

DETAILED BROCHURE

MIWAI 2026 · INDUSTRY SHOWCASE

MIWAI 2026 Industry Showcase

Where AI research meets industry practice.

October 10–12, 2026

Halifax, Nova Scotia, Canada

Part of the **19th International Conference on Multi-disciplinary Trends in Artificial Intelligence (MIWAI 2026)** — bringing together companies and public-sector partners applying artificial intelligence to real-world problems across Nova Scotia and beyond.

This detailed brochure contains the complete programme: all 12 showcase partners, their full abstracts, research projects, presenters, contacts, and links to each recorded presentation.

Showcase site: <https://miwai26.cs-smu.ca/miisc/> · Conference site: <https://miwai26.miwai.org/> · General contact: info@miwai.org

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 below presents their work in three parts: a recorded presentation, an infographic summarising the project at a glance, and a written abstract. Everything is open to explore at your own pace — before, during and after the conference.

Twelve partners span supply chain and logistics, education, public sector and healthcare, health and wellness, agriculture, environmental monitoring, construction, software, and retail. The pages that follow reproduce each partner's full abstract, at-a-glance research facts, presenter and contact details, and links to the showcase page and presentation video.

Partners at a glance

PARTNER		SECTOR
01	Artinus Consulting Inc.	Supply Chain & Logistics
02	Halifax Learning	Education
03	Nova Scotia Health	Public Sector
04	Kardio Diagnostix	Healthcare AI
05	Wellnify.ai	Health & Wellness
06	MacDon Industries Ltd.	Agriculture
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Artinus Consulting Inc.

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

Presented by: Jason Carayanniotis and Adam Gardner

ABSTRACT

Small and medium-sized importers handle approximately \$900 billion in goods across more than 236,000 businesses in the United States, yet remain significantly underserved by modern enterprise technology. Many of these firms rely on spreadsheets, email, and disconnected tools to manage demand planning, purchasing, container loading, shipment tracking, and landed-cost calculations. These manual processes contribute to slow planning cycles, stockouts, excess inventory, tied-up working capital, and operational risk.

SKU Pilot, developed by Artinus Consulting Inc., addresses this gap through an ERP-connected AI control tower designed for import-intensive businesses. The platform replaces fragmented spreadsheet workflows with integrated operational planning powered by adaptive machine learning. Its proprietary PRISM forecasting model is designed for sparse and intermittent demand, predicting both the timing and magnitude of order spikes. For products with continuous sales patterns, an adaptive meta-learning engine evaluates thousands of algorithm configurations to identify an appropriate forecasting model.

SKU Pilot also includes a 3D container load optimization engine that considers weight, volume, item dimensions, stacking limitations, and packaging constraints to improve container utilization and reduce shipping costs. Real-time marine vessel tracking enables the system to update expected arrival dates, inventory projections, and cash-flow forecasts when shipment delays occur. The platform further combines ocean freight, tariffs, customs duties, and exchange rates into dynamic, location-specific landed-cost calculations across multi-warehouse operations.

Users can interact with SKU Pilot through an agentic AI assistant that supports natural-language queries, configurable dashboards, and plain-language what-if supply chain simulations. Co-designed with industry partners Buildworks Ltd., Drywall Specialties Corporation, and Brexx Co., SKU Pilot is intended to help importers move from reactive, manually coordinated operations toward proactive, data-driven supply chain management.

AT A GLANCE

Research project: Mitacs IT36137 — Artinus Cost-effective NLP solutions for digitization, translation, and insights of domain specific corpora

Supervisors: Pawan Lingras, Matthew Hamilton

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

Note: *The Mitacs project listed above is Artinus's NLP research collaboration. The presentation on this page covers a different Artinus project, SKU Pilot.*

Contact: Jason Carayanniotis — jason@artinus.ai

Showcase page: <https://miwai26.cs-smu.ca/miisc/showcase/artinus-consulting>

Presentation video (9 min 18 s): <https://miwai26.cs-smu.ca/miisc/media/videos/artinus-consulting-video-da495a90.mp4>

Halifax Learning

Automating Phonological Assessments: A Scalable Machine Learning Platform

Presented by: Melinda Cameron

ABSTRACT

This project modernizes phonological literacy assessments by transitioning Halifax Learning's traditionally manual, one-on-one testing into an automated, asynchronous digital platform. Designed to eliminate the operational bottlenecks of face-to-face evaluations, the system allows students to complete phoneme synthesis, analysis, and recognition tasks independently on any device.

The user-friendly frontend, built with ReactJS, ensures an engaging, child-friendly recording experience. Behind the scenes, a robust Django backend processes audio recordings asynchronously, employing a pre-trained speech-to-text transformer model to transcribe spoken responses into phonetic representations. These transcriptions are automatically compared against correct grading keys to generate immediate, objective scoring.

To ensure absolute evaluation accuracy, the system maintains a hybrid human-in-the-loop design with an intuitive educator verification dashboard. This allows instructors to rapidly review auto-graded results, saving hours of active administrative time while simultaneously building a high-quality database of human-verified evaluations to continuously fine-tune the machine learning model. Containerized using Docker, the platform offers a highly scalable and adaptable solution that seamlessly integrates into modern educational frameworks.

AT A GLANCE

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

Supervisors: Pawan Lingras

Universities: Saint Mary's University

Contact: Melinda Cameron — mcameron@halifaxlearning.com

Showcase page: <https://miwai26.cs-smu.ca/miisc/showcase/halifax-learning>

Presentation video (7 min 47 s): <https://miwai26.cs-smu.ca/miisc/media/videos/halifax-learning-automating-phonological-assessments-a-scala-aec3926c.mp4>

Nova Scotia Health

Strategic Resource Optimization and Intelligent Decision Support Platform

Presented by: Derek Spinney

ABSTRACT

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 delivering personalized, adaptive management dashboards that reduce cognitive fatigue for healthcare leaders, while aligning regional facility resources with actual community service demand.

This project also establishes a vital training pipeline, preparing fifteen Master's level interns to become Canada's future digital health leaders.

AT A GLANCE

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

Supervisors: Pawan Lingras

Universities: Saint Mary's University

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

Showcase page: <https://miwai26.cs-smu.ca/miisc/showcase/nova-scotia-health>

Presentation video (8 min 1 s): <https://miwai26.cs-smu.ca/miisc/media/videos/nova-scotia-health-strategic-resource-optimization-and-intel-c5f8311d.mp4>

Kardio Diagnostix

AI-Powered Pediatric Heart Murmur Triage

Presented by: Shameer Iqbal, Robert Chen and Santokh Dhillon

ABSTRACT

Kardio Diagnostix is an AI-driven pediatric heart murmur triage platform designed to address systemic clinical referral failures. By pairing a patented physics-informed Harmonic-Percussive-Residual signal decomposition with a stacked LSTM deep-learning network, the system 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 dramatically lower healthcare expenditures and significantly reduce unnecessary specialist referrals while improving the detection rates of actual heart defects.

This solution is sustained by a secure, continuous medical data lifecycle that handles secure clinical data ingestion, rigorous prospective validation, automated MLOps model retraining, and strict regulatory compliance using explainable AI dashboards.

AT A GLANCE

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

Supervisors: Pawan Lingras

Universities: Saint Mary's University

Contact: Mohammed Shameer Iqbal — shameer@kardi Diagnostix.com

Showcase page: <https://miwai26.cs-smu.ca/miisc/showcase/kardio-diagnostix>

Presentation video (8 min 41 s): <https://miwai26.cs-smu.ca/miisc/media/videos/kardio-diagnostix-video-ed8962bd.mp4>

Wellnify.ai

Holistic Personalization Architecture for Wellness Engagement

Presented by: Brendon Ferguson

ABSTRACT

This project delivers a dual-track software engineering and data analytics initiative designed to enhance Wellnify.ai, an industry-leading wellness engagement platform that utilizes gamification and behavioral science to foster healthy community habits. The architecture introduces two core data-driven systems designed to transform raw activity data into actionable insights and highly personalized digital experiences.

First, the interactive user engagement dashboards, built on a scalable stack of React, Flask, and MySQL, process raw activity logs to provide organizations with dynamic real-time visualizations that compute custom behavioral metrics, including Activity Value Scores (AVS), normalized Consistency Scores (CS), monthly Improvement Trends, and Consecutive Active Day Streaks.

Second, a machine learning recommendation engine operates as a digital curator that uses natural language processing (NLP) to suggest tailored activities across Mind, Body, and Spirit wellness categories. The pipeline converts content tags into high-dimensional numerical vectors using TF-IDF vectorization, ranks matches via Cosine Similarity, and dynamically balances recommendations using a novelty bonus, diversity scoring, and smoothed inverse frequency tag weighting to prevent fatigue and promote holistic health.

Bridging advanced computing with behavioral analytics, this dual-pillar platform empowers organizations to make data-driven wellness decisions while offering individual users a highly tailored, engaging, and sustainable path to personal well-being.

AT A GLANCE

Supervisors: Pawan Lingras

Universities: Saint Mary's University

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

Showcase page: <https://miwai26.cs-smu.ca/miisc/showcase/wellnify-ai>

Presentation video (9 min 12 s): <https://miwai26.cs-smu.ca/miisc/media/videos/wellnify-ai-holistic-personalization-architecture-for-wellne-2f1450c6.mp4>

MacDon Industries Ltd.

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

Presented by: Christopher Henry, University of Manitoba

ABSTRACT

Our research team is developing deep learning (DL) methods to enhance how agricultural machines, like cultivators, detect and navigate crop rows. This work draws on our longstanding interest in applying DL and computer vision to agricultural challenges and builds on prior collaborations with industry. Central to the project is semantic segmentation, a computer vision technique that allows machines to interpret each part of an image and accurately identify where crop rows begin and end. This level of precision is essential for enabling autonomous farm equipment to perform tasks such as weed control and soil management more effectively.

We are working with MacDon Industries Ltd., a leading Canadian agricultural equipment manufacturer, whose goal is to reduce the time and cost of manually labeling training data so they can develop DL algorithms - such as the crop detection system. Together, we are investigating the use of synthetic data - photorealistic images generated by DL models - to augment MacDon's proprietary datasets. This approach promises to accelerate training processes while preserving the quality of DL-based systems. Our work aims to produce scalable, reusable tools and pipelines to support DL development in agriculture and other industrial domains.

The project is being carried out by an interdisciplinary team that includes Drs. Henry and Wang, trainees from the University of Manitoba, and engineers and developers at MacDon. The team brings together expertise in DL, digital agriculture, simulation, and embedded systems. One highly qualified personnel - a recent MSc graduate in computer science - is working full time on this research, with support from an MSc student, along with both academic and industry mentors.

The long-term outcomes will include more capable machine systems, new career opportunities in AI and robotics, and broader economic benefits for Canada's rural and tech sectors. This work is a step forward in making Canadian agriculture more sustainable, efficient, and globally competitive.

AT A GLANCE

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

Showcase page: <https://miwai26.cs-smu.ca/miisc/showcase/macdon-industries>

Presentation video (5 min 56 s): <https://miwai26.cs-smu.ca/miisc/media/videos/macdon-industries-video-c3354cd0.mp4>

Hatfield Consultants LLP

Exploring Unsupervised Domain Adaptation Methods for Automated Linear Disturbance Mapping

Presented by: Christopher Henry, University of Manitoba

ABSTRACT

In Canada's vast northern region of boreal forest and wetlands, disturbances such as roads, seismic exploration, pipelines, and energy transmission corridors are a leading cause of the decline of woodland caribou (*Rangifer tarandus*) - boreal population. As a result, a deep understanding of these "linear disturbances" has become a research and forest management priority in Canada. An ideal tool to support managing linear disturbances is a way to automatically generate cost-effective maps that accurately identify this form of forest habitat fragmentation.

As a result, the focus of this project is to develop an approach for automated map production from multispectral satellite images using deep learning methods. Specifically, convolutional neural networks designed for classifying each pixel in a satellite image will be used to produce linear disturbance maps from Sentinel-2 data. The main research challenge to be addressed is that labels were developed using expensive high-resolution SPOT-6 satellite data, and there are no equivalent labels for the free and medium-resolution Sentinel-2 data. Thus, the proposed work will develop an unsupervised domain adaptation approach, which aims to take the data and corresponding labels from one domain and adapt it for training semantic segmentation models in a related, but different domain.

The main benefit of this work is advancing methods for monitoring the fragmented habitats affecting the boreal Caribou herds at scale, thereby supporting important conservation outcomes. Additional benefits include advancing general unsupervised domain adaptation from finer spatial resolution domains to coarser ones, providing improved opportunities to use freely available Sentinel-2 data for other related environmental monitoring tasks, and developing baseline methodology to build upon for spectral or time-series analysis.

AT A GLANCE

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

Showcase page: <https://miwai26.cs-smu.ca/miisc/showcase/hatfield-consultants>

Presentation video (6 min 30 s): <https://miwai26.cs-smu.ca/miisc/media/videos/hatfield-consultants-video-bd2ec5d7.mp4>

R-Tech Industries

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

Presented by: Christopher Henry, University of Manitoba

ABSTRACT

Manitoba has an opportunity to transform agriculture practices through advances in sensors, robotics, and machine learning. Real-time, automated methods of in-field data collection are needed to increase productivity and sustainability in production agriculture, to expedite plant breeding and research, and to further the uptake of organic farming.

To this end, we have developed a prototype of a self-propelled, GPS-guided data rover with industry partners R-Tech Industries and Northstar Robotics. The rover will be used for the rapid collection of plant images and environmental data in test plots, organic farms, and with partner EMILI, across a full-scale commercial farm. Large volumes of high-quality, in-field data are crucial for the development of crop scouting technology that will, for example, identify weeds amongst crops, characterize plant health and yield, or detect disease.

This project is the next innovative leap by the TerraByte research group and its collaborators. In-field testing and data collection will be used to update and improve the prototype into a final commercial product for R-Tech. As such, this project represents an exciting new frontier in the long and venerable tradition of agriculture implement development in Manitoba.

AT A GLANCE

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

Showcase page: <https://miwai26.cs-smu.ca/miisc/showcase/r-tech-industries>

Presentation video (5 min 13 s): <https://miwai26.cs-smu.ca/miisc/media/videos/r-tech-industries-video-3f37ccd4.mp4>

TACKLE Lab

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

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

ABSTRACT

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 for accurate design visualization. The workflow 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.

The research is led by Dr. Andrew Fisher (andrew.fisher@unb.ca) and the TACKLE Lab (<https://tacklelab.ca/>), dedicated to advancing artificial intelligence, machine learning, and computational optimization in real world settings. The lab uses this project to focus on bridging the gap between digital architectural design, material knowledge automation, and off-site manufacturing optimization to drive real-world operational efficiency and sustainability across the construction industry.

AT A GLANCE

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

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

Universities: Saint Mary's University

Website: <https://tacklelab.ca/>

Note: *Partner organization: Greenstone Brandon Plant Ltd.*

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

Showcase page: <https://miwai26.cs-smu.ca/miisc/showcase/tackle-lab>

Presentation video (6 min 49 s): <https://miwai26.cs-smu.ca/miisc/media/videos/tackle-lab-video-600d7725.mp4>

WorkCore AI

An Enterprise AI Agent Workforce for Knowledge-Intensive Operations

Presented by: Ali Nafarieh

ABSTRACT

WorkCore AI is building an enterprise AI platform that helps organizations use specialized AI agents to automate knowledge-intensive operational work.

While large language models can improve productivity, many small and medium-sized businesses face challenges when adopting AI, including inaccurate responses, lack of reliable business context, data privacy concerns, and limited control over how AI systems make decisions. WorkCore AI addresses these challenges by combining specialized AI agents with enterprise security, governance, and organizational knowledge.

The platform uses technologies such as retrieval-augmented generation (RAG), vector databases, and confidence scoring to improve the accuracy and reliability of AI-generated information. Instead of relying only on general AI knowledge, WorkCore AI agents retrieve information from approved company data and use it to produce more factual, traceable, and relevant responses.

The platform is designed for secure multi-tenant business environments and includes data isolation, role-based access controls, policy-based guardrails, and audit logging. These features support responsible AI deployment and help organizations align their systems with Canadian privacy requirements, including PIPEDA.

WorkCore AI agents are designed to operate as digital team members rather than general-purpose chatbots. Specialized agents, including Tenant Insights, Trade, and Estimator Agents, can support operational schedules, follow business rules, assist with decision-making, and coordinate tasks across departments through a shared orchestration system.

Development of the platform is supported by a Mitacs Business Strategy Internship initiative. The project combines technical research with commercialization strategy, with an initial focus on industries such as property management and construction.

The technical stream focuses on secure AI retrieval systems, agent coordination, accuracy, and reliability. In parallel, the business strategy stream examines market opportunities, customer needs, purchasing decisions, product positioning, and scalable go-to-market and white-label distribution models.

By connecting applied AI research with real-world business operations, WorkCore AI aims to provide organizations with a secure and trustworthy AI workforce that can reduce repetitive work, improve decision-making, minimize operational errors, and increase productivity across Canadian industries.

AT A GLANCE

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

Supervisors: Pawan Lingras

Universities: Saint Mary's University

Contact: Ali Nafarieh — ali@workcore.ai

Showcase page: <https://miwai26.cs-smu.ca/miisc/showcase/workcore-ai>

Presentation video (6 min 26 s): <https://miwai26.cs-smu.ca/miisc/media/videos/workcore-ai-video-9d92ac85.mp4>

Invisipay Inc.

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

Presented by: Pavan Puri

ABSTRACT

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. By 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 built for modern retail operations.

AT A GLANCE

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

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

Universities: Saint Mary's University

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

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

Presentation video (8 min 30 s): <https://miwai26.cs-smu.ca/miisc/media/videos/invisipay-video-3661ef13.mp4>

Delmore “Buddy” Daye Learning Institute

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

ABSTRACT

Learners of African descent in Nova Scotia face persistent achievement disparities in public education due to historical marginalization, Eurocentric curricula, and systemic barriers. To address these inequities, 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 traditional philosophy of Ubuntu—“I am because you are”—and the principle that “it takes a village to raise a child,” this initiative emphasizes that academic success relies on collaborative partnerships built on mutual trust among schools, families, and communities.

The project encompasses two core components: first, it conceptualizes Africentric Cultural Intelligence (ACQ) to enable educators and administrators to understand African cultural nuances, adopt Culturally Responsive Pedagogy (CRP), and engage meaningfully with students and communities. Second, it applies multilevel modeling and temporal unsupervised machine learning—including soft computing approaches like rough and fuzzy clustering—to analyze provincial assessment data, identify characteristics of promising schools, and discover key learning patterns while examining and mitigating potential algorithmic biases. By combining community-based participatory research with data analytics, this project provides actionable insights to inform evidence-based educational policies, bridge achievement gaps, and foster sustainable, inclusive educational environments across Nova Scotia.

AT A GLANCE

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

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

Universities: Saint Mary’s University

Showcase page: <https://miwai26.cs-smu.ca/miisc/showcase/delmore-buddy-daye>

Presentation video (6 min 42 s): <https://miwai26.cs-smu.ca/miisc/media/videos/delmore-buddy-daye-video-b353c377.mp4>

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

ADVISORY BOARD

Reid Sutherland (she/her/elle)

Mitacs — rsutherland@mitacs.ca

ADVISORY BOARD

Danielle Goodfellow

Industry Liaison Officer, Office of Innovation and Community Engagement, Saint Mary's University —
danielle.goodfellow@smu.ca

ADVISORY BOARD

Kevin Buchan

Director, Office of Innovation and Community Engagement, Saint Mary's University — kevin.buchan@smu.ca

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