

Liam Mercier

LiamMercier@proton.me | github.com/LiamMercier

Education

Simon Fraser University

2025

Bachelor of Science in Computer Science, with distinction
Minor in Mathematics, Concentration in Artificial Intelligence

- Relevant courses: Deep Learning, Computer Vision, Intelligent Systems, Computational Data Science
- President's Honor Roll

Projects

Silent Tanks | C++, Qt, Boost, PostgreSQL, OpenSSL, CMake

GitHub

- Developed an asynchronous, multithreaded game server capable of supporting concurrent matches
- Improved maintainability through modular design, separating server components for client connections, user management, matchmaking, database operations, and administrative actions
- Integrated PostgreSQL backed by a thread pool with per-user request serialization
- Implemented secure authentication using password salting and SSL encryption for data confidentiality
- Created a bucket-based matchmaking system and custom extension of the Elo rating system to balance match quality, queue times, and rating inflation
- Designed a cross-platform GUI client in C++ and QML with a material design inspired dark interface
- Implemented a user-managed server connection page, social features, and interactive replay viewer

Loadshear | C++, Boost, wasmtime (WebAssembly), GTest, FTXUI, CMake

GitHub

- Developed a multithreaded, sharded load generator with a contention-free design capable of generating >16 Gbps of TCP or UDP traffic
- Implemented user-defined packet response handling with an embedded WebAssembly runtime
- Designed a domain-specific language for defining execution flow and generation parameters

Audio Deepfake Detection | Python, PyTorch, scikit-learn

GitHub

- Designed an end-to-end data pipeline to preprocess audio, extract different features, and train models
- Compared in-context performance and transfer learning using domain-specific criteria across models shown to be promising in external works and competitions
- Performed ablation studies to compare how model architectures and feature extraction techniques affect test performance and inference time

Social Media Sentiment Analysis | Python, scikit-learn, NLTK

GitHub

- Interfaced with external APIs to automate collection of 30,000 text samples from selected communities
- Implemented a data processing pipeline using the Natural Language Toolkit to tokenize and normalize text

Experience

Mathematics and Computing Tutor

2023 - Present

- Applied evidence-based learning strategies to improve mean z-scores by 0.30 and average percentile ranks by 10.8% for students in undergraduate-level courses

Skills

Languages: C++, C, Python, QML, SQL

Libraries: Boost, Qt, GTest, wasmtime, scikit-learn, PyTorch, Pandas, NumPy