Charles Hong

charleshong@berkeley.edu | charleshong3.github.io | linkedin.com/in/charleshong3

Education

University of California, Berkeley — Expected May 2022
MS, Electrical Engineering and Computer Science — *Berkeley, CA*

- GPA: N/A
- Apple Scholar

University of California, Berkeley — August 2017 – May 2021
BS, Electrical Engineering and Computer Science — *Berkeley, CA*

- GPA: 3.97/4.00

Experience

University of California, Berkeley — June 2020 – Present
Undergraduate/Graduate Student Researcher — *Berkeley, CA*

- Advised by Professor Sophia Shao

University of California, Berkeley — August 2018 – Present
Undergraduate/Graduate Student Instructor — *Berkeley, CA*

- Six-time (U)GSI for CS 61A (programming fundamentals), CS 61C (computer architecture), and EECS 151 (digital design, FPGAs)

Apple — May 2021 – August 2021
Hardware Technology Intern — *Cupertino, CA*

- Developed CPU Emulation Flow 2.0, which enhances support for internal emulation users, increases test throughput, and reduces runtime of common queries

NVIDIA — May 2020 – August 2020
System Architect Intern — *Santa Clara, CA*

- Applied machine learning to CPU networking workload analysis, predicting costs to within 15% accuracy

NVIDIA — May 2019 – August 2019
System Architect Intern — *Santa Clara, CA*

- Modeled power data of SoC use cases based on task scheduling and per-IP workload parameters
- Still in use as of following internship

Oski Technology — June 2018 – August 2018
Formal Verification Intern — *San Jose, CA*

- Verified an interconnect bridge design and prototyped Chisel FV flow

Community & Leadership

Pioneers in Engineering — September 2017 – Present
Advisor, Director of Engineering, Project Manager, Software Developer — *Berkeley, CA*

- Various roles helping run robotics competition for local underserved high schools
- Two years as project manager; one year as engineering director, managing 30+
- Led team that built robot simulator web app (pimulator.pierobotics.org)

Honors

University of California, Berkeley | Apple 2021
Master's Scholarship in Integrated Systems

- Full-tuition (plus stipend) master's degree fellowship

University of California, Berkeley | Apple 2019
EECS 151 Design Award

- Top 3 FPGA project teams in digital design course

IEEE-HKN Honor Society 2018 – Present
Member

Projects & Publications

Learning A Continuous and Reconstructible Latent Space for Hardware Accelerator Design 2021
(Paper under submission)

- Applies VAE-based optimization to improve sample efficiency of hardware design space exploration

Modeling DNN Layer Performance Across Accelerators (Paper) (Poster) 2021

- Compares accuracy and interpretability of learned models for layer schedule performance

Fast Thread Migration in a Heterogeneous ISA System (Paper) (Poster) 2021

- Devises a mechanism for automatic firmware-level migration of programs to appropriate heterogeneous core

Enhancing Yelp Rating Predictions (Paper) 2021

- Applies novel ensembling and multi-head approaches to improve the classification accuracy of BERT

Monte Carlo Tree Search for Query Optimization 2020

- Implements database join order optimization using Monte Carlo tree search and reinforcement learning

A Chipyard Comparison of NVDLA and Gemmini (Paper) 2020

- Integrates NVDLA into RISC-V SoC environment and compares its performance to Gemmini's

Technical Skills

Languages: Python, C/C++, Java, Go, RISC-V, Verilog, Chisel, HTML/CSS, JavaScript, SQL
Frameworks: CUDA, OpenMP/MPI, Spark
Developer Tools: Git, Perforce, SVN
Libraries: PyTorch, TensorFlow/Keras, NumPy, Pandas, Matplotlib
Frameworks/Applications: Vivado, JasperGold