



Bringing
WORLDS
Together



Dalhousie's campaign for transformational change

Growing at the rate of technology

We are the premier computer science faculty in Atlantic Canada with ambitions to be the best in Canada.

At Dalhousie Computer Science, we anticipate, shape and respond to the demands of our increasingly digital world. Our research strengths — including artificial intelligence, software engineering, cybersecurity, bioinformatics and digital health — focus on finding solutions to real, current priorities for our world. We are keen collaborators, working closely with fellow Dalhousie faculties and our many community and industry partners at the intersections where computer science and other disciplines and sectors meet — where innovation is born. Our exceptional students graduate well-equipped and eager to tackle the complex and diverse tech challenges of today and tomorrow.

Our goal is to make Nova Scotia one of North America's most attractive jurisdictions for digital talent and companies, where technology fuels the economic health of our region. We will drive research and innovation that has a global impact. We will fill the voracious tech talent pipeline with highly skilled graduates who are truly industry and future ready. Our hope is to create an inclusive, diverse workforce that allows everyone to access the many opportunities the digital world affords.

The **Bringing Worlds Together** campaign will help us attract the best and brightest students and faculty. Through this campaign, we will help demystify computer science, and create better and earlier pathways to this ubiquitous field. We will inspire our students and faculty to use innovation, entrepreneurship and world-leading research to solve complex challenges — from AI and cyber resiliency, to health care and sustainability. Bringing these worlds together, we will accelerate and excel at the rate technology demands.



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Enhancing our impact

Inspiring Future-Ready Leaders

We want to be the most student-centric faculty of computer science in Canada. That means offering exceptional education and experiential learning, and employing industry-leading technology. We will be welcoming and inclusive, and offer the support students need — whether academic, professional, personal or financial. Our students will graduate as skilled, innovative and community-minded leaders who are ready to code a future filled with opportunity.

1. Centre for Diversity in Tech — \$4.8M

With the pervasive nature of technology in our lives, it is critical to ensure computer science works to benefit all of society. To achieve this, we need to increase diversity in our faculty and field. We will create the Centre for Diversity in Tech in collaboration with our grade school, industry and community partners. The Centre will offer pathway programs to recruit, educate and provide financial supports for students from historically underrepresented groups in technology, including female-identifying, Black and Indigenous people. An equity, diversity, inclusion and accessibility (EDIA) chair and EDIA program coordinator will support the faculty's EDIA programs and research.

2. Innovation and entrepreneurship programs — \$6.6M

Halifax is one of Canada's fastest-growing tech hubs. Our goal is to create a workforce with an innovation mindset, giving our students the tools to seize opportunities — and create them. We will anchor innovation and entrepreneurship activities into the academic life of the Faculty and develop new programs for students that align with today's tech needs. Focusing on career development and student incubator start-ups, these programs will “supersize” the work of our technology innovation sandbox, ShiftKey Labs. This campaign will allow us to enhance programming, furnish facilities and equipment, hire staff and provide seed funding for student start-ups.

Economic growth fuelled by talent and expertise

A robust talent pipeline is essential to feed the massive growth and success of the tech sector in our region. That pipeline flows through Dalhousie Computer Science.

- **We have rapidly increased** enrolment to meet demand for highly skilled professionals. Dal Computer Science currently has over 2400 students — more than triple the number enrolled in 2015.

- **Dalhousie trains 90 per cent** of all university-level CS students in Nova Scotia.
- **Thanks to significant investments** through Scale CS — a partnership with government, industry and other educational institutions to address tech needs in the region — Dalhousie is recruiting 60 computer science and interdisciplinary faculty to train our future-ready leaders and conduct vital research.



Where passion meets community outreach

When **Madeleine Nykl** left Vancouver to study sustainability and geography at Dalhousie, computer science wasn't even a blip on her radar. But faced with extra down time when the pandemic hit, Nykl tried out a coding course to learn a new career-friendly skill. She quickly got hooked.

"I assumed computer science was all about math and I had already decided I just wasn't a 'math person,'" says Nykl. "But I got really passionate about it and was willingly spending more time on coding than my other courses. So I took a big leap and switched to the Bachelor of Applied Computer Science program. It was one of the best decisions I've ever made."

Keen to engage in her new field, Nykl sought out activities where she could share her enthusiasm and is now a program coordinator on the Faculty's Computer Science Education Outreach Team. This part-time position is funded by the Leacross Foundation, a long-time Faculty partner that provides supports to help women students realize their potential.

As part of her role, Nykl creates workshops for high school students. She especially loves talking to students who — like her — would not have considered computer science as a career or who might not see themselves in a field that often lacks diversity.

"Whether they consider themselves to be 'math people' or 'artistic people,' I do my best to show them that not only is there a space for them in computer science, there is a demand for them in computer science."

For Nykl, it's all just a matter of having the right perspective.

"I challenge students to think about their goals and intentions first, and then to think about what they need to make those a reality," she explains. "If they don't see their specific Venn diagram of interests there, that doesn't mean it's off the table — that's all the more reason to go and create that reality. You can do that in computer science."



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NOT ONLY IS THERE A SPACE FOR THEM IN COMPUTER SCIENCE, THERE IS A DEMAND FOR THEM IN COMPUTER SCIENCE.

— MADELEINE NYKL

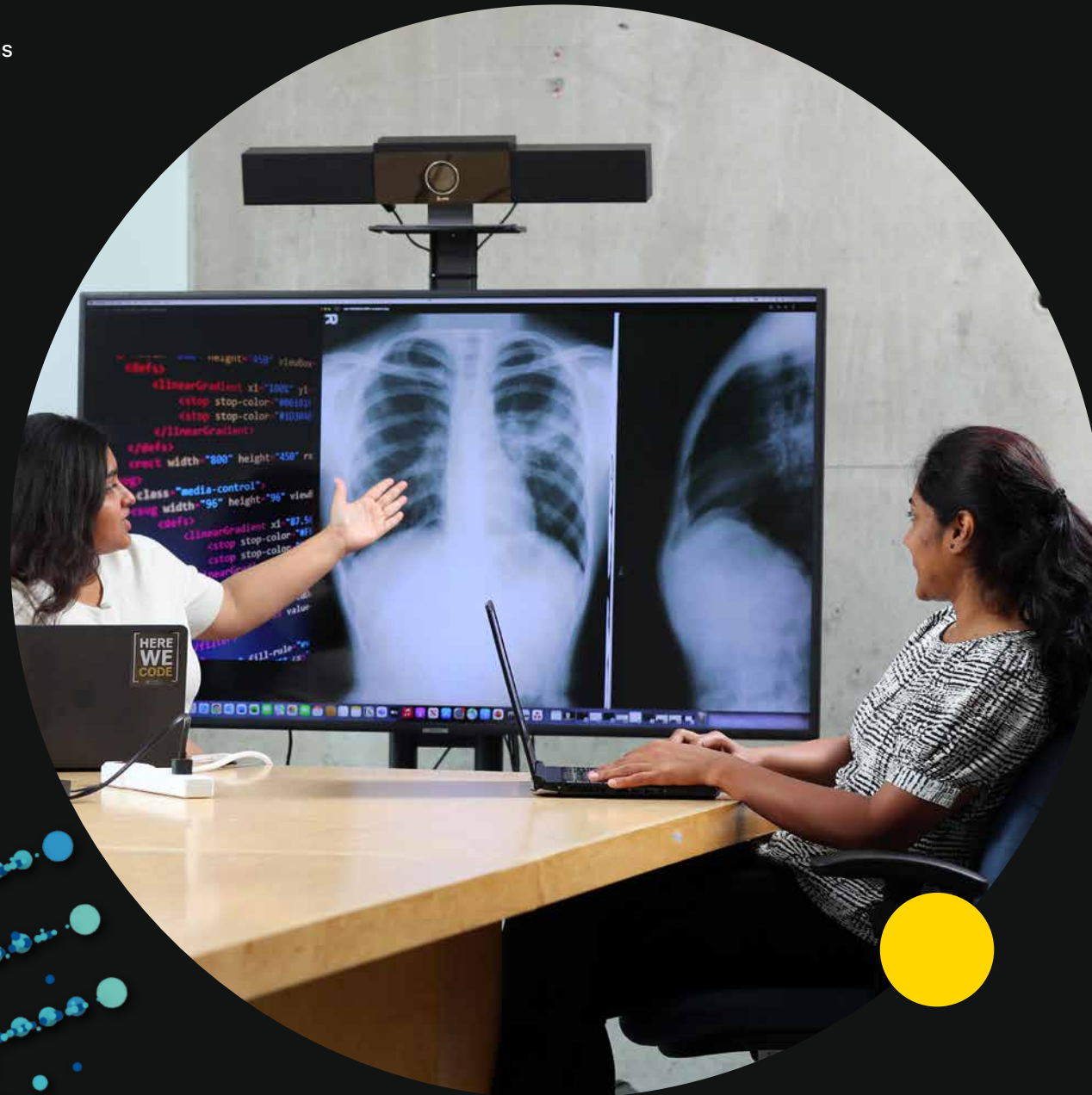
Engaging in High-Impact Research

In our rapidly evolving field, research must constantly anticipate and address opportunities and threats, facilitating our understanding of ongoing developments in computer science. Our outstanding faculty and talented trainees work across disciplines with industry, academia and government to translate ideas into robust solutions. We provide extensive training and the opportunities to use tools that will propel research and transform the world. Our innovative research drives evidence-based solutions to pressing real-world challenges. Together, we aim to elevate our research, fuel social innovation, pioneer climate and health-care technology, and harness our expertise in big data and machine learning.

1. Dalhousie Nexus for Advanced Artificial Intelligence Research — \$11.9M

The potential of artificial intelligence (AI) is vast and unfolding rapidly. It is increasingly urgent and necessary to establish leadership in this area. Dalhousie is an emerging national leader in AI research, particularly in ocean data analytics and health-care technologies. We propose a new centre for AI research focused primarily on the multidisciplinary application of these new technologies — a unique focus among Canadian universities. We envision AI-driven models predicting and mitigating the effects of climate change on marine ecosystems, and personalized health care revolutionizing patient treatment and care. These, and other applications, are imminent realities made possible through this initiative.

Investing in the Dalhousie Nexus means supporting a state-of-the-art facility powered by advanced technologies. It also means fostering the next generation of AI innovators through graduate scholarships, postdoctoral fellowships and eminent visiting scholars. This initiative is a commitment to harness AI's transformative power for societal benefit, making Dalhousie a pivotal player in shaping a smarter, more sustainable future.



AT DALHOUSIE, I LEARNED TO THINK ABOUT HOW AI CAN BE APPLIED TO MAKE POSITIVE CHANGE.

—MATHEW ZIMOLA

Where AI potential meets impact

Mathew Zimola (BEng'13, MASc'19) is the Chief Executive Officer and co-founder of ReelData, a company that uses AI innovation to enable land-based aquaculture farms to maximize both profit and sustainability. He sees bringing together digital innovation and aquaculture as an opportunity to increase food production and help improve food security.

“Aquaculture has the potential to help solve food shortages around the world, and AI has the power to realize that potential. At ReelData, we want to help ‘create the future’ and we believe land-based aquaculture farms are the best chance to do exactly that. At Dalhousie, I learned to think about how AI can be applied to make positive change.”

2. Centre to Build Resiliency in the Cyber-Connected World — \$6M

Reliance on information technology makes us increasingly vulnerable to cyberattacks. Our proposed Centre to Build Resiliency in the Cyber-Connected World will maximize our research strengths in cybersecurity and resiliency. Centre researchers will address gaps in hardware that make systems susceptible to malicious attacks, while developing more resilient software to create a safer, more innovative digital future. This campaign will help establish the Centre with an endowed research chair, technical staff and specialized equipment, and provide seed funding for research and financial supports for graduate students.

3. Centre for Sustainable Software Innovation — \$8.3M

From the sheer volume of materials produced to meet tech demands, to where and how materials are mined or created, it's clear that technology has huge environmental and social impacts. Our Centre for Sustainable Digital Transformation will tackle how to make technology more sustainable through education, community engagement and cutting-edge research. This collaborative, multidisciplinary enterprise will draw on expertise across our Faculty's signature research clusters to improve environmental, social and economic sustainability. Our work will include monitoring marine life, optimizing agriculture, decarbonizing blockchain applications, reversing the downward spiral of automation and unemployment, and much more. To achieve this, we will establish an endowed research chair in sustainable software, hire postdoctoral fellows and technical staff, fund enhanced research start-up grants, and provide facilities and equipment for the new centre.



WHAT IS HAPPENING IN RESEARCH AT DALHOUSIE COMPUTER SCIENCE IS SPECIAL.

— DR. NUR ZINCIR-HEYWOOD

Where growth meets limitless opportunity

Dr. Nur Zincir-Heywood is a Distinguished Research Professor and the Associate Dean of Research at Dalhousie's Faculty of Computer Science. A standout researcher in cybersecurity and network computing, her work draws high-profile attention from across the university, within the community and internationally. As the Faculty attracts new researchers, Dr. Zincir-Heywood sees limitless opportunities for growth and collaboration.

"What is happening in research at Dalhousie Computer Science is special. The spectrum of new faculty members will increase the breadth and diversity of research topics, ranging from sustainable and responsible online information systems to explainable AI for recommender systems. We are dedicated to training generations to come with a diverse approach at the forefront of research in computer science and information communication technologies."

Lifting Our Communities

A deep sense of social responsibility is hardwired in everything we do. We are committed to strengthening our local and global communities. That commitment means training enough future-ready graduates to fill tech roles across industries — especially in the exploding digital market in Halifax. And it means ensuring members of our wider community can benefit from the opportunities afforded by digital, no matter their location or background.

1. Engaging NS youth through enhanced computer science education — \$5.7M

We want to inspire youth with the infinite possibilities of computer science. To do this, we will increase exposure to computer science in all Nova Scotia schools. We will create EDIA and rural pathways to computer science. Our planned Digital Innovation Coding Hub will be a provincial hub for computer science curriculum, programming and professional development for teachers. Working with provincial government partners, we will create a “dual-credential model” for students to receive university credit for high school computer science courses. This campaign will fund curriculum development and supports, outreach programming, software licensing, facilities, equipment and staffing.



WE WANT TO INCREASE INCLUSIVITY AND ENSURE TECHNOLOGY IS WITHIN EVERYONE'S REACH.

— DORA JONAH

Where collaboration meets empowerment

Based in Halifax, Dora Jonah is the Delivery Head for Cognizant Canada, an international technology firm. From early STEM outreach to their “Synapse” training initiative, Cognizant aims to empower more than one million individuals around the globe with in-demand skills through innovative, sponsored upskilling programs. The company is working with Dalhousie to broaden access to tech careers so everyone can participate in the digital economy.

“At Cognizant, we have a deep sense of commitment to the communities where we work. We want to increase inclusivity and ensure technology is within everyone’s reach — whether they live in a city or in rural Nova Scotia.

“With the current IT landscape and technology moving at light speed, it’s imperative that academia and industry work together. Our collaboration with Dalhousie will empower the next generation of STEM professionals through engaging, industry-informed learning opportunities. We’re excited to see the impact these programs will have.”

An investment in the future

Technology underlies almost every facet of our lives — from the simplest tasks to the complex machinery we use each day with barely a thought. Technology has the awesome potential to solve the most pressing issues of our time. But it also has the potential to cause some of the worst.

The Faculty of Computer Science is ready to tackle these challenges. And we are ready to create amazing opportunities through trailblazing research and innovation.

We have a bold plan to ensure there is an exceptional, sustainable and diverse talent pool to meet the world's ever-expanding and evolving digital needs. A plan to make Nova Scotia one of the most attractive places for digital firms and talented innovators — to enhance Atlantic Canada's digital impact on society and the economy.

The Dalhousie Faculty of Computer Science is ready. Our goals are ambitious, but achieving them is within our reach — with your help. Together, we can create the solutions we need today and build the world we want tomorrow.

Simply put, your investment in the Faculty of Computer Science is an investment in the future.

To learn how you can make a difference by supporting the Faculty of Computer Science, please contact us.

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