Parsa Jafarian

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EDUCATION

McGill University August 2024 – April 2028

B.Eng in Software Engineering Co-op – Minor in Mathematics | ***GPA**: 3.94/4.00*

Coursework: Applied ML, Theory of ML, Time-Series Analysis and Stochastic Processes (Winter 2027)

PUBLICATIONS

P. Jafarian, M. Kaviri, W. Suleiman, and G. Durandau. "A New Simulation Framework for the Design of Human–Robot Controllers in Elderly Care." *Int. Conf. on NeuroRehabilitation (ICNR)*, 2026 (in press).

T. Glavas, S. Pütz, **P. Jafarian**, B. N. Oreshkin, and M. Coates. "Bayesian Koopman-inspired Time-series Forecasting with Graph-encoded Exogenous Information." *Asilomar Conf. on Signals, Systems, and Computers*, 2026 (accepted).

EXPERIENCE

Machine Learning Research Intern January 2026 – Present

McGill Networks Research Lab – Supervisor: Mark Coates

- Improving ***SLiDE***, a Koopman-based RNN with exogenous inputs, for cross-sectional equity return prediction, following the setup of *Deep Learning Statistical Arbitrage*
- Preprocessed daily returns of a top **3,000 U.S. stocks** portfolio via **EWMA** volatility adjustment and **PCA**, validating residuals for homoskedasticity with **ARCH/Levene** tests
- Trained SLiDE on a **Sharpe Ratio** objective, achieving the best SR (**0.93**) among baselines, deemed significant under **stationary bootstrap** and **permutation** tests ($p < 0.05$)
- Built a **parallelized PyTorch** rolling-window training framework, cutting runtime from **2 days** to **2 hours**
- Implemented a **Bayesian graphical** approach to SLiDE as a **variational state-space** model for traffic forecasting

Robotics Research Assistant September – December 2025

McGill NeuRoC Lab – Supervisor: Guillaume Durandau

- Built a human-robot interaction **MuJoCo** simulation with **damped least squares** Jacobian **inverse kinematics**
- Implemented an **admittance-impedance controller** with a **Butterworth filter** for tremor mitigation, resulting in **98% attenuation** and **4–14% tracking RMSE**

Data Engineering Intern January – August 2025

Transport Canada

- Migrated 9 **GeoPandas** pipelines to **PySpark** on **Databricks**, contributing to **$24K** in annual savings

PROJECTS

Comparative Analysis of Neurological Signals for Exoskeleton Control: Compared EEG, sEMG, and their fusion for movement-intent detection, finding sEMG was the best in accuracy (96%), latency (59.9 ms), and cost

AWARDS

Research Funding: NSERC Discovery Grant Stipend *($4,000)* | Dan Adamson CDSI Undergraduate Award *($5,000)*
Scholarships: Faculty of Engineering Scholarship *($2,750)* | Desjardins Foundation Scholarship *($2,000)*
Honours: Dean's Honour List *(McGill)* | 3x hackathon winner at CodeML, JACHacks, and MariHacks

SKILLS

Programming: Python, Bash, SQL, Java, C, OCaml
Machine Learning: PyTorch, NumPy, SciPy, Pandas, Scikit-Learn, Matplotlib
Languages: English, French, Persian (Fluent) – Spanish (Intermediate)