Samuel Harrison Ottawa, Ontario
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EDUCATION

University of Ottawa **Expected Graduation April 2025**

BSc in Computing Technology and BASc in Chemical Engineering – 5th Year

- Computing Technology GPA : 9.8/10.0, Chemical Engineering GPA : 9.1/10.0
- Dean's Honour List, Dean's Merit Scholarship, and French Study Bursary 2020 – 2023

WORK EXPERIENCE

SkyWorks Solutions (Ottawa, ON) **July 2024 – Present**

Machine Learning Engineer II, III-V Modelling Group

- Created CLI to interface with on-prem HPC cluster and file system for training, boot standardized project templates and environments with Apptainer, and manage and monitor experiments
- Developed PyTorch-to-Verilog-A transpiler to deploy DL models into Cadence and ADS simulators
- Designed physics-informed neural network of GaAs pHEMT devices, enabling more precise bias point selection for intermodulation distortion suppression
- Built an internal RF switch design math package, deployed behind a RESTful API and Next dashboard, and as a standalone pip package; automated test, build, and deployment workflows on Azure DevOps

GBatteries (Ottawa, ON) **September 2023 – January 2024**

Algorithm Developer Intern, R&D Division

- Developed various deep learning models for state estimation of Li-Ion batteries during drive cycles, achieving a 6% accuracy improvement over previous approaches by utilizing using memory effects
- Deployed models with FastAPI and Redis for timeseries data buffering
- Created Electrochemical Impedance Spectroscopy dashboard in React and accompanying REST API to standardize data acquisition for all platforms and allow researchers to access, compare, and share battery cycling results across teams
- Integrated API calls into existing EIS platforms for transmission of sweep conditions and impedance results into MongoDB

Public Services and Procurement Canada (Gatineau, QC) **May 2022 – August 2022**

Junior Data Scientist, National Project Oversight Branch

- Developed an automated review system for the National Project Management System to provide early warnings for projects at risk of exceeding time, budget, or scope constraints
- Reduced quarterly review exercise timeline from over 60 hours to approximately 5 minutes
- Created a comprehensive dashboard to visualize project data, highlighting trends across projects, regions, and project managers

PROJECTS

TensorCraft.click | *React, Tailwind, Zustand, Typescript, AWS (Lambda, S3, Route53, API Gateway), Python*

Created web app enabling users to build neural networks by dragging, connecting, and defining layers in an interactive playground, providing real-time tensor shape feedback and a PyTorch implementation instantly

GaussianPI | *Postgres, Optuna, Python, MATLAB*

Developed framework for tuning PID controller constants using Bayesian Optimization and MATLAB simulations of the process. Leveraged distributed computing for near-real-time simulation constraints

Uranium Milling Demonstration Plant – Hatch Ltd. | *TensorFlow, Python*

Collaborated with engineering firm for honors capstone project, designed and optimized solvent extraction process of uranium using deep reinforcing learning. Winner of University of Ottawa plant design competition

SKILLS

- Languages : Python, Rust, Typescript, Golang
- Machine Learning : PyTorch, Lightning, Sklearn, Polars, Pandas, Numpy, Optuna
- Databases : Postgres, MongoDB, Redis, TimescaleDB
- Infra : Docker, Compose, CI/CD, Linux, Git, AWS
- Web Development: React, Next, Tailwind, Bootstrap