William Liu

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Education

The University of Texas at Austin
May 2023 (Expected)
M.S. Computer Science

Carnegie Mellon University
May 2020
B.S. in Cognitive Science
Minor in Computer Science
Alpha Epsilon Pi Fraternity

Skills

Programming Languages:
C, C++, Python, SML, TypeScript, JavaScript, MATLAB, R, OCaml

Machine Learning:
Tensorflow, Keras, High-Res Image Processing

Frameworks and Tools:
LLVM, CUDA, OpenMP, Open MPI, Unix, Git

Web Development:
GraphQL, React, MySQL, PostgreSQL, NextJS, AWS, Express, MongoDB

Design:
InDesign, Photoshop, Illustrator, AutoCAD, Sketch, Adobe XD

Select Coursework

Theory:
Deep Learning
Topology and Modal Logic
Parallel Algorithms
Functional Programming
Computational Perception

Systems:
Optimizing Compilers
Parallel Computer Architecture
Advanced Operating Systems

Updated: Jan 1, 2021

Experience

● **SambaNova Systems** // *Palo Alto, CA*
Software Engineer // *Jun 2020 — Present*
 - ML and HPC application compilation and dataflow graph optimization

● **Nvidia** // *Santa Clara, CA*
Deep Learning Software Intern // *May 2019 — Aug 2019*
 - Created new machine learning model regression pipeline
 - Implemented hypercube compression algorithms to increase model performance on custom chip by up 25%

● **Uber** // *Pittsburgh, PA*
Software Engineering Intern // *May 2018 — Aug 2018*
 - Prototyped new safety-critical distributed message passing architecture to reduce autonomous vehicle safety response latency
 - Implemented new synchronized distributed vehicle metrics system

● **Computer Architecture Lab at CMU** // *Pittsburgh, PA*
Research Assistant // *Dec 2016 — May 2020*
 - Research in memory systems optimizations for sparse algorithms

● **Carnegie Mellon University** // *Pittsburgh, PA*
Teaching Assistant // *Aug 2017 — May 2020*
 - Taught and mentored 100's of students over 5 semesters of teaching:
   - 15-418 Parallel Computer Architecture and Programming (S20)
   - 85-310 Research Methods in Cognitive Psychology (S20)
   - 15-110 Principles of Computing (F17, S18, F18, F19)

Select Projects   Detailed descriptions and more projects at: ***https://williamliu.me/tags/#project***

Improving CNN Interpretability // *Course Project, May 2019*
Improved interpretability of convolutional neural network kernels by using part-templates to extract kernel convergence features

Parallel Galaxy Simulation // *Course Project, May 2019*
Built and optimized a parallel galaxy simulator using a lock-free quadtree

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

Select Publications

"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.