

# 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, 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

## 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.