Charles Bricout

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Education

Mila (Quebec Artificial Intelligence Institute) & École de technologie supérieure Montréal, Canada
Master of Applied Science, Information Technology Engineering. GPA : 4.06 / 4.3 Expected August 2025

- Research Project : Automated Quality Control of Magnetic Resonance Imaging of the Human Brain using Deep Learning.
  Supervised by Sylvain Bouix and Samira Ebrahimi Kahou.
- Relevant Coursework : Representation Learning, Deep Learning for Computer Vision, Biomedical Imaging Principles.

Sorbonne University Alliance - University of Technology of Compiègne Compiègne, France
Diplôme d'ingénieur (equivalent to a combined BS/MS in engineering), Expected August 2025
Computer Science. GPA : 5 / 5

- Relevant Coursework : Artificial intelligence and symbolic programming, Numerical analysis, Problem-solving and logical programming, Optimization and Operations research, Data analysis and data mining, Vision and machine learning.

Lille University - École Polytechnique Universitaire de Lille Lille, France
Preparatory Classes for Engineering School. June 2021

Fundings & Awards

- Research scholarship funded through the Accelerating Medicine Partnership Schizophrenia program.
- *Bourses d'Excellence et de Rayonnement International*, Grant for academic excellence, University of Technology of Compiègne.
- *Bourse Éclair*, Grant for excellent academic results , University of Technology of Compiègne.

Presentations & talks

- "A Deep Learning Framework to Detect Motion in Brain MRI Volumes", Medical Imaging Seminar, École de Technologie Supérieure, Montréal, April 2024.
- "Parlons intelligence artificielle", Panelist at a virtual symposium for Grade 9-12 students, Let's Talk Science, December 7th. Discussed the importance of AI research in healthcare and shared insights on studying AI.

Competitions & Projects

41st NA-MIC Project Week, MIT, Cambridge, USA June 2024

- Implement a Python plugin for the 3D Slicer software to predict motion in MRI scans.

Mila's Morocco Solidarity Hackathon, Montréal, Canada September 2023

- Implement Proof of Concept tool to detect and map roads on satellite imaging with deep learning.
  - Python, Pytorch.
- **Winning team**.

Psycle's Computer Vision Hackathon, Compiègne, France April 2023

- Train a CNN model on data collected during the event to detect different kind of defects on water bottle caps.
  - Python, Roboflow, RabbitMQ.

French Tournament of Young Mathematician, France January - May 2019

- Work in a team on open problems for 5 months.
- Present solutions in front of an academic jury.
- Discuss and debate on each team's solution.
- Rank first at regional phase in Lille.

Selected Course Projects

Optimal Scheduling of Quests in the Game Dofus University of Technology of Compiègne, Winter 2023

- Retrieve quests and map data from multiple APIs using Python.
- Develop a Python library to interact with the database and compute a precedence graph for any quest.
- Optimize quest sequence by determining the best succession path from the starting quest to a target quest, minimizing travel distance using Answer Set Programming (ASP / Clingo).

Full Implementation of the Carcassonne Board Game University of Technology of Compiègne, Fall 2022

- Implement the base board game logic in C++ with an extensible design.
- Add three game extensions to enhance gameplay.
- Develop a user interface using the Qt library.

Professional Experiences

Fruition Sciences Montpellier, France
Freelance Developer February 2023 – August 2024

- Engineered new features for Fruition Sciences products 360viti and App Sapflow.
  - Scala, Typescript, Angular, PostgreSQL, Cassandra.
- Implement and debug computing pipelines.
  - Scala, Cassandra, RabbitMQ.

Intern Developer August 2022 – February 2023

- Develop a program to compute climatic and biological statistical indicators on large datasets, evaluating the status of multiple vineyards and regions. This program supported strategic agricultural decision-making by providing key indicator.
  - Scala, Cassandra, PostgreSQL, Apache Spark, Cron Job.
- Implement flow-based computation for formatting irrigation data from IoT devices.
  - Scala, Cassandra, RabbitMQ.
- Design and create interactive maps to visualize data.
  - Scala, PostgreSL, Typescript, OpenLayer.

Community Involvement

École de Technologie Supérieure's Sustainable Climate Awareness Club Montréal, Canada
Workshop Animator December 2023 – Present

- Assisting attendees in understanding their carbon footprint and exploring possible actions through the "2 Tons Workshop."
- Promoting knowledge of Low-Tech principles via the "Low-Tech Fresk."

École de Technologie Supérieure's Sustainable Development Committee Montréal, Canada
Project Manager September 2023 – Present

- Manage the creation of a sustainable student coffee shop and the integration of a green roof for in-place vegetable production.
- Create a low-emission website, based on the LowTech Journal practice, using solar power.
  - Hugo, Markdown, Nginx, Raspberry Pi.
- Lead initiative to use sewable patches instead of printing T-shirts for the Student Association's clubs.

École de Technologie Supérieure's Music Club Montréal, Canada
Administration Committee Member September 2023 – Present

- Assist with event organization.
- Welcome new members.
- Manage two music bands with multiple performances.

University of Technology of Compiègne's Music Club Compiègne, France
IT Manager January 2022 – June 2022

- Create an interactive timetable website to manage practice rooms.
  - PHP, Laravel, Javascript, Angular, MariaDB.
- Manage tickets and payments systems for events.

Auby's Diving Club Auby, France
Fullstack developer June 2020 – April 2022

- Create and maintain a web application to manage events, members, and equipments of a diving club.
  - PHP, CodeIgniter, Javascript, MariaDB.

Skills

Programming : Python, C++, Scala, Typescript, SQL, Prolog.
Machine Learning and Data Science: Pytorch, Lightning, Monai, Scikit-learn, Numpy, Pandas, Matplotlib, Seaborn, Apache Spark.
Laboratory: Slurm, Deep Learning Model design, training and evaluation, Multiple GPU training, Reproducibility.
Language: French (Native), English (Fluent), German (Intermediate).

Interests

Singing, Bass Guitar, Ecology, Brain study, Hiking.

Academic References

Sylvain Bouix	**Samira Ebrahimi Kahou**	**Aaron Courville**
Professor	Professor	Professor
Canada Research Chair in Neuroinformatics for Multimodal Data	Canada CIFAR AI Chair	Canada CIFAR AI Chair
Department of Software Engineering and Information Technology	Department of Electrical and Software Engineering	Department of Computer Science and Operational Research
École de Technologie Supérieure, Montreal	Mila / University of Calgary	Mila / University of Montréal
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