Abenezer Wudenhe

awude001@ucr.edu | https://abe157.github.io/ | Google Scholar

EDUCATION

University of California, Riverside (UCR) — PhD (Computer Science)
- SMART Fellow — Expected: May 2024
- Chancellor's Distinguished Fellow
- GAANN Fellow

University of Maryland, Baltimore County (UMBC) — BS (Computer Engineering)
- Meyerhoff Scholar — May 2018 (Cum Laude)
- NSA Scholar

PROFESSIONAL EXPERIENCE

Extreme Storage and Computer Architecture Lab (ESCAL) — 2018 Aug – Present

Graduate research assistant to Dr. Hung-Wei Tseng.

- *TPUPoint: Profiler and optimizer for TPU cloud*
  - Designed and developed an automatic profiling and optimization tool for Google's TPU-based ML Cloud Platform.
  - Achieved up to 1.12x speedup for programmer's optimizations using TensorFlow.
  - Ported a set of MLPerf applications to Google's TPU Cloud Platform.

Google Software Engineering Intern — Jun. 2023 – Sep 2023

Software Engineering Intern under Dr. Jaswanth Sreeram

- Participate in a 13-week internship program for the Google XLA TPU Backend Compiler team.
- Developed Low Level Instruction analysis tool to identify performance gaps in compiler heuristics.
- Create a python static visual analysis tool of compiler generated TPU & CPU instruction execution and Utilization.
- Participated in internal Core Machine Learning (ML) training program, "Core ML University".

Google Software Engineering Intern — Jun. 2022 – Sep 2022

Software Engineering Intern under Dr. Ayub Gubran

- Participate in a 14-week internship program for the Google gChips Architecture Team.
- Developed System Verilog based tools for architects to utilize in debugging/analysis of SoCs files.
- Participated in Google Intern Mentorship Program during weeks 5 - 12.

Intel OneAPI Graduate Student Software Internship — Oct 2021 – Feb 2022

Software Engineering Research Intern

- Participate in a 3 month internship to extend existing research project to Intel OneAPI.
- Extend existing compiler infrastructure to produce Data Parallel C++ device code to run on CPU, GPU, and FPGA.
- Present Temporal to Spatial Programming (T2SP) at the 10th International Workshop on OpenCL (IWOCL) and SYCL.

PUBLICATION

A. Wudenhe, Hung-Wei Tseng. "TPUPoint: Automatically Characterizing Hardware Accelerated Data Center Machine Learning Program Behavior". In IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS 2021), 2021.

TECHNICAL SKILLS

- Experience programming in **C, C++, python**, **CUDA**, Bazel, Makefile, CMake, html, MPI, php, Arduino, OpenMP, Open MPI, TensorFlow, Skilearn, Javascript, NodeJS
- Experience writing technical documents using LaTex, BibTex, Word
- Experience with Xilinx Design Tool, MATLAB, Cadence's Allegro Design Entry CIS, Atmel Studio