MICHAEL RIZVI-MARTEL

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PROFILE

Master's student at Université de Montréal and Mila. My research focuses on applying tensor methods to Deep Learning.

EDUCATION

Master of Computer Science, Université de Montréal — Expected 2024
Relevant Coursework: Representation Learning, Probabilistic Graphical Models, Tensor Methods

Major of Computer Science, Université de Montréal — 2022
Relevant Coursework: Fundamentals of Machine Learning, Data Science, Quantum Computing

B. Eng. Electrical Engineering, Polytechnique Montréal — 2020
Specialization in applied mathematics

EXPERIENCE

Research Intern — October 2021 - March 2022
NeuroPoly Lab, Polytechnique Montréal — *Montréal, QC*

- Worked under supervision of Prof. Julien Cohen-Adad
- Collaborated on open source software for the AxonDeepSeg project, a tool using CNNs to segment axon and myelin from microscopy data of nerve fibers

Hardware and Test Specialist — October 2020 - July 2021
AEPONYX — *Montréal, QC*

- Built up and coded a Python library to automate measuring instruments. Resulted in massive time gain for data acquisition.
- Developed data pipelines to analyze data from measuring instruments using pandas.
- Designed and debugged PCBs according to requirements

Research Assistant — May 2020 - August 2020
Quantum Institute, Sherbrooke University — *Sherbrooke, QC*

- Developed Python code for data analysis and instrument automation. Conducted cryogenic measurements using a dilution fridge (temperatures under 4K)

Research Assistant — Sep. 2019 - May 2020
GERAD, Polytechnique Montréal — *Montréal, QC*

- Implemented new features for a public transportation planification solver in C. Resulted in a more accurate model representing the transit of buses

TEACHING EXPERIENCE

Teaching Assistant, IFT1227 - Computer Architecture — Sep. 2021 - Dec. 2021
Université de Montréal — *Montréal, QC*

- Prepared and taught the lab portion of the course.
- Corrected assignments

PROJECTS

Honors Research Project. Performed a comparative analysis between two algorithms for a tensor decomposition task (decomposition using tensor ring). Implemented a solver (using alternating least squares) for one of the two algorithms. Code is available here

Probabilistic Graphical Models Course Project. Implemented the model proposed in the paper A Unified Probabilistic Model for Learning Latent Factors and Their Connectivities from High-Dimensional Data using both the proposed algorithm in the paper as well as the Expectation Maximization algorithm, which was not included in the paper. Code is available here.

Fundamentals of Data Science Cours Project. Implemented a model to classify different stellar objects using the stellar classification dataset. We cleaned the data, performed analysis of the data and implemented a classification model. Code can be found here.

SKILLS

Technical Skills	Python, Pytorch, Numpy, LaTeX, C/C++, Rust, Java
Soft Skills	Strong analytic skills, Effective communicator, Quick Learner

AWARDS & HONORS

Mention of Excellence
Université de Montréal 2021-2022
UPIR Scholarship
Polytechnique Montréal 2019-2020

EXTRA-CURRICULAR ACTIVITIES

- **Departmental tutor in Computer Science:** I work as a tutor for Université de Montréal CS department. I give office hours where undergraduate students can come ask questions about (basically any) first or second year curriculum.
- **PolyJam:** Organized concerts for students and participated as a guitarist.
- **Polyphoto:** Photo coverage of various student events.