

2019

OFFICE OF INNOVATION AND COMMUNITY ENGAGEMENT **SUCCESS STORIES**

Fostering innovation
through partnerships
with our university
and the community



Office of Innovation and Community Engagement

The Office of Innovation and Community Engagement (OICE) facilitates research relationships between Saint Mary's University and companies, government departments, and community organizations. OICE is the initial point of contact for faculty members and external partners wishing to collaborate. The office assists with finding suitable expertise, contract development, and advises on funding opportunities.

SPRINGBOARD ATLANTIC

Saint Mary's University is a member of Springboard Atlantic, a network of 19 universities and colleges across the Atlantic region. Springboard supports interactions that help advance the commercialization of technology and knowledge transfer. Springboard is partially funded by the Atlantic Canada Opportunities Agency (ACOA).

By strategically positioning resources, Springboard Atlantic helps skilled professionals in academia connect with like-minded contacts in industry, driving research commercialization in Atlantic Canada.

Personalizing the retail experience

RetailDeep uses facial recognition software to enhance the shopping experience in stores, collect data from clients, and pinpoint opportunities to innovate within the retail space.

The Halifax-based startup's first prototype was a smart kiosk placed at The Shelf, a joint venture between Saint Mary's and the Halifax Seaport Farmers Market. SMU student Zhenni Ge was sponsored to work on product research.

"Now we just graduated from XRC Labs, one of the top retail-focused accelerators based in New York City, and acquired several marquee customers in the U.S., UK and China. Google reached out to us wanting to showcase our solution to over 100 retail executives at their retail show in New York City." —Dr. Hai Hu, CEO and Chief Scientist, RetailDeep

Industry Partner: RetailDeep

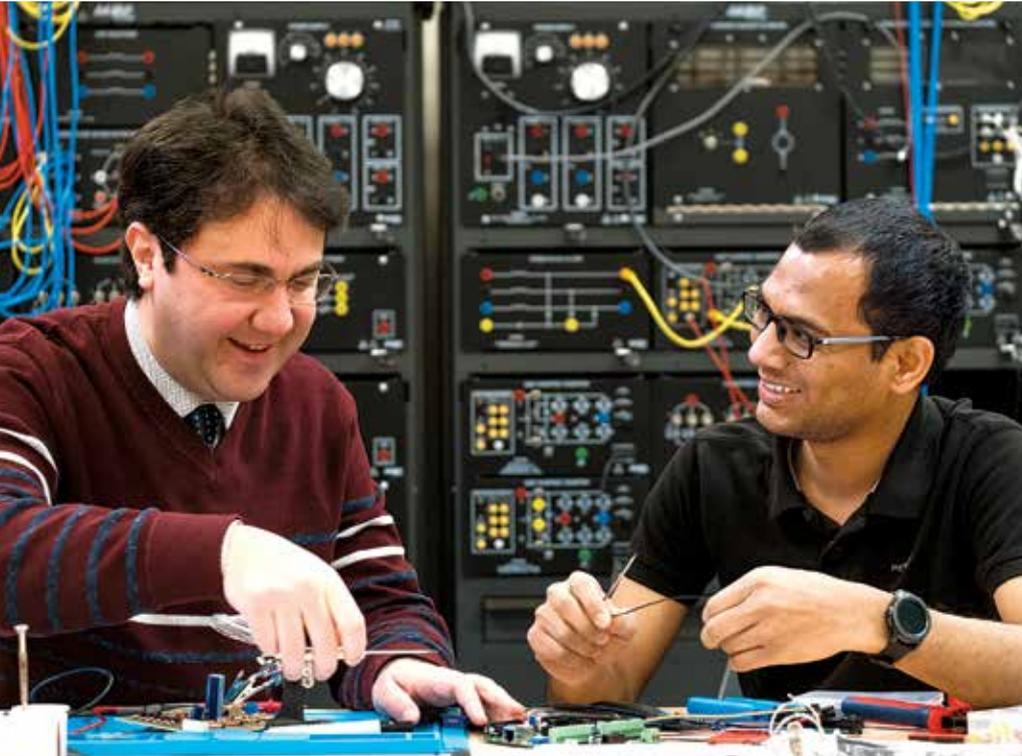
Academic Partner: Dr. Gordon Fullerton

L-R: Dr. Gordon Fullerton, Zhenni Ge, Dr. Hai Hu (RetailDeep)



Building strength with collaboration

When DeMario Dunkley, Saint Mary's alumnus (DipEng'11), and inventory manager at **Novatec Braids**, needed to improve the control system at the custom rope manufacturing company where he has worked for two years, he called his former Engineering professor for help.



The Yarmouth, N.S.-based company designs and manufactures synthetic rope. Their team collaborated with Dr. Adel Merabet and Vinod Bachhao to come up with an innovative control system with new testing capabilities that helps them best serve their customers.

“Dr. Merabet and his team of students were able to update and enhance the control system and add features that will insure Novatec’s continued competitive advantage with fast response design commercialization.” —Neal Prescott, Managing Director, Novatec Braids.

Industry Partner: Novatec Braids Inc.

Academic Partner: Dr. Adel Merabet

L-R: Dr. Adel Merabet, Vinod Bachhao (PhD candidate)

Finding world-class expertise at home

Halifax-based biotechnology company **MedMira** created and patented a technology platform that allows healthcare providers to test for infectious diseases in minutes, and wanted to advance the platform’s capabilities.

Dr. Christa Brosseau’s research expertise in nanotechnology and Surface-enhanced Raman spectroscopy (SERS) allowed MedMira to enhance the detection and quantitative analysis capabilities of its Rapid Vertical Flow system.

“We were excited to discover that one of the leaders in this field was at Saint Mary’s. Being able to meet face-to-face and share resources and discoveries with Dr. Brosseau and her team has helped us move the project forward towards commercialization faster than we had anticipated.”—Neeraj Vats, Director of Technology, MedMira.

Industry Partner: MedMira

Academic Partner: Dr. Christa Brosseau

L-R: Carlina Hui, Chief Scientist (MedMira), Dr. Christa Brosseau





Visionary research on colour blindness

When **Coloursmith Labs** needed to examine the optical properties of nanoparticles in their new contact lenses to treat colour blindness, Saint Mary's researcher Dr. Danielle Tokarz was able to help. Along with her team she helped the startup company refine the focus of their research efforts and identify the appropriate nanoparticles and gels for the lenses.

"They exemplify the world class talent that Saint Mary's University and Atlantic Canada has to offer," said Gabrielle Masone, CEO and President of Coloursmith.

"Their expert support and guidance offers us the opportunity to take swift and smart strides through our foundational research," she said. "We look forward to undertaking many more projects with Dr. Tokarz and Saint Mary's in the near future."

Industry Partner: Coloursmith Labs

Academic Partner: Dr. Danielle Tokarz

L-R: Dr. Danielle Tokarz, Chandika Ramful, Gabrielle Masone (Coloursmith Labs)





Giving non-energy benefits a boost

To study the non-energy benefits of saving energy, **EfficiencyOne** partnered with Dr. Mark Raymond, whose expertise on environmental economics made him the perfect candidate to help. EfficiencyOne administers a variety of energy efficiency and conservation services under the Efficiency Nova Scotia brand.

Dr. Raymond's research produced quantifiable results, which will allow the organization to design more effective, cost-efficient programs and initiatives.

"The benefits of this research will flow to all Nova Scotians, enabling them to better reap the benefits of energy efficiency – saving money, reducing greenhouse emissions, and enjoying more comfortable, productive spaces where they live and work." —Matthew Davidson, Technical Manager, EfficiencyOne.

Community Partner: EfficiencyOne

Academic Partner: Dr. Mark Raymond

L-R: Dr. Mark Raymond, Sarah Mitchell (EfficiencyOne)

Using data to detect dental defects early

The team at **Lansing Dental**, a Toronto-based dentistry company specializing in cosmetics and implant dentistry, consists of experienced university instructors.

The company needed to create a unique software solution for better patient care in future. Dr. Hai Wang is currently working on a project that involves machine learning and data analytics.

"This project will enable our company to utilize cutting-edge technology. We expect to see real benefits in the next couple of years." —Dr. Weidong Pei, Lansing Dental

Industry Partner: Lansing Dental

Academic Partner: Dr. Hai Wang

L-R: Dr. Hai Wang, Maninder Kaur Baria (student)





Paving the way to new technology

LED Roadway Lighting, a Canadian-owned clean technology company that manufactures energy-efficient LED streetlights, developed an adaptive radar-based sensor platform for pedestrian and vehicle recognition for use in vehicles.

Because a high level of accuracy is key, the Halifax-based company was pleased to partner with Dr. Jason Rhinelander, who was able to use his expertise in the area of artificial intelligence and object recognition to evaluate the accuracy of a new design and determine if further development was needed.

“This project allowed us to leverage the expertise developed within academia on neural networks and computer vision to evaluate the technology and vendor landscape in this field.” —Ken Cartmill, Vice-President, Product Development, LED Roadway

Industry Partner: LED Roadway Lighting

Academic Partner: Dr. Jason Rhinelander

L-R: Dr. Jason Rhinelander, Ken Cartmill (LED Roadway Lighting)

Using data to provide care at home

With a newly-developed, non-intrusive monitoring system that uses heat to detect the presence and absence of people in a room, **HomeExcept** has created a solution to a growing problem.

The Halifax-based company paired with Dr. Pawan Lingras and his Mathematics and Computing Science students, who were excited to assist the company with collecting data through interviews and observations.

This information was compiled to provide design recommendations for the interface and interactions. Additionally, it was used to provide a standardized protocol for future UI/UX.

“The students from Saint Mary’s were critical in developing our product. Without their work there would be no product.” —John Robertson, Founder and CEO.

Industry Partner: HomeExcept

Academic Partner: Dr. Pawan Lingras

L-R: Students Sanjeev Ramachandran and Dinesh Kumar Govindaraj with Dr. Pawan Lingras





Chemistry is key in producing wine

Located in Nova Scotia's Gaspereau Valley, **L'Acadie Vineyards** offers an array of certified organic red, white, rosé, and sparkling wines.

L'Acadie uses natural wine ferments from wild yeasts found on their certified organic grapes, and wanted to understand what microbes live in the soil and on the vines to help characterize a new wine.

Dr. Clarissa Sit and M.Sc. student Brandon Logan are collecting soil samples and doing genetic analysis on the microbes.

"This research enables us to better understand the microfauna in our vineyard and ferments to produce high quality wines such as Petillant Naturel. Our organic practices could improve by knowing microbe strains and populations in our whole farming cycle, from composting to harvest." —Bruce Ewert, Owner, L'Acadie Vineyards

Industry Partner: L'Acadie Vineyards

Academic Partner: Dr. Clarissa Sit

L-R: Brandon Logan (student), Dr. Clarissa Sit, Bruce Ewert (L'Acadie Vineyards)

Improving the Internet of Things

A term used to describe objects that "talk" to each other, the Internet of Things (IoT) uses sensors and meters to connect physical devices to the Internet, collecting valuable data that can help businesses become more efficient.

Hanatech's IoT services help business owners collect, analyze, and draw actionable insights from their operations data. The Halifax-based company was looking for assistance in the visualization of IoT signals and optimization of sampling rate using machine learning, and Dr. Pawan Lingras' Master of Science in Computing and Data Analytics classes provided expertise in the rapidly-growing field.

"SMU students are able to quickly jump in, apply their vast skill set to our development efforts. This program will continue to provide Hanatech and the Atlantic region with much needed talent for years to come." —Chuck Lienaux, CFO and Co-Founder, Hanatech

Industry Partner: Hanatech

Academic Partner: Dr. Pawan Lingras

L-R: Chuck Lienaux (Hanatech), Dr. Pawan Lingras





Creating synthetic, renewable fuels

Cellufuel, a start-up that is focused on the production of synthetic renewable fuels, holds an exclusive license for an innovative technology that they will be transferring to Nova Scotia.

The Nova Scotia-based company sees their project as an opportunity to aid in the development of the forestry industry across Canada, and says these projects “have the potential to provide significant economic impact within rural communities.”

Dr. Kai Ylijoki assisted with developing methods to improve the quality of the synthetic renewable fuels derived from forestry resources in colour, smell, and flashpoint.

“Saint Mary’s has been instrumental in finding a solution for improving quality of our diesel. Based on their findings, we are planning on scaling up the testing to evaluate economic aspects of the solution.” —Veselin Milosevic, Chief Technology Officer

Industry Partner: Cellufuel

Academic Partner: Dr. Kai Ylijoki

L-R: Veselin Milosevic (Cellufuel), Dr. Kai Ylijoki

Reintegrating sex offenders into society

Circles of Support and Accountability (CoSA) Canada are professionally-supervised groups of screened and trained volunteers who are committed to enhancing public safety by supporting sex offenders when they are released back into society after being incarcerated.

As a sociologically-informed criminologist, Dr. Diane Crocker has been working in the area of restorative justice for years and she has partnered with CoSA Canada to do an assessment of their program.

This information will help CoSA Canada determine the best methods for moving forward to help individuals that need their support.

“This evaluation will help us develop a better understanding of the impact we are having and the role we play in helping to reduce victimization and create safer communities.”
—Kathryn Bliss, Executive Director.

Community Partner: Circles of Support and Accountability Canada

Academic Partner: Dr. Diane Crocker

L-R: Dr. Diane Crocker, Joy Steem (CoSA Halifax)





Searching for help from academia

Saint Mary's was "one stop shopping" for **GreyLit**, created as a practical tool for publishing, searching, and reviewing health-related literature that has not been published through the traditional academic, peer-reviewed process.

Dr. Ethan Pancer, Assistant Professor of Marketing at the Sobey School of Business, offered advice on effectively reaching audiences.

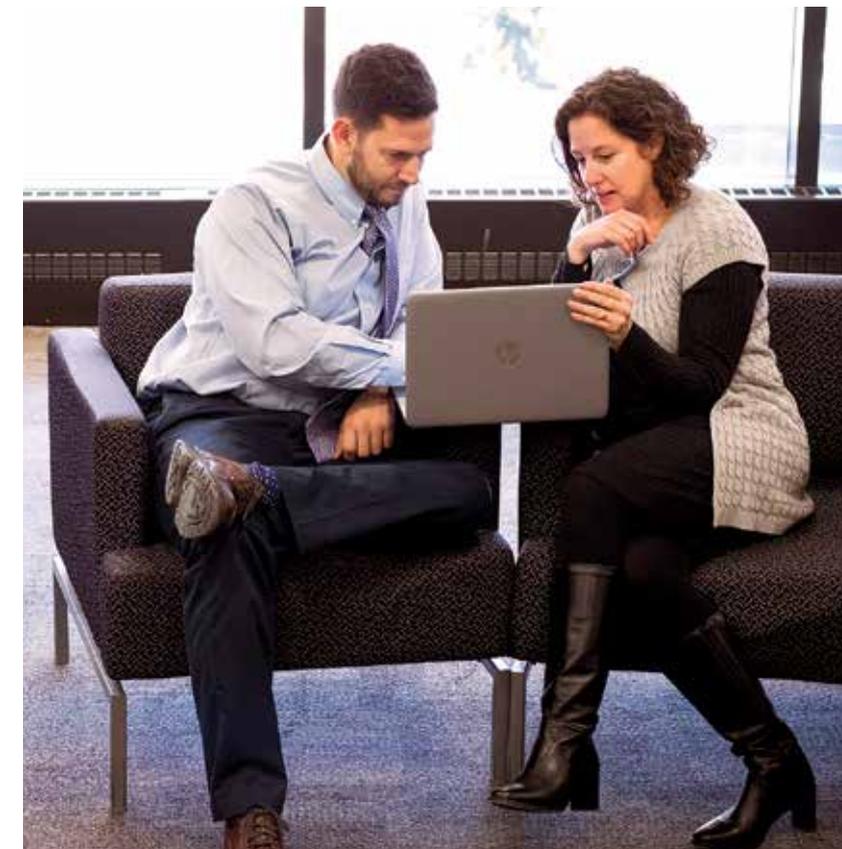
Dr. Yasushi Akiyama, Assistant Professor and a human-computer interaction researcher in the Department of Mathematics and Computing Science at Saint Mary's, improved the search and share functions of the web platform.

"One advantage of liaising industry and academia is that it creates a two-way street of knowledge transfer. The less obvious, but perhaps more important advantage is gaining critical insights and practical strategies to improve your business." —Cora Cole, Founder and CEO, GreyLit

Industry Partner: GreyLit

Academic Partners: Dr. Ethan Pancer and Dr. Yasushi Akiyama

L-R: Dr. Yasushi Akiyama, Cora Cole (GreyLit), Dr. Ethan Pancer



INTELLECTUAL PROPERTY

To educate students on the best way to protect their ideas, OICE gives lectures on protecting intellectual property in classes such as Chemistry and Engineering, and to PhD in Applied Science candidates.

TRAINING

Each year the office teams up with the Saint Mary's Entrepreneurship Centre to offer a training session for faculty on how to hone a perfect pitch. Effective and concise communication is key for getting messages across when seeking funding support or collaborators.

REAL-LIFE APPLICATIONS

Through projects, OICE enables students to gain relevant experience in their fields while completing their studies. Employers benefit when students apply their knowledge, and in some cases students also secure employment with their company partners after graduation.

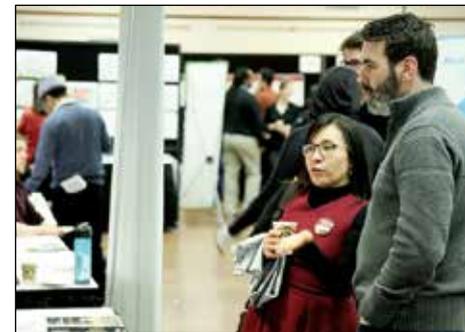
RESEARCH EXPO

This exceptional annual event at Saint Mary's University is an opportunity for Science, Business, and Arts researchers, research institutes, and centres to showcase their work in the form of pitch presentations or displays. Companies and organizations can explore partnerships by learning about the research expertise available at Saint Mary's University.



Faculty Pitch Presentations

Pitch presentations are a great way to highlight the focus of faculty members' work, explaining their research in a way that piques the audience's interest and leaves them eager to know more.



Booth Displays

Poster presentations and display booths allow researchers, research institutes, and research centres to share their work.



Networking

This event is an opportunity to connect with businesses, government departments, community organizations, colleagues, and students.

OICE Team

Kevin Buchan

Director

Saint Mary's University

kevin.buchan@smu.ca

Danielle Goodfellow

Industry Liaison Officer

Saint Mary's University

danielle.goodfellow@smu.ca

Vanisa Omicevic

Coordinator

Saint Mary's University

oice@smu.ca

We gratefully acknowledge the financial support of Springboard Atlantic.



Writing and Design: **Danielle Boudreau** • Photography: **Andrew Tolson, Paul Darrow** (Research Expo)