Steric Tsui

280 Dundas St W, Toronto, ON
437-445-5858 steric.tsui@mail.utoronto.ca steric-tsui stericishere steric-tsui.com

Experience

Squirl ASL **Toronto, ON**
ML Engineer *Sep 2024 – April 2025*

- Selected for the **Microsoft Startup Club** and funded by **Alterna Savings** to develop a B2B ASL translator.
- Contributed to a Temporal Convolutional Network (TCN) by performing a grid search over key hyperparameters and implementing a Cosine Annealing scheduler **resulting in an award-winning prototype.**
- **Reduced inference computation by 33% using a post-training dynamic frame sampling technique in Azure ML, prioritizing real-time smooth user experience without compromising model accuracy.**

TinyProof Github **Toronto, ON**
Research Assistance | PyTorch, Google Cloud Platform, LeanDojo, Lean4, Docker, Jira *Jan 2024 – April 2025*

- Conducted original research under Dr. Mohammad to build an RL-based theorem prover extending AlphaProof using **R'max Tree Search**, **achieving 87% on college-level proofs surpassing expected baselines**.
- Engineered a scalable ETL data pipeline in GCP, leveraging LeanDojo to extract formal proof data from Lean4 repositories and transform it into structured datasets for downstream training.
- Containerized workflows with Docker and coordinated iterations via Jira/CI, ensuring reproducibility across research.

Education

University of Toronto **Expected: May 2027**
Bachelor of Science in Computer Science and Statistics *Toronto, ON*

Projects

Airplane Boarding Optimization via RL – Github | *PyTorch, Gymnasium, SB3, TensorBoard, Pygame* **Aug 2025**

- Trained a **Maskable PPO agent** using **Stable-Baselines3** with action masking, improving passenger flow efficiency by **75%** in a custom **Gymnasium environment** simulating airplane boarding dynamics.
- Vectorized the env to enable parallel training, accelerated **convergence** by 90% and improved **generalization** by 15%
- Monitored training performance using **TensorBoard**, analyzing metrics such as **reward trends**, **KL divergence**, **explained variance**, and **clip fraction** to ensure stable policy updates.

ML for Adaptive Education – Github | *PyTorch, NumPy, SciPy, scikit-learn, Matplotlib* **Jul 2025**

- Led a team of four to develop a ML model that predicts student performance and recommends personalized questions, enhancing a 3-parameter IRT model, achieved a **15% improvement** over the baseline, validated through A/B testing.

Interactive AI multi-Agent Simulation – Github | *LangGraph, Docker, FastAPI, Django, WebSocket* **May 2025**

- Implemented an episodic-based 10-agent environment, showcasing multi-agent social behaviors and interactionsy.
- Re-architected the original Generative Agents framework using the **PIANO architecture arXiv:2411.00114)**, enabling scalable and memory-efficient agent behavior and decision-making.
- Optimized API interaction by **consolidating context management and shared memory access**, reducing per-step token usage from 50 to 5 and minimizing latency and cost.

Technical Skills

Languages: Python, C++, Java, HTML/CSS, JavaScript, PostgreSQL, MongoDB
Frameworks: Tensorflow, Pandas, Numpy, Scikit-learn, LangChain, FastAPI, Streamlit
ML: Linear & Logistic Regression, SVM, KNN, Decision Trees, Random Forests, GLM, GAM
Deep Learning: MLP, CNNs, LSTM, TCNs, Attention Mechanisms, Backpropagation, ReLU, Sigmoid
RL: Monte Carlo, RMax, DQN, Q-Learning, PPO, GRPO
Cloud: GCP (GCS, Cloud Scheduler Functions, BigQuery), AWS (S3, Sagemaker), Jupyter
Rest: ML lifecycle, SAS & SDLC & MATLAB programming, MLOps, CI/CD pipelines, DevOps
Certification: AWS Machine Learning Engineer-Associate, Oracle Cloud Foundations Associate, Google Cloud Essentials

Leadership / Extracurricular

UTMIST (University of Toronto Machine Intelligence Student Team) **Sep 2025**
Project Developer

The AI Collective **May 2025**
Event Coordinator

UofT AI **Jun 2024**
Conference Team Member

- Acted as a key communication link between multiple internal teams to coordinate planning & logistics for the conference