

Mehrdad Momeni Zadeh

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SKILLS

Languages & Frameworks: Python, C/C++, Go, Java, MATLAB, R, SQL

Libraries: PyTorch, scikit-learn, TensorFlow, Wandb, Hydra, JAX, NLTK, OpenCV, CMake, Gin, Chi (Go)

Technologies: Docker, Git, Google Cloud Platform, Kubernetes, Linux (Ubuntu), CLI, RabbitMQ

Methodologies: Agile (Scrum), Functional Programming, OOP

EXPERIENCE

DeLTA Lab — Simon Fraser University

Burnaby, BC

Undergraduate Researcher — Scientific Machine Learning

Jan 2025–Present

- **Second author** on *NeurIPS 2025* paper “*Learning Data-Efficient & Generalizable Neural Operators via Fundamental Physics*”, co-led with Ph.D. student [Siyang Ma](#) under [Prof. Wuyang Chen](#).
- Redesigned the Transformer core, boosting accuracy by **12%** on **5** PDE benchmarks and cutting training cost **4×**.
- Added **rotary positional embeddings** for stability, enabling reliable **5-step** future forecasts without drift.
- Moved training to $8 \times$ RTX 6000 GPUs and **Google Cloud TPU v4** pods; mixed-precision shrank each epoch from **3 h to 45 min** (**75%** faster).
- Built one-command experiment runners with **Hydra + Weights & Biases**, letting teammates launch tests in under 10 minutes.
- Containerised the full stack in Docker and wrote install docs so external labs can reproduce results in a single script.

PROJECTS

RageVision – Twitch Emotion Classifier | *Python, PyTorch, MobileNetV2* | [GitHub](#)

Jan 2025 – Mar 2025

- Collected and labelled **10,800** images from **120** Twitch clips to build a balanced “rage / non-rage” dataset; automated video-to-frame extraction with OpenCV.
- Fine-tuned a lightweight vision model (MobileNetV2) to **86%** accuracy with **90%** detection rate on rage events.
- Automated six hyper-parameter sweeps and prototyped an audio-video fusion variant that reached **79%** accuracy.

Neuro Driver | *Python, Pyglet, Genetic Algorithms* | [GitHub](#)

Oct 2024 – Dec 2024

- Built a **2D car simulator** with a custom neural network, reducing collisions by **20%** over 50 training generations.
- Implemented a full **genetic algorithm** that lifted track-completion rates by **30%**.
- Streamlined parameter sweeps and visualisation with **Makefile** automation.

Micro Gopher | *Go, Docker, Kubernetes* | [GitHub](#)

Aug 2024 – Nov 2024

- Converted a monolith into a distributed **Go micro-services** platform, improving scalability and fault isolation.
- Delivered core services: frontend, auth (**Postgres**), logging (**MongoDB**), **RabbitMQ** listener, and mailer, communicating via REST, RPC, gRPC and AMQP.
- Deployed with **Docker Swarm** and **Kubernetes**, supporting high-volume traffic and rolling updates with **<10 min** downtime per release.

EDUCATION

Simon Fraser University

Burnaby, BC

B.Sc. Computer Science (Minor in Mathematics)

*GPA: **3.5** / **4.33***

Expected Graduation

Dec 2026

- **Dean’s Honour Roll** (2024).
- **Relevant coursework:** Data Structures, Machine Learning, Deep Learning, Affective Computing, Data Communication and networking, Computer Vision