

# Alexandre Brown

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## SUMMARY

Versatile AI researcher and software engineer with strong expertise in machine learning, computer vision, and software development. Proven track record delivering end-to-end solutions from prototype to production in academia and industry.

## EXPERIENCE

### Graduate Student Researcher

Mila Quebec Artificial Intelligence Institute

September 2024 – Present, Montreal

- Research on Visual Generalization for Deep Reinforcement Learning & Robot Learning.

### Data Scientist Intern

Intact Insurance

May 2024 – September 2024, Montreal

- Trained and tuned XGBoost wildfire-prediction models on large geospatial datasets and improved performance.
- Engineered features and assessed data quality impacts.
- Created a geospatial tool using SHAP for regional model explainability.

### Python Teaching Assistant

University of [Institution]

November 2023 – May 2024, Montreal

- Tutored and evaluated 150+ undergraduates in Python programming.
- Graded assignments and exams for Python programming class.

### Machine Learning Specialist

Microdrones

August 2021 – October 2023, Montreal

- Founded and led AI division; designed and deployed object-detection models for RGB and multispectral imagery, achieving SOTA in eucalyptus crop analysis.
- Implemented point-cloud sampling algorithms, boosting throughput by 100x; maintained AI research platform on AWS/Kubernetes.

### Android Developer

Microdrones

January 2019 – August 2021, Montreal

- Developed safety-critical drone-control app (Clean Architecture) in Kotlin/Java; integrated LiDAR and mapping SDKs.
- Championed TDD and wrote extensive unit/integration tests; collaborated in Agile teams.

### Full Stack Developer (C#/ASP.NET)

Telus

August 2018 – January 2019, Montreal

- Built a web platform for appointment scheduling and medical record management; implemented microservices and managed SQL Server databases.

### IT Technician

Best Buy/Geek Squad

March 2016 – August 2018, Saint-Jérôme

- Automated Windows deployments; delivered multi-client technical support and troubleshooting.

## PUBLICATIONS

### SegDAC: Segmentation-Driven Actor-Critic for Visual Reinforcement Learning

RL Paper • 2025 (preprint)

## EDUCATION

### PhD Computer Science (AI)

University of Montreal • Montreal • 2025–Present

### M.Sc. Computer Science (AI)

University of Montreal • Montreal • 2024–2025

### B.Sc. Computer Science (AI)

Laval University • Montreal • 2021–2024

### DEC Computer Science Technology

CEGEP Saint-Jerome • 2015–2019

## PROJECT

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### Canada Wildfire Prediction using Deep Learning

[github.com/AlexandreBrown/WildfirePrediction](https://github.com/AlexandreBrown/WildfirePrediction)

- Developed and trained Semantic-segmentation model predicting annual wildfire occurrence across Canada using temporal geospatial vegetation and weather data.
- Created a data processing pipeline to automatically download data for a desired location and time period, generate a processed dataset using complex geospatial data from over 16 data sources (eg: NDVI, EVI, LAI, Tree Cover, Weather, Wind, PE, TP, DEM and more).

### Cloud Cover Detection Challenge

[github.com/GIF-7005-Projet/cloud-cover-detection](https://github.com/GIF-7005-Projet/cloud-cover-detection)

- Developed and implemented multiple deep learning model architectures to segment clouds from Sentinel-2 RGB, near-infrared, and infrared satellite imagery sourced via Microsoft's Planetary Computer.
- Conducted end-to-end model training, validation, and error analysis across multispectral bands to optimize segmentation accuracy.
- Achieved state-of-the-art cloud-masking performance under stringent time constraints.

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## CERTIFICATIONS

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### Introduction to Deep Learning & Neural Networks with Keras

IBM • 2021

### Deep Neural Networks with PyTorch (with Honors)

IBM • 2021

### Convolutional Neural Networks

DeepLearning.AI • 2021

### Deep Learning with PyTorch : Image Segmentation

Coursera • 2021

### Deep Learning with PyTorch : Convolutional Neural Network

Coursera • 2021

### Machine Learning with Python

IBM • 2021

### Machine Learning

Stanford • 2020

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## SKILLS

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Python, PyTorch, XGBoost, ONNX, Kubeflow, Kubernetes, AWS, SQL (PostgreSQL, SQL Server), Docker, Git, QGIS, Android (Kotlin, Java), C#, ASP.NET, React

English, French