Mehrdad Momenizadeh

mehrdad.mmz.ca@gmail.com
github.com/mehrdadmmz
(236) 509-2543

Technical Skills

- **Programming and Frameworks**: Python, C/C++, Go, Java, SQL, Pytest, PySpark, DLIB
- **Libraries**: PyTorch, Keras, scikit-learn, JAX, SciPy, NLTK, LangChain, CMake, OpenCV, Gin, Go Chi
- **Tools and Technologies**: Linux (Ubuntu), Git, Docker, Kubernetes, MATLAB, RabbitMQ, AWS

Projects

- **NeuroDriver**
  Python, Pyglet, Genetic Algorithms, Neural Networks, Git
  - **Developed** a 2D car simulation that uses a custom-built feed-forward neural network to control car navigation, **reducing collisions by approximately 20%** over 50 training generations.
  - **Engineered** a genetic algorithm—manually implementing selection, crossover, and mutation—to **improve track completion rates by roughly 30%** across successive cycles.
  - **Implemented** a multi-track simulation framework for comprehensive testing, facilitating iterative debugging and fine-tuning of network parameters.
  - **Automated** training and evaluation using a Makefile, conducting 10 structured test sessions to ensure robust model performance.
- **EducMate**
  Python, Tkinter, OpenAI
  - **Developed** an interactive desktop application integrating OpenAI's API to offer tutoring and note-taking functionalities.
  - **Designed** a multi-pane GUI with Tkinter, enabling users to easily switch between "Take Notes" and "Start Tutoring" modes.
  - **Implemented** robust threading for real-time API calls, message polling, and error handling, ensuring smooth, responsive user interactions, **and achieved** over 85% positive feedback in beta testing, demonstrating the app's effectiveness in enhancing study sessions.
- **MicroGopher**
  Go, Docker, Kubernetes, Postgres, MongoDB, RabbitMQ, Git
  - **Developed** a distributed microservices system in Go, transforming a traditional monolithic design into a modular, scalable architecture.
  - **Implemented** essential services—including a front-end display, an authentication service with Postgres, a logging service using MongoDB, a listener interfacing with RabbitMQ, and a mail service for formatted notifications—each aligned to specific business capabilities.
  - **Utilized** inter-service communication via REST, RPC, gRPC, and AMQP, ensuring high maintainability, testability, and flexibility.
  - **Deployed** the microservices using Docker Swarm and Kubernetes, enabling rolling updates with less than 10 minutes of downtime per release, **and integrated** diverse data stores and messaging protocols to effectively support high-volume request loads.

Volunteering Experience

- **Peer Tutor** May 2024 – Dec 2024
  Simon Fraser University *Burnaby, BC*
  - **Academic Guidance**: Tutored 10–15 students weekly in data structures, algorithms, and core programming concepts, resulting in improved understanding and grades.
  - **Tailored Sessions**: Led one-on-one and group tutoring sessions, adapting teaching methods to different learning styles and receiving consistently positive feedback.
  - **Enhanced Collaboration**: Partnered with faculty and teaching assistants to identify areas needing additional support, contributing to a 20% increase in student pass rates.

Education

- **Simon Fraser University** Burnaby, BC
  Bachelor of Science in Computer Science — Cognitive Science minor; GPA: 3.7 *Expected Sep. 2026*
  - **Relevant Coursework**: Data Structures, Machine Learning, Deep Learning, Affective Computing, Computer Vision