

MIWAI 2026 · INDUSTRY SHOWCASE

MIWAI 2026 Industry Showcase

Where AI research meets industry practice

OCTOBER 10-12, 2026 · HALIFAX, NOVA SCOTIA, CANADA

The 19th International Conference on Multi-disciplinary Trends in Artificial Intelligence

About the Industry Showcase

The MIWAI 2026 Industry Showcase brings together companies and public-sector partners applying artificial intelligence to real-world problems across Nova Scotia and beyond. Each partner presents their work in three parts: a recorded presentation, an infographic summarising the project at a glance, and a written abstract — all open to explore at your own pace, before, during and after the conference. This brochure profiles all twelve partners, from supply chain and healthcare to agriculture, education, construction, and retail.

01 Artinus Consulting Inc. SUPPLY CHAIN & LOGISTICS

SKU Pilot: An ERP-Connected AI Control Tower for Import-Intensive Businesses

Presented by: Jason Carayanniotis and Adam Gardner

Supervisors: Pawan Lingras, Matthew Hamilton

Universities: Saint Mary's University, Memorial University of Newfoundland

Small and medium-sized importers handle about \$900 billion in goods yet remain underserved by modern enterprise technology, relying on spreadsheets and disconnected tools for planning, purchasing, shipment tracking, and landed-cost calculations. SKU Pilot is an ERP-connected AI control tower that replaces fragmented workflows with integrated operational planning powered by adaptive machine learning. Its PRISM forecasting model is designed for sparse, intermittent demand, while a 3D container load optimization engine, real-time vessel tracking, and dynamic landed-cost calculations address utilization, delays, and costs. An agentic AI assistant supports natural-language queries, dashboards, and plain-language what-if simulations. The platform was co-designed with Buildworks Ltd., Drywall Specialties Corporation, and Brexx Co.

Research project: Mitacs IT36137 — Artinus Cost-effective NLP solutions for digitization, translation, and insights of domain specific corpora. Note: this Mitacs project is Artinus's NLP research collaboration; the presentation covers a different Artinus project, SKU Pilot.

Contact: Jason Carayanniotis — jason@artinus.ai

02 Halifax Learning

EDUCATION

Automating Phonological Assessments: A Scalable Machine Learning Platform

Presented by: Melinda Cameron

Supervisors: Pawan Lingras

Universities: Saint Mary's University

This project modernizes phonological literacy assessments by moving Halifax Learning's traditionally manual, one-on-one testing to an automated, asynchronous digital platform, so students can complete phoneme synthesis, analysis, and recognition tasks independently on any device. A ReactJS frontend provides a child-friendly recording experience, while a Django backend uses a pre-trained speech-to-text transformer model to transcribe responses into phonetic representations and score them against grading keys. A human-in-the-loop educator verification dashboard lets instructors rapidly review auto-graded results, saving administrative time while building a database of verified evaluations to fine-tune the model. Containerized with Docker, the platform is scalable and adaptable to modern educational frameworks.

Research project: Mitacs IT45193 — Automation of Phonological Skills Assessment with Machine Learning

Contact: Melinda Cameron — mcameron@halifaxlearning.com

03 Nova Scotia Health

PUBLIC SECTOR

Strategic Resource Optimization and Intelligent Decision Support Platform

Presented by: Derek Spinney

Supervisors: Pawan Lingras

Universities: Saint Mary's University

Nova Scotia Health and Mitacs are collaborating to build a Strategic Resource Optimization and Intelligent Decision Support Platform to optimize public healthcare delivery. The initiative focuses on personalized, adaptive management dashboards that reduce cognitive fatigue for healthcare leaders. It also aligns regional facility resources with actual community service demand. In addition, the project establishes a training pipeline, preparing fifteen Master's level interns to become Canada's future digital health leaders.

Research project: Mitacs IT50679 — Resource Optimization and Intelligent Decision Support for Nova Scotia Health

Contact: Derek Spinney — Derek.Spinney@nshealth.ca

04 Kardio Diagnostix

HEALTHCARE AI

AI-Powered Pediatric Heart Murmur Triage

Presented by: Shameer Iqbal, Robert Chen and Santokh Dhillon

Supervisors: Pawan Lingras

Universities: Saint Mary's University

Kardio Diagnostix is an AI-driven pediatric heart murmur triage platform designed to address systemic clinical referral failures. Pairing a patented physics-informed Harmonic-Percussive-Residual signal decomposition with a stacked LSTM deep-learning network, it acts as an objective clinical gatekeeper to differentiate benign murmurs from pathologic abnormalities. Validated in clinical studies of patients in Nova Scotia, the platform achieves high diagnostic accuracy to lower healthcare expenditures and reduce unnecessary specialist referrals while improving detection of actual heart defects. It is sustained by a secure medical data lifecycle covering clinical data ingestion, prospective validation, automated MLOps retraining, and regulatory compliance using explainable AI dashboards.

Research project: Mitacs IT38334 — Prescriptive Machine Learning in Pediatric Cardiology

Contact: Mohammed Shameer Iqbal — shameer@kardiodiagnostix.com

05 Wellnify.ai

HEALTH & WELLNESS

Holistic Personalization Architecture for Wellness Engagement

Presented by: Brendon Ferguson

Supervisors: Pawan Lingras

Universities: Saint Mary's University

This project enhances Wellnify.ai, a wellness engagement platform that uses gamification and behavioral science to foster healthy community habits, through two core data-driven systems. Interactive engagement dashboards, built on React, Flask, and MySQL, process raw activity logs into real-time visualizations computing metrics including Activity Value Scores, normalized Consistency Scores, monthly Improvement Trends, and Consecutive Active Day Streaks. A machine learning recommendation engine uses natural language processing to suggest tailored activities across Mind, Body, and Spirit categories, converting content tags with TF-IDF vectorization and ranking matches via Cosine Similarity. Novelty bonuses, diversity scoring, and smoothed inverse frequency tag weighting balance the recommendations to prevent fatigue and promote holistic health.

Contact: Brendon Ferguson — brendon.ferguson@wellnify.ai

06 MacDon Industries Ltd.

AGRICULTURE

Synthetic Data Augmentation and Domain Adaptation for Training Agricultural Semantic Segmentation Models

Presented by: Christopher Henry, University of Manitoba

This team is developing deep learning methods to enhance how agricultural machines such as cultivators detect and navigate crop rows, using semantic segmentation so machines can identify where crop rows begin and end — precision essential for autonomous tasks such as weed control and soil management. Working with MacDon Industries Ltd., a leading Canadian agricultural equipment manufacturer, the project investigates synthetic data — photorealistic images generated by deep learning models — to augment MacDon's proprietary datasets and reduce the time and cost of manually labeling training data. The work is carried out by an interdisciplinary team including Drs. Henry and Wang, trainees from the University of Manitoba, and engineers and developers at MacDon. It aims to produce scalable, reusable tools and pipelines to support deep learning development in agriculture and other industrial domains.

Contact: Christopher Henry — Christopher.Henry@umanitoba.ca

07 Hatfield Consultants LLP

ENVIRONMENTAL MONITORING

Exploring Unsupervised Domain Adaptation Methods for Automated Linear Disturbance Mapping

Presented by: Christopher Henry, University of Manitoba

In Canada's northern boreal forest and wetlands, disturbances such as roads, seismic exploration, pipelines, and transmission corridors are a leading cause of the decline of woodland caribou, making a deep understanding of these linear disturbances a research and forest management priority. This project develops an approach for automated map production from multispectral satellite images, using convolutional neural networks to produce linear disturbance maps from Sentinel-2 data. Its central challenge is that labels were developed using expensive high-resolution SPOT-6 data, with no equivalent labels for the free, medium-resolution Sentinel-2 data, so it develops an unsupervised domain adaptation approach. The work supports monitoring the fragmented habitats affecting boreal caribou herds at scale and advances opportunities to use freely available Sentinel-2 data for other environmental monitoring tasks.

Contact: Christopher Henry — Christopher.Henry@umanitoba.ca

08 R-Tech Industries

AGRICULTURE

The R-Tech Data Rover – From Prototype to Commercial Product

Presented by: Christopher Henry, University of Manitoba

Manitoba has an opportunity to transform agriculture through advances in sensors, robotics, and machine learning, and real-time, automated in-field data collection is needed to increase productivity and sustainability, expedite plant breeding and research, and further the uptake of organic farming. To this end, the team has developed a prototype self-propelled, GPS-guided data rover with industry partners R-Tech Industries and Northstar Robotics. The rover will rapidly collect plant images and environmental data in test plots, organic farms, and, with partner EMILI, across a full-scale commercial farm — data crucial for crop scouting technology that can identify weeds, characterize plant health and yield, or detect disease. In-field testing will be used to update and improve the prototype into a final commercial product for R-Tech, as the next step of the TerraByte research group and its collaborators.

Contact: Christopher Henry — Christopher.Henry@umanitoba.ca

09 TACKLE Lab

CONSTRUCTION

AI-Driven Pre-Planning for Construction: From 2D Drawings to Optimized Panel Manufacturing

Presented by: Dr. Andrew Fisher, University of New Brunswick

Supervisors: Pawan Lingras (co-supervisors: Muntasir Billah, Vijay Mago)

Universities: Saint Mary's University

This work introduces an integrated AI framework that automates and optimizes key pre-planning phases in construction management. It begins with BIRD, an end-to-end framework that converts 2D perspective drawings into scaled 3D building envelope models, then transitions to JACK, which employs joint training and cascaded neural networks to predict material requirement quantities across interdependent building components. Finally, PAAD applies a genetic evolutionary algorithm based on 2D bin packing to generate optimal panel manufacturing layouts and minimize material waste. Led by Dr. Andrew Fisher and the TACKLE Lab, the project bridges digital architectural design, material knowledge automation, and off-site manufacturing optimization to drive operational efficiency and sustainability across construction. Partner organization: Greenstone Brandon Plant Ltd.

Research project: Mitacs IT22468 — Design Automation and Optimization Using Artificial Intelligence

Contact: Dr. Andrew Fisher — andrew.fisher@unb.ca

10 WorkCore AI

SOFTWARE & PLATFORMS

An Enterprise AI Agent Workforce for Knowledge-Intensive Operations

Presented by: Ali Nafarieh

Supervisors: Pawan Lingras

Universities: Saint Mary's University

WorkCore AI is building an enterprise AI platform that helps organizations use specialized AI agents to automate knowledge-intensive operational work, addressing challenges small and medium-sized businesses face with inaccurate responses, lack of reliable business context, data privacy concerns, and limited control over AI decisions. The platform uses retrieval-augmented generation (RAG), vector databases, and confidence scoring so agents retrieve information from approved company data and produce more factual, traceable, and relevant responses. Designed for secure multi-tenant environments, it includes data isolation, role-based access controls, policy-based guardrails, and audit logging, supporting alignment with Canadian privacy requirements including PIPEDA. Specialized agents — including Tenant Insights, Trade, and Estimator Agents — operate as digital team members through a shared orchestration system, with development supported by a Mitacs Business Strategy Internship initiative and an initial focus on property management and construction.

Research project: Mitacs IT52062 — Design and Evaluation of Secure Multi-Tenant AI Agents for Enterprise Knowledge Systems

Contact: Ali Nafarieh — ali@workcore.ai

11 Invisipay Inc.

RETAIL

Building Autonomous Retail: An End-to-End Checkout-Free Store Platform

Presented by: Pavan Puri

Supervisors: Pawan Lingras (co-supervisors: Mohamed Drira)

Universities: Saint Mary's University

Invisipay Inc., in collaboration with Saint Mary's University, is advancing an end-to-end, camera- and AI-powered autonomous retail platform designed to eliminate traditional checkout lines. Combining advanced computer vision models with an integrated mobile application, the system tracks customer interactions in real time, automatically manages cart updates, and processes secure payments upon exit. Grounded in interdisciplinary research spanning computer vision, user experience design, scalable backend architecture, and data privacy frameworks, the platform achieves target object recognition accuracy exceeding 85 percent while adhering to PIPEDA, GDPR, and PCI DSS compliance standards. Through a structured deployment model culminating in a public live demo store, Invisipay delivers a secure, scalable, and frictionless shopping ecosystem for modern retail operations.

Research project: Mitacs IT48394 — Building AI-Powered Checkout Systems and Mobile UX for Autonomous Retail

Contact: Pavan Puri — pavan.puri@invisipay.ca

12 Delmore "Buddy" Daye Learning Institute

EDUCATION

Evidence-Driven Africentric Strategies for Successful Schooling Outcomes in Nova Scotia

Supervisors: Pawan Lingras (co-supervisors: Joyline Makani)

Universities: Saint Mary's University

Learners of African descent in Nova Scotia face persistent achievement disparities in public education due to historical marginalization, Eurocentric curricula, and systemic barriers. The Delmore "Buddy" Daye Learning Institute (DBDLI), in partnership with Saint Mary's University and Dalhousie University, leads research into evidence-driven strategies grounded in Africentric cultural principles, rooted in the philosophy of Ubuntu — "I am because you are" — and the principle that "it takes a village to raise a child." The project conceptualizes Africentric Cultural Intelligence (ACQ) to help educators adopt Culturally Responsive Pedagogy (CRP) and engage meaningfully with students and communities. It also applies multilevel modeling and temporal unsupervised machine learning, including rough and fuzzy clustering, to provincial assessment data to identify characteristics of promising schools, discover learning patterns, and mitigate potential algorithmic biases.

Research project: Mitacs IT23333 — Evidence-driven strategies for successful schooling outcomes of learners of African descent in Nova Scotia

Committee

Chair — Nikita Neveditsin — Assistant Professor, Department of Mathematics and Computing Science, Saint Mary's University (SMU) — nikita.neveditsin@smu.ca

Co-Chair — Pawan Lingras — Professor, Department of Mathematics and Computing Science, Saint Mary's University (SMU) — pawan.lingras@smu.ca

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Showcase: <https://miwai26.cs-smu.ca/miisc/>

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