

Frédéric Branchaud-Charron

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 Github |  LinkedIn |  Scholar

Frédéric is an AI expert with 5 years of experience in developing real-world safe AI systems. He co-founded Baal and Azimuth, worked at ElementAI/ServiceNow, and has been published at top conferences. Combining scientific knowledge and engineering skills, Frédéric excels at developing AI projects from concept to production. He's now seeking to lead new AI initiatives and deliver client value.

EXPERIENCE

GLOWSTICK | FOUNDING MACHINE LEARNING ENGINEER

June 2022 – June 2024 | Montréal, QC

- Led the development of an **LLM-based** Post-Sales copilot to detect sales opportunities in meetings. This agent analysed hundreds of daily meetings and increased opened opportunities by 20%.
- Developed innovative methods for **domain adaptation** improving precision by 30% using topic modeling.
- Spearheaded the adoption of **active learning**, reducing our labeling labor by 75%.
- Fine-tuned algorithms based on UX session insights, improving the relevance of extracted insights by 60%.
- Providing **data-driven analyses** using LLMs that helped customers improve strategic initiative success by 50%.

SERVICENOW | STAFF APPLIED RESEARCH SCIENTIST (IC4/M3)

Nov 2020 – June 2022 | Montréal, QC

- Lead a small team of scientists and developers to develop **Azimuth**, an **error analysis tool** that leverages **explainability** techniques and **behavioral testing** to help users better understand their models. This method has improved internal model performance by 10%.
- Designed a scalable framework allowing easy integration of new analyses using FastAPI and Dask.
- **Mentored** team members in distributed programming, databases, and clean code practices.
- Oversaw the launch of **ServiceNow ATG's first open-source project**, collaborating closely with all stakeholders.


ELEMENT AI | SENIOR APPLIED RESEARCH SCIENTIST

Jan 2019 – Nov 2020 | Montréal, QC

- Led integration of active learning into our core product, boosting labeling efficiency by 70% through research, experimentation, platform development, and cross-team collaboration.
- Led the research and deployment of **road defect detection** algorithms using **image segmentation** and active learning.
- Implemented state-of-the-art methods for active learning and released it as **Baal**, an **active learning** library in Python.

SHERBROOKE UNIVERSITY / MIOVISION | MSC BY RESEARCH & RESEARCH INTERNSHIP

May 2016 – Aug 2019 | Waterloo, ON

- Developed CSG, a metric for **dataset complexity estimation**. (Published at CVPR 2019)
- Developed centroid estimation models to improve **object tracking algorithms**.
- Curated **MIO-TCO** , an industrial dataset for **vehicle localization**.

OPEN-SOURCE

azimuth

Co-creator • API Design • Technical Leadership

Azimuth is an error analysis tool designed to help data scientists gain deeper insights into their datasets and model predictions through comprehensive dataset and error analyses. As the technical lead, I spearheaded the development and the arduous open-sourcing process.

baal

Co-creator • API Design • Research • Community development

Led development and open-source release of Baal, a Bayesian active learning library. Conducted research resulting in 4 publications and fostered academic collaborations.

keras

Community chair & Collaborator • Input pipeline • SSIM Loss • Tensorflow backend

I made significant contributions to the project, particularly through the development of the **Sequence API** and the **SSIM loss function**. Over several years, I played a key role in maintaining and advancing the Keras codebase until its integration with TensorFlow main repo. In addition to my work on Keras, I also served as the project manager for keras-preprocessing. In this role, I focused on maintaining the library and overseeing its evolution as Keras Preprocessing layers were developed.

INDUSTRIAL RESEARCH

BAYESIAN ACTIVE LEARNING | SERVICE NOW / ELEMENTAI

Jan 2019 – June 2022 | Montreal, QC

- Improved **model's calibration** using Bayesian deep learning and Bayesian active learning.
- Improved the **efficiency** of active learning on production settings by 90%.
- Studied the effects of active learning on **discrimination**.
- Improved benchmarks in active learning, primarily with Synbols, **an image dataset generator**.

PUBLICATIONS

- 2022 Azimuth: Systematic error analysis for text classification
Gauthier-Melancon G., Marquez Alaya O., Branchaud-Charron F., & al. in proceedings at EMNLP 2022
- 2022 Stochastic Batch Acquisition for Deep Active Learning
Kirsch A., Farquhar S., Atighehchian P., Jesson A., Branchaud-Charron F., Gal Y. in proceedings at TMLR
- 2021 Can Active Learning Preemptively Mitigate Fairness Issues?
Branchaud-Charron F., Atighehchian P., Rodríguez P., Abuhamad G., Lacoste A., in proceedings at ICLR Workshop on Responsible AI, 2021
- 2020 Synbols: Probing Learning Algorithms with Synthetic Datasets
Lacoste A. & al., in proceedings at NeurIPS, 2020
- 2020 Bayesian active learning for production, a systematic study and a reusable library
Atighehchian P., Branchaud-Charron F., Lacoste A., in proceedings at ICML Workshop on Bayesian Deep Learning, 2020
- 2019 Spectral metric for dataset complexity assessment
Branchaud-Charron F., Aachkar A., Jodoin P., in proceedings at CVPR, 2019
- 2017 MIO-TCD: A new benchmark dataset for vehicle classification and localization
Luo Z., Branchaud-Charron F. & al. in press at IEEE Transactions on Image Processing, 2018

EDUCATION

SHERBROOKE UNIVERSITY

MSc BY RESEARCH IN COMPUTER SCIENCE

Dec 2018 | Sherbrooke, QC

GPA: 3.92/4.3

BSc IN COMPUTER SCIENCE

Dec 2016 | Sherbrooke, QC

Dean's List (2 times)

GPA: 3.99 / 4.3

SKILLS

PROGRAMMING

Expert:

Python • AI / ML • Text Classification • Computer Vision • NLP
• LLM • GenAI • Prompt Engineering • Structured Output
Generation • FastAPI • BERTopic • Google Cloud • Docker •
Dask • HuggingFace • Pytorch • SQL • \LaTeX • Bash

Familiar:

LangChain • OpenCV • C# • Tensorflow • MongoDB • JS •

Haskell • React

COURSEWORK

GRADUATE

Advanced Machine Learning

Time series

Open Source Software Engineering

(Teaching Asst)

Assembly and Python programming

UNDERGRADUATE

Artificial Intelligence

Functional Programming

Computer Graphics

SCHOLARSHIPS

2017 MITACS Acceleration

2017 FRQNT, MSc Scholarship

2017 Hydro-Québec, Recruitment Scholarship

2015-2016 NSERC, Experience Awards (IUSRA)