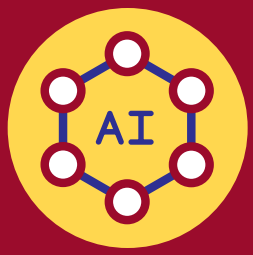
ADVANCED MANUFACTURING

"This shift to zero-emission vehicles (ZEVs) represents a unique opportunity for Ontario, while also presenting challenges as it relates to the workforce... This transition calls for significant updating of existing curricula for schools, colleges and universities and developing new, relevant programs." – ***Canadian Manufacturers & Exporters, 2024***

In 2022, Ontario's mining sector produced minerals worth $13.5 billion, accounting for 22% of Canada's total production value, according to the **Ontario Mining Association**. This supports the supply chain for advanced manufacturing, from resource extraction to materials refinement.

Though a blend of teaching and research, the **Laurentian University** Intelligent Mobile Robotics Lab provides a platform for hands-on learning in programming, control systems, and robot design. Focusing on a range of mobile robots from wheeled platforms to advanced-legged humanoid robots, the lab is not just a space for technical learning but a launchpad for future careers in areas like autonomous systems in the mining sector.

To accelerate materials discovery, the **University of Toronto's** Acceleration Consortium (AC) is developing self-driving labs (SDLs) that combine AI, robotics and advanced computing to rapidly design and test new materials and molecules. By accelerating the design and commercialization of materials for sustainability and health applications, the AC will help society solve some of our most significant challenges.



With the demand for professionals with expertise in the supply chain and logistics field, **Trent University's** Logistics and Supply Chain Management program is training and producing highly-skilled graduates, ready to enter the industry. The program focuses on the management of supply chain networks and logistics systems and allows students to navigate real-world scenarios by applying knowledge gained in the course to research-based projects, giving them the relevant supply chain knowledge and skills that employers are increasingly looking for.

The predicted retirement of one-third of the agricultural workforce by 2030, creating a need for 100,000 new jobs, highlights the importance of automation in addressing labour shortages. With 1 in 9 Ontarians employed in the $50.7 billion agri-food sector, **University of Guelph** researchers are developing self-driving, weed-cutting robots to assist workers, easing stress on operators and allowing human resources to be utilized more effectively and transforming the future of farming.

By leveraging 3D printing for sustainable, affordable housing solutions, a partnership between **York University's** Lassonde School of Engineering and Printerra is helping address Canada's growing demand for affordable and sustainable housing. Using state-of-the-art printing technology to innovate and manufacture 3D-printed concrete homes, this project can transform the future of housing construction, reducing both labour costs and construction time.