William Liu

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Education

The University of Texas at Austin
M.S. in Computer Science
Thesis: Summarization and Display of Conversational Critiques Concerning Graphical Topics
May 2023 (Part Time, Remote)

Carnegie Mellon University
B.S. in Cognitive Science
Minor in Computer Science
May 2020

Engineering

Languages:
Python, TypeScript, C, C++, OCaml
Machine Learning Tools:
Tensorflow, PyTorch, NumPy, Pandas, NLTK, Huggingface
Compiler Tools:
LLVM, MLIR, TACO

Web Development

Frontend:
React, NextJS, React Query, Urql
Backend:
Fastify, Flask, FastAPI, Prisma 2, Express, Apollo-Server
Databases:
MongoDB, PostgreSQL
Infrastructure:
AWS, DigitalOcean, Firebase, Heroku, Docker

Design

Design Tools:
InDesign, Photoshop, Figma

Select Coursework

Theory:
Topics in Deep Learning
Parallel Algorithms
Functional Programming
Numerical Analysis

Systems:
Optimizing Compilers
Parallel Computer Architecture
Advanced Operating Systems

Updated: May 8, 2022

Experience

CoPilot // *Pittsburgh, PA (Remote)*
Backend Systems Engineer // *Aug 2021 — Present*
- Build, manage, and maintain the entire backend infrastructure
- Manage data and metrics pipelines and perform business analytics

SambaNova Systems // *Palo Alto, CA*
Software Engineer // *Jun 2020 — Aug 2021*
- Led small team to increase performance of multiple 2D and 3D computer-vision ML models more than 10X on custom hardware
- Designed architecture-specific, highly optimized convolution primitives

Nvidia // *Santa Clara, CA*
Deep Learning Software Intern // *May 2019 — Aug 2019*
- Reduced ML model size up to 5x through in-compiler weights compression

Uber // *Pittsburgh, PA*
Software Engineering Intern // *May 2018 — Aug 2018*
- Reduced autonomous vehicle safety response latency by more than 2x with new prototype distributed message passing architecture

Carnegie Mellon University // *Pittsburgh, PA*
Research Assistant // *Dec 2016 — May 2020*
Teaching Assistant // *Aug 2017 — May 2020*
- Research in memory systems optimizations for sparse algorithms
- Taught and mentored hundreds of undergraduate and graduate students

Select Publications

"Accelerating Scientific Applications With SambaNova Reconfigurable Dataflow Architecture" *Computing in Science & Engineering, 2021*
M. Emani, V. Vishwanath, C. Adams, M. E. Papka, R. Stevens, L. Florescu, S. Jairath, **W. Liu**, T. Nama, and A. Sujeeth

"What Your DRAM Power Models Are Not Telling You: Lessons from a Detailed Experimental Study" *SIGMETRICS 2018.*
S Ghose, A G Yağlıkçı, R Gupta, D Lee, K Kudrolli, **W X. Liu**, H Hassan, K K. Chang, N Chatterjee, A Agrawal, M O'Connor, O Mutlu.

Select Projects

Detailed descriptions and more projects at: ***https://williamliu.me/categories/project/***

Improving CNN Interpretability // *Course Project, May 2019*
Algorithm that annotates how each layer in a CNN contributes to the output

Parallel Galaxy Simulation // *Course Project, May 2019*
Galaxy simulation algorithm using parallel algorithms and data structures

Modware // *PennApps XVII Hackathon, Jan 2018*
Built in 36 hours. Allow software engineers to prototype hardware systems
2nd Place, Hacker's Choice Award, Best Hardware Hack, and Best IoT Hack

Facebook Discourse // *Facebook Global Hackathon Finals, Nov 2017*
Built in 24 hours. Digitize and organize political debates in real time
Presented to the VPs of Technology of Instagram, WhatsApp and Facebook
Grand Prize out of 14 finalists from 11 different countries