Maryam Valipour

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Languages: English, French

PROFESSIONAL SUMMARY

AI Engineer with a strong foundation in **deep learning**, **generative AI**, and **agentic AI**. Experienced in building and deploying **end-to-end machine learning pipelines** and **AI-powered solutions** across research and industry. Skilled in **Python**, **SQL**, **Databricks**, **Docker**, **cloud platforms (AWS, Azure)**, and **data visualization (Power BI, Tableau)**.

WORK EXPERIENCE

AI Researach Assistant, Concordia University *May 2022 – Oct 2025*

- Designed knowledge distillation frameworks, training lightweight models with **Vision Transformers** achieving 92.56% accuracy, improving latency.
- Built a custom **CNN** architecture using deformable convolutions, depthwise layers, and gating mechanisms for **image classification**.
- Built and validated a **physics-informed DNN** that predicts detonation of cell size with 22% error, outperforming traditional combustion models.
- Conducted 30+ tutorial and lab sessions, mentoring students in coding, AI development, and research projects.

ML Engineer Intern, Vosyn *April 2025 – August 2025*

- Trained and **fine-tuned LLMs** for multilingual speech-to-speech tasks with contextual accuracy
- Supported development and maintenance of ML pipelines for testing, deployment, and monitoring using **version control**, **Docker**, and **CI/CD** to ensure reliability and scalability.

Machine Learning Engineer, IMPACK CPR *Dec 2023 – April 2025*

- Designed and deployed **end-to-end ML pipeline** with **CI/CD** integration for real-time healthcare applications.
- Applied scheduled sampling, improving patient-level **predictive** accuracy despite limited data by 20%.
- Implemented temporal models (**Transformers, Seq2Seq, LSTMs**), reducing error by 15%.
- Collaborated with **cross-functional** teams to lead AI solution design and aligning with **business needs**.

Reinforcement Learning Research Assistant, TaarLab *May 2021 – April 2022*

- Developed a **deep reinforcement learning** model for autonomous mobile robot navigation, improving localization accuracy in dynamic environments.

Data Scientist Intern, Rahnema College *Jan 2020 – Jan 2021*

- Built a **music recommendation** system using collaborative and content-based method for personalized results.
- Queried and processed large-scale music metadata and user logs using **SQL** and **Python**, and built **Power BI dashboards** to visualize engagement patterns and model insights.
- Developed monitoring pipelines to track model performance and support scalable production deployment.

SKILLS

Programming & Tools: Python (PyTorch, TensorFlow, Pandas, NumPy, Scikit-learn, PySpark, FastAPI, Flask, XGBoost, LightGBM), R, SQL, C++, Gradio, Streamlit, Selenium
Data Engineering & Warehousing: Snowflake, dbt, Databricks
AI/ML Frameworks: Google ADK, LangChain, LlamaIndex, AutoGen, CrewAI, LangGraph, MLflow
Data & Visualization: Tableau, Power BI, Matplotlib, Seaborn, Excel
Cloud & DevOps: AWS, GCP, Azure, Docker, Kubernetes, Git, REST APIs, CI/CD
Databases & Vector Stores: PostgreSQL, MySQL, SQLite, FAISS, ChromaDB
Core Competencies: Agile (Scrum), Problem-solving, collaboration, Time management, Adaptability

EDUCATION

M.ASc., Quality Systems Engineering (AI) *Concordia University*

B.Sc., Mechanical Engineering *College of Engineering*

PROJECTS

Weekend Planner Agent Team ***(Google ADK, Async, MCP, CI/CD)***

- Built a **stateful multi-agent system** that captures user preferences, calls external tools via **MCP**, and generates structured weekend itineraries using **async orchestration** and **session memory**.
- Integrated **LLMs** (Gemini/OpenAI/Anthropic) with **secure API key management**, **CI/CD** automation, **pytest**-based testing/mocking, and **structured logging** for reproducible results.

Multi-Class Face Mask Classification and Bias Mitigation ***(Deep Learning)***

- Developed and evaluated **CNN** architectures with **k-fold cross-validation**, achieving **85% accuracy** through dataset balancing, augmentation, and **ResNet-18**.
- Built a scalable **data pipeline** (2k+ images) with automated preprocessing, augmentation, and performance tracking to improve generalization and fairness across demographic groups.

Canada Emissions Dashboard ***(Databricks, SQL, Python, Visualization)***

- Built an end-to-end **Databricks** emissions dashboard using **AI/BI workflows** and **Genie Spaces** for interactive exploration of Canada's GHG data.
- Implemented **data ingestion and cleaning** pipelines and applied advanced **SQL** (**CTEs**, **window functions**, joins, aggregations).

SQL Data Analysis & Visualization: COVID-19 Global Trend Exploration ***(SQL, Tableau)*** | Tableau Dashboard

- Analyzed real-world datasets using **advanced SQL** (**CTEs**, **window functions**, joins) to derive global case, death, and vaccination trends.
- Built interactive **Tableau dashboards** to visualize key metrics and enable data-driven insights for public-health trend analysis.

Movie Correlation EDA ***(Python, Pandas, Seaborn)***

- Conducted **exploratory data analysis** to uncover relationships among budget, box-office gross, ratings, and viewer votes.