

SHARANSHANGAR MUHUNTHAN

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EDUCATION

University of Toronto

Toronto, ON

Bachelor of Science in Statistics (Machine Learning and Data Mining Stream)

Sept. 2019 – present

Relevant Coursework: Neural Networks and Deep Learning, Robotic Perception, Statistical Inference, Probability and Stochastic Processes, Regression Analysis, Introduction to Machine Learning, Data Structures and Algorithms

WORK EXPERIENCE

Undergraduate Research Assistant

January 2024 – Present

Embarc Lab (University of Toronto)

Toronto, ON

- Conducted research on **dynamic scene representation** using **python, pytorch, CUDA, C++**, resulting in **parameter efficient models** and **faster training** in 3D scene modeling
- Partnered with PhD researchers to convert conceptual models into optimized code, **increasing project efficiency by 5 ×**
- Enhanced system performance by identifying and resolving **GPU bottlenecks** using **Nvidia Nsight** and **Pytorch Profiler**, speeding up training by **5 ×**
- Debugged and resolved critical issues in **Python, Pytorch, CUDA**, and **C++** code, stabilizing the application and reducing 100% of errors, contributing to overall system reliability.
- **Automated** the dataset creation process for training and testing using **Blender and Python**, reducing data preparation time and ensuring consistent data quality across experiments.
- Wrote custom, and refactored existing **CUDA kernels** and **C++ Pytorch Extensions** to accelerate computation by **70 ×** directly enhancing training time
- Optimized C++ code for a splat renderer, achieving real-time scene updates and improving rendering efficiency from **one single update after training is done up to per second updates during training**
- Developed and optimized **data pipelines for training and inference**, increasing supported dataset types by 150%, enhancing the flexibility and scope of 3D scene modeling research
- Analyzed experimental data and created detailed visualizations and figures using Python and specialized software, effectively communicating complex research findings to both technical and non-technical audiences.

Data Scientist

September 2021 – Present

Temerity Analytics

Toronto, ON

- Applied advanced statistical and machine learning techniques, including **time series analysis and clustering**, to derive actionable insights that significantly improved client decision-making processes.
- Developed and maintained robust **ETL pipelines** with **AWS Kinesis** for ingesting live vehicle telemetry data, ensuring seamless data flow and high data integrity for real-time analytics.
- Designed and maintained scalable **RESTful APIs in Python and SQL**, enabling efficient data exchange for large-scale client applications and enhancing overall system interoperability.
- **Improved the accuracy of existing sentiment analysis models by 10%** through the integration of advanced machine learning techniques, resulting in more reliable insights for client feedback analysis.
- Executed extensive **data wrangling and cleaning processes** on complex datasets, including census data and large-scale client data dumps, to ensure high-quality inputs for advanced analytics and model development.
- Performed **clustering and predictive analysis** on client datasets, uncovering actionable insights that guided data-driven decision-making and strategy formulation for improved business outcomes.
- **Engineered** key features such as **geographic competitor analysis, EV battery estimation, and driver behavior scoring, and more**, contributing to the development of robust machine learning models that support critical business functions.
- **Designed and implemented** scalable, cloud-based data architectures using **AWS**, enabling the **secure and efficient storage, processing, and analysis** of large volumes of structured and unstructured data.

SKILLS

Languages: Python, C++/C, Rust, Bash | **Database:** SQL (Postgres) | **Pralell/GPU Computing:** CUDA

Frameworks: Pytorch, Tensorflow, Django, Flask

Developer Tools: Git, Linux/Unix, Docker, AWS Kenesis, AWS EC2, Bazel, Cargo, Jupyter Notebook, L^AT_EX, Blender

Libraries: Eigen, Cutlass, Pandas, NumPy, Matplotlib, Blender, OpenCV, Open3D, Pygame, Scikit-learn, PCL, PyBind11, Boost

Build Tools: CMake, Bazel, Cargo