEARCH

Advance Vector's global leadership in AI research, development, and deployment

Vector offers a unique value proposition: a home base where leading AI researchers can hold appointments, act as entrepreneurs, and collaborate with industry, health organizations, governments, and more.

To build on that advantage and reinforce Vector's place among leading global AI institutions, Vector will:

· Continue to lead in research that:

  - Continues to foster a rich ecosystem of globally-renowned researchers.

  - Develops knowledge and tools for safe and trustworthy AI to ensure that models are deployed responsibly.

  - Accelerates AI for health to improve health outcomes and delivery of healthcare.

  - Expands the potential of generative models to enhance productivity, spur economic activity, and enable scientific discovery.

· Attract more leading AI researchers by developing new partnership models through collaborative appointments with both top-tier research institutions and industry partners, evolving beyond traditional funding models.

· Align its AI engineering, compute, and data resources to enable partners to take better advantage of cutting-edge research.

· Ensure Vector researchers and industry partners have access to leading-edge AI compute and high value data resources to meet the significant demands of AI research.
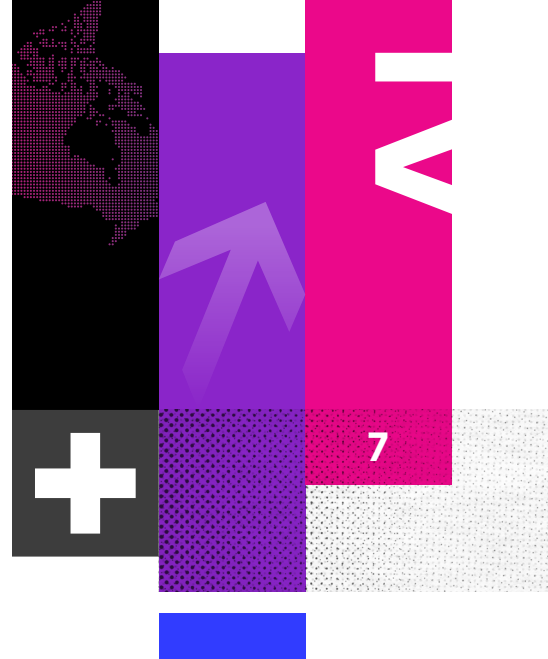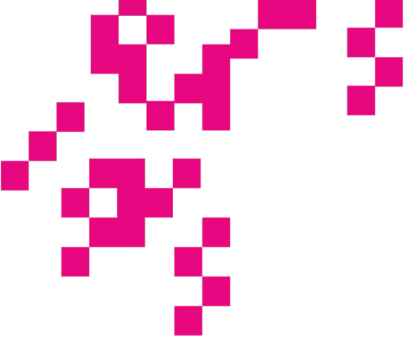
INDUSTRY

Enable AI excellence at our partner organizations

Vector's AI research leaders and engineering teams enable Canadian businesses and institutions to excel in AI, affording them a competitive advantage, bringing them into a community of AI practitioners larger than themselves, and supporting innovation across multiple sectors of the economy.

To build on that advantage, Vector will:

· Simplify AI adoption by working with partner organizations by developing a platform that makes the latest research findings and new AI tools more easily accessible and usable.

· Develop a new open-source AI licensing framework that balances open science and exclusivity, allowing Vector's partner organizations early access to emerging models and the latest techniques ahead of broader market adoption.

· Forge new collaborations with top-ranked universities, institutes, and non-profits to increase the global perspectives and depth of expertise available to Vector's partners.
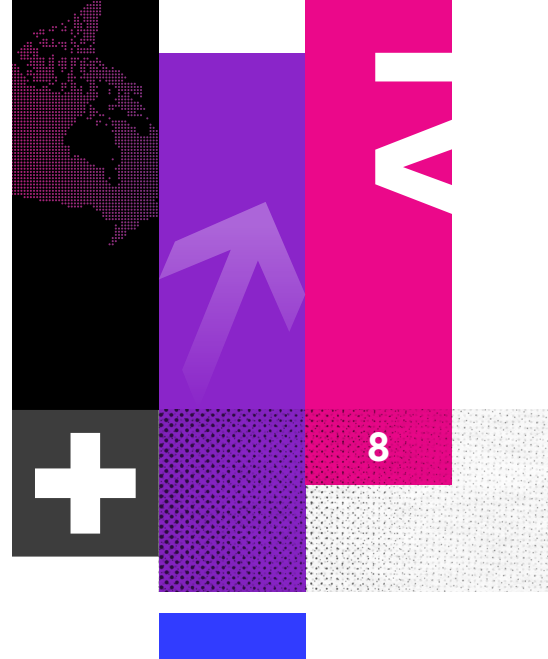
HEALTH

Achieve a world-leading position in health AI research and application

Vector's work with Ontario hospitals and health organizations is already delivering tangible benefits through cutting-edge research, access to data, and responsible deployment of AI. Vector's leadership in the health field is attracting both interest from across the country and talent from around the world.

To build on that advantage, Vector will:

· Improve health outcomes by pursuing more health AI partnerships with research hospitals and other health sector partners.

· Share AI engineering capabilities and expertise to better support the efficient implementation of ground-breaking health AI models.

· Lead in the development and implementation of best practices for accessing health data assets for AI and machine learning discovery while adhering to the highest privacy and security standards.

AI ECOSYSTEM

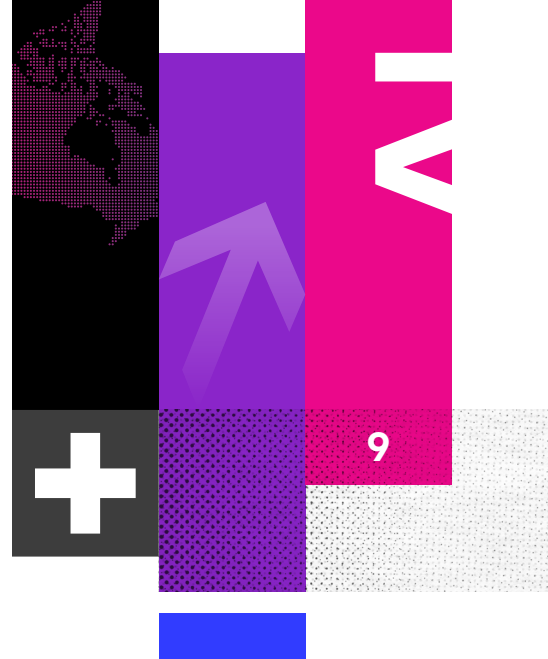## Supercharge the Ontario AI ecosystem

Ontario's AI ecosystem attracts world-class talent, supports high-paying jobs, and drives key breakthroughs in AI research. Attracting strong talent is a foundational element of the economy of the future.

To build on that advantage, Vector will:

- · Adapt its programs to support growth of AI startups and scaleups and accelerate the commercialization of new products and services.

- · Ensure that the most promising ventures in the AI ecosystem are more quickly able to attract funding and grow.

- · Provide additional AI talent through both new and existing training and work experience programs, readying them for the modern workforce.

- · Develop a licensing model for AI tools and technologies that mitigates risk and contributes to a wider open science initiative while protecting the commercial interests of Vector's partners.

WORK
WITH US

Focusing on four objectives enables Vector to make a profound impact on AI research, supercharge Ontario's AI ecosystem, and accelerate the development and adoption of reliable AI in the private sector, health institutions, and governments while de-risking innovation.

The Vector Institute believes that AI will be embedded in everything we do, reshaping how we approach challenges and unlocking opportunities in every sector. Now is the time to partner with Vector and help your organization achieve objectives that will have both near- and long-term impacts and far-reaching implications across all sectors, many of which are yet to be fully understood.

Together, the Vector Institute and its partners will continue to strengthen Ontario and Canada's position as a global AI leader, foster groundbreaking discoveries, and create lasting value for the economy and society.