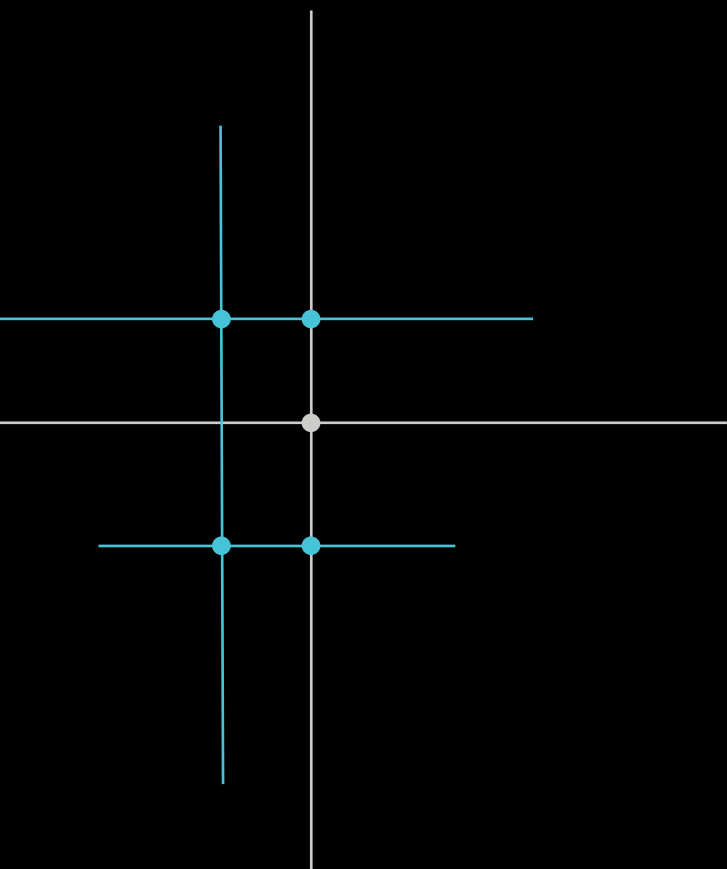




GovLab —●— ai

# IMPACT REPORT

2022 ————— 2023



POWERED BY



AltaML



# *A Year of Successfully* Unlocking the Value of Data



I am very proud to present the inaugural Impact Report for GovLab.ai (GovLab). The program launched in May 2022 as a joint partnership between AltaML, the Government of Alberta (GoA), and Mitacs. As Partners, we've set out to create solutions for society's most pressing problems through the application of ethical and responsible artificial intelligence (AI).

Over the last year, GovLab has demonstrated the importance of a collaborative approach to innovation, including value-creation for our public sector Tenants in the Lab. Quickly recognizing the potential economic reach of this model, GovLab has grown from its initial cohort with the GoA to include the City of Edmonton and the City of Calgary.

Strengthening our relationships with post-secondary institutions and Mitacs has allowed us to recruit the top tech talent for each cohort. Applicants are now competing for these coveted positions that ultimately provide them with a hockey stick effect for their career trajectory—especially if they choose to work towards solving public sector problems.

Through GovLab, we are delivering on the opportunity to help our governments partake in the benefits of an increasingly digital economy. Several public sector employees joined GovLab in its first year as Residents—allowing them to upskill and cross-train with subject-matter experts and students to build and deploy AI solutions.

Now viewed as one of the most innovative public-private partnerships, GovLab continues to gain momentum across Canada. The opportunities to build impactful AI-powered solutions are endless, and we could not be more excited to embark on this journey with our valued Partners going forward.

We are stronger than ever and can't wait to see how much we accomplish in year two!

**Celia Wanderley**

Chief Technology Officer  
AltaML

It's been a whirlwind first year for GovLab.

From onboarding our first cohort of Associates to bringing on additional Tenants—looking back, it's been incredible to witness the formation and growth in such a short time.

Cohort 1 consisted of two project teams instrumental in creating a proof-of-concept (PoC) for Alberta Wildlife Watch and a pilot stage project for Mountain Pine Beetle Detection. This group saw the onboarding of Associates from the University of Alberta, allowing us to begin sourcing talent for project completion and a future talent pipeline for the public sector.

During this period, the GoA also piloted the operational Wildfire Occurrence Prediction model. It informed the prioritization of various enhancements and demonstrated the GoA's willingness to adopt AI models into their business processes.

In September, we welcomed Cohort 2 and our first major municipal Tenant, the City of Edmonton—which we were thrilled about! With our municipal Partners, we began investigating the use of machine learning (ML) to assess compliance requirements for construction permit applications. Within the GoA, we started a PoC with Education Capital Planning on an enrolment prediction model. Plus, we continued work with Forest Health and the Wildfire Management Branch on a model identifying dead trees to inform the fuel classification grid.

In January, we began Cohort 3 and brought on yet another municipal Tenant, the City of Calgary. Every new Tenant in GovLab allows us to multiply the potential impact we can have within the Alberta public sector and for our citizens—we are building solutions that are making a difference.



### Kelsea Zalaski

Program Manager, GovLab  
AltaML

### Chantal Ritcey

Executive Business Partner, Public Sector  
AltaML





# Accelerate Digital Transformation in the Public Sector

The AI Lab for Government was co-founded by AltaML, the GoA, and Mitacs as an innovation hub for public sector organizations. Leveraging public sector data, GovLab works to transform government operations by connecting public sector innovators with the private sector to upskill talent and create AI-powered solutions.

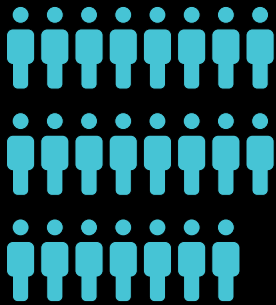
GovLab brings together AltaML experts, government staff, post-secondary students, and graduates to solve real-world problems together. By unlocking the value of data, GovLab helps identify the public sector's most complex challenges, optimizes government service delivery, and improves the lives of all citizens.

GovLab is a working example of *The Triple Helix: University-Industry-Government Innovation in Action* model introduced by Henry Etzkowitz and Loet Leydesdorff in 1995. It brings together private sector technology, public sector data and problems, as well as academic talent to propel economic prosperity and social development.





**23**  
INTERNS  
HIRED



**560+**  
EMPLOYEES  
ENGAGED FOR  
USE CASE GENERATION



STUDENTS HAVE  
STAYED FOR A  
**5**  
SECOND TERM

**9**  
PROJECTS  
COMPLETED



**5**  
RESIDENTS



CONSERVATIVE ESTIMATE  
OF  
**\$25M**



**1**  
PRODUCT  
BEING USED IN  
DAY-TO-DAY OPERATIONS



**1,316**  
APPLICATIONS



**1093**  
ASSOCIATE ML DEVS  
**223**  
ASSOCIATE BSC

# Permit Application Assistant

## Case Study

### Problem

Administrative checks on submitted permit applications are often time consuming yet necessary to ensure the success of an application. This process eats up time and takes workers away from their core responsibilities leading to costly delays.

### Value

With the use of machine learning and computer vision, building permit applications for the City of Edmonton can be pre-screened. Enabling quick initial responses to permits with incomplete or missing information will result in faster permit application approval times.

### Solution

The solution uses object detection and rules-based programming to identify incorrectly applied stamps, missing dates, and signatures on professional documents. Work is underway to test the model with the city's intake staff and to improve the model's overall accuracy while considering the application of the solution for other building permit documents.

### Future Outcomes

- Reduced application processing times
- Plans examiners will have more time to work with builders on complex issues
- Higher quality experience from the applicant perspective
- Faster permits will lead to increased economic activity





# Pavement Condition Assessment

## *Case Study*

### Problem

Pavement condition assessments involve expensive data collection and labour costs.

### Value

The proposed solution will provide a more standardized method to compare and estimate roadways condition on a more frequent basis. With the ability to use photo imagery from sources such as dashboard cameras, traffic cameras, and drone imagery it will enable efficient and rapid screening and triaging, allowing the City of Calgary to best prioritize maintenance work.

### Solution

GovLab curated a dataset of 4,000 images from Google Street View for object detection training. The trained machine learning model can detect four primary groups of pavement distress, including cracking, surface defects, deformation, and potholes. In the future, this could also be used to assess conditions for assets like sidewalks, traffic signs, signals, and parking meters.

### Future Outcomes

- Reduced amount of time required to survey the entire road network, enabling earlier identification and repair of pavement conditions
- Reduced cost of data collection and analysis



# Education Capital Planning

## *Case Study*

### Problem

Every year the GoA receives hundreds of applications for new schools. To help streamline the evaluation process, it needed a data-backed solution that would better predict the enrolment rates and provide insight to the best size and location of proposed schools.

### Value

The lack of insight into expected enrolment leads to the underutilization or overutilization of schools. A one per cent underutilization across Alberta represents \$19.6 million in annual waste—the cost of building a 300-student elementary school. Optimizing school utilization will generate considerable cost savings and a better experience for students, families, and the community.

### Solution

A machine learning model was developed to allow users to place a hypothetical school in a specific area, select the school's attributes, and predict the enrolment pressure on it and the schools surrounding it. Work is now underway to enhance prediction accuracy and the user interface.

### Future Outcomes

- Higher-quality data supported capital planning with more concise insights into applications such as using the tool to:
  - Identify where the school will be more efficiently utilized
  - View student distributions across a map rather than a spreadsheet
  - Generate alternative scenarios recommending appropriately sized facilities for each community
  - Collaborate with school boards to review current usage and future demand



# Mountain Pine Beetle Detection

## Case Study



### Problem

Mountain Pine Beetles (MPB) are attacking Alberta's pine trees resulting in significant forest damage. If left unmanaged, MPB will devastate forests and spread to Canada's boreal region.

### Value

The infestation of MPB continues to threaten timber supply and healthy forest ecosystems. Surveys represent a high cost of controlling infested trees, with helicopter surveys accounting for \$2.6 million annually while exposing Forest Health officers to the risks associated with low-altitude surveys. Using satellite imagery and machine learning to identify infested areas will lead to cost reductions, improved safety, and more efficient use of resources.

### Solution

GovLab developed a machine learning solution that complements the GoA's Forest Health and Adaptation process for detecting infestations. The solution takes satellite images as the input and identifies stands of infested forest. Higher resolution satellite imagery can then be used to pinpoint the leading edge of the infestation, allowing results to be incorporated into the Forest Health officer's workflow.

### Future Outcomes

- Reduced reliance on costly and dangerous helicopter surveys
- Ability to survey larger areas utilizing satellite imagery
- Ability to increase frequency of surveys for MPB

### PARTNERS



*GovLab is an example of the meaningful impact that collaboration between the private and public sectors can have on society. Since its launch in May 2022, GovLab has empowered emerging talent to apply their knowledge of artificial intelligence and data science to tackle challenges in a wide range of areas, from wildfire prediction to urban infrastructure planning. Mitacs is a proud partner of AltaML and the Government of Alberta in this important endeavour. We look forward to continuing working together to create solutions that improve the quality of life for all Albertans and Canadians for years to come.*

**Mitacs**

**Dr. John Hepburn**  
Chief Executive Officer  
Mitacs

# GovLab.ai

## Talent Spotlight



**Sherry Pewar**  
Resident, Cohort 3  
GovLab

Senior Data Scientist, Sherry Pewar, participated in Cohort 3 of GovLab to further enhance her craft by contributing to AI projects that will impact Albertans.

**“GovLab has differed from other work placements I’ve participated in by providing a truly collaborative and hands-on experience,” she said.**

During the cohort, Pewar gained technical knowledge directly related to her field of work, including exploratory data analysis, feature engineering, training and testing machine learning models, evaluating model results, and developing data visualizations.

“The benefits you gain are worth the time and effort you put in,” she added.

For Pewar, the most exciting public sector project she participated in was AI for Education Capital Planning.

“This project stands out to me because of the potential business value to the GoA and Albertans.”

Pewar credits GovLab for allowing her to flourish further in her role in the department of Technology and Innovation at the GoA.

“It is a worthwhile learning opportunity that will allow you to grow your skill set and provide a valuable experience for your future.”



**Annie Tan**  
BSC Associate  
Cohort 2 & 4  
GovLab

GovLab offered Annie Tan a launching pad for her personal and professional development.

“Having a defined role in real-world projects allowed me to make an impact, all while learning valuable soft and technical skills through mentorship from incredible leaders,” Tan said.

“I learned to develop strategic thinking and problem-solving skills to address complex problems using responsible AI.”

The most exciting project for Tan? Working on the Permit Application Assistant.

“I had the chance to apply the skills and competencies I learned in coursework to real-world business projects within my city,” Tan explained.

“One of my most significant insights is the public sector’s commitment to civic engagement, which has been particularly rewarding for my passion for community involvement.”

Through Tan’s work with GovLab and the Business Solutions Consultant (BSC) role, she gained a better understanding of her interests as she had the opportunity to explore different career paths while working with a diverse team.

**“My time at GovLab has significantly impacted my career trajectory.”**



## Chloe Zhou

ML Associate, Cohort 1  
ML Team Member, Cohort 2  
ML Team Lead, Cohort 3  
GovLab

Chloe Zhou participated in the inaugural cohort of GovLab and is now a full-time employee at AltaML.

While in the cohort, Zhou was on the team that developed and deployed the AI for Mountain Pine Beetle Detection project for the GoA.

**“I had the opportunity to work with an amazing team, interact with satellite and drone images and get exposed to the geospatial world.”**

According to Zhou, working in the public sector provided her with a “unique opportunity” to positively impact society.

“Public servants get to serve the community and contribute to the greater good, which can be incredibly rewarding.”

## PARTNERS



*We are delighted to partner with Mitacs and AltaML to connect learning and discovery to change, action and engagement.*

*It is our mandate at the College of Natural and Applied Science at the University of Alberta to support and build experiential and work-integrated learning opportunities that open up career connections and provide professional development for diverse learners. Students engaged in Baccalaureate or Masters level programs have the invaluable opportunity to see how their learning can be applied in real-world contexts through the AltaML supported internships at GovLab. They benefit from seeing first-hand how their training fits in across many business sectors through AltaML's extensive connections with private industry and government, and how to apply their learning to develop innovative solutions for real-world challenges with local partners.*

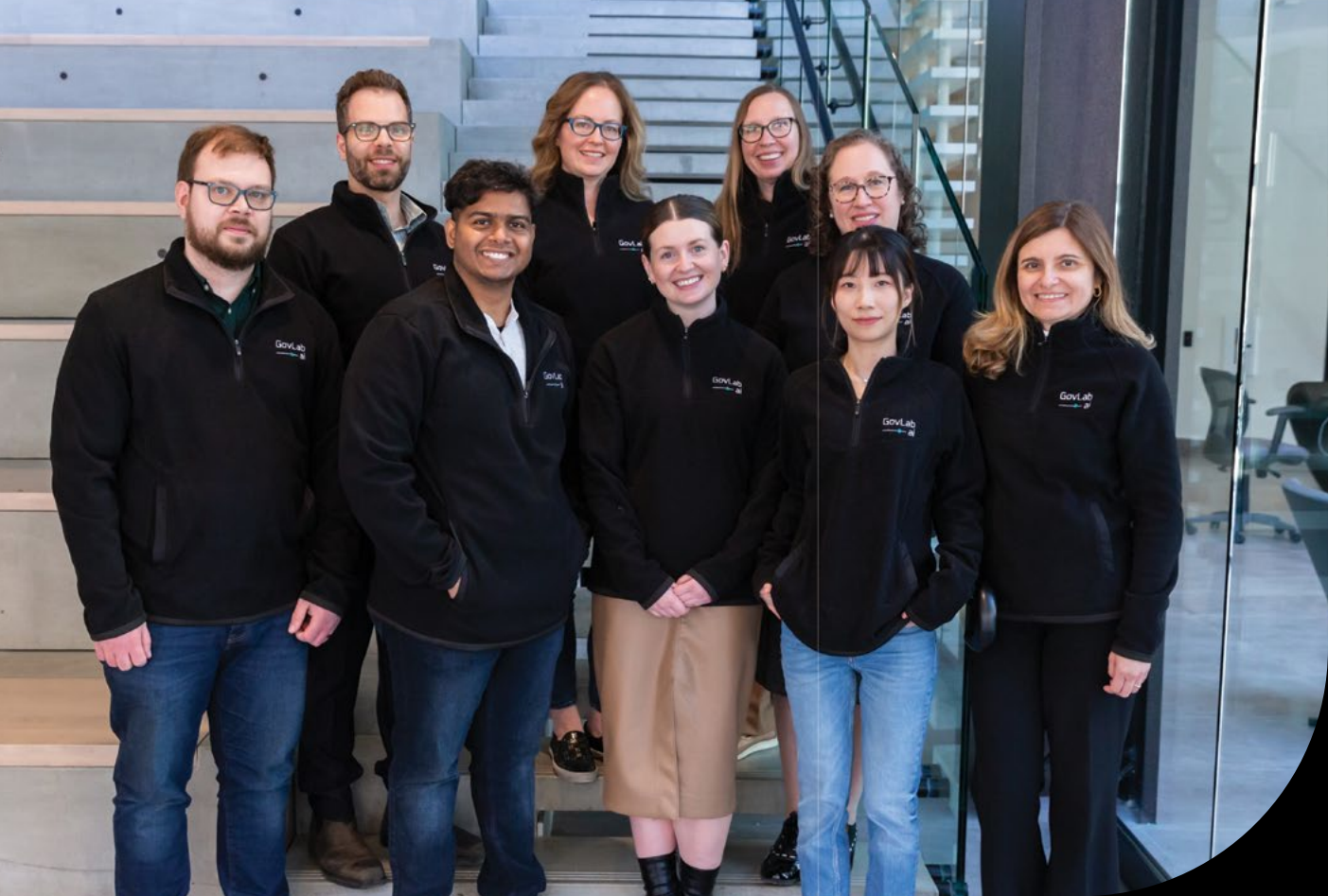


**UNIVERSITY  
OF ALBERTA**

## Tracy Raivio

Associate Dean  
Education, College of  
Natural and  
Applied Sciences  
University of Alberta

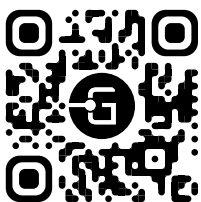




The first year of GovLab has exceeded our expectations. It has been a privilege to work alongside our valued Partners and Tenants. Our successes so far wouldn't be possible without every one of you, so thank you. As we move into year two, we're ready to take GovLab to the next level. Alberta has always been a leader in the AI tech space. Now we're on a mission to achieve that recognition globally as we continue our work to create impact through AI-powered solutions and talent development.

### Nicole Janssen

Co-Founder & Co-CEO  
AltaML



Visit **GovLab.ai**  
to Learn More About the Program

### Contact

[govlab@altaml.com](mailto:govlab@altaml.com)

 TORONTO

 EDMONTON

 CALGARY