

Lachlan Gray

in lachlan-gray

✉ lachlan [dot] gray2000 [at] gmail

🌐 LachlanGray

SKILLS

Languages: Python, C++, SQL

Frameworks: Pytorch, NumPy, TensorFlow, Flask, Protobuf

Tools: Bash scripting, Docker, Makefile, Git

LLM's: Local inference (GGML, MLC), prompting frameworks, design patterns

Theory: Mathematics, learning algorithms, model architecture, probability/information

EXPERIENCE

Software Engineer (intern)

May 2022 - December 2022

Augmenta AI

- Wrote a validation suite uncovering dozens of subtle errors in generated solutions [Python, C++]
- Offloaded geometric computations to a C++ library, vastly improving validation speed [SWIG]
- Created unit tests achieving full coverage of validations [PyTest]
- Minimized redundancies in validation workflows, cutting validation time [Python, C++, C#]

ML Engineering Intern

September 2021 - December 2021

Canadian Department of National Defence

- Developed a retrieve/rerank pipeline for an information retrieval chatbot [Transformers, NLTK]
- Constructed a fine-tuning pipeline for embedding models [PyTorch, SQLAlchemy]
- Implemented a data integration pipeline to reconcile disparate CSV formats [Pandas]
- Qualitatively improved search results by augmenting user queries [Python, NLTK]

Research Assistant

September 2020 - April 2021

Northwestern University

- Reproduced network embedding algorithms and evaluated them on various metrics [NumPy, Scikit]
- Accelerated experiment iterations severalfold by creating a gradient-based optimizer [TensorFlow]
- Derived and implemented a Boltzmann model relating protein expression to neural connectivity [NumPy]
- Developed a pipeline to clean protein expression data for regression models [Pandas]

Data Science Intern

January 2020 - April 2020

Loblaw's

- Designed and developed an anomaly detection algorithm for sales data [Python, SQL, GCP]
- Wrangled large volumes of data for analysis and visualization [SQL, Matplotlib]
- Identified customer segments through data visualization [Matplotlib, Seaborn]

PROJECTS

Dixie 🌐

Ongoing

- A terminal assistant inspired by the Dixie Flatline from William Gibson's *Neuromancer*

sLiMQL 🌐

Ongoing

- Small (~ 250 LOC) and hackable prompt template python library based on LMQL syntax

Tree of Thoughts 🌐

June 2023

- Asynchronous implementation of Tree of Thoughts

Neural Image Search (School project) 🌐

March 2022

- Worked in a team of three to build and train a neural image search model
- Responsible for the data preprocessing pipeline and triplet loss implementation

EDUCATION

University of Waterloo

Waterloo, On

General Science (physics) - 83% average

2018 - 2023

INTERESTS

- Blogging, sci-fi, jazz, evolution