ZHEYUAN CHEN

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EDUCATION

Rensselaer Polytechnic Institute   *August 2018 - May 2022*
Undergraduate, Computer Science   GPA 3.74/4.0
University of California, Santa Cruz   *Sept 2022 - June 2024*
Master, Computer Science and Engineering   GPA 3.78/4.0
University of California, Santa Cruz   *Sept 2024 - Present*
PhD, Computer Science and Engineering

RESEARCH & WORKING EXPERIENCE

Mercedes-Benz Research & Development North America   June 2024 - Dec 2024
Software Engineering Intern   *Sunnyvale, CA*

- Helped the team to build middleware for automated driving system (ADS), which crucial for handling communication, data management, and resource sharing among various components of ADS.
- Developed a toolchain to automate the migration of a large Bazel project, consisting of mixed CUDA and C++ code, to SYCL.

MMTK, OSPP2023   July 2023 - Oct 2023
Remote Intern   *The Australian National University(Remote)*

- In collaboration with the Australian National University (ANU) research group, actively participated in the MMTK (Memory Management Toolkit) project, a versatile framework for memory management, specifically garbage collection, with a focus on supporting multiple programming languages and virtual machines.
- Port MMTk core and its OpenJDK binding to the ARMv8 platform.
- Implement fast paths, including object allocation and write barrier fast paths, to enhance the efficiency of OpenJDK on the ARMv8 platform when utilizing MMTk as its garbage collector.

Languages, Systems, and Data (LSD) Lab   Janaury 2023 - Current
Research Assistant   *University of California, Santa Cruz*

- Helped to build a framework named RedWood, designed for the development of traverse-compute workloads that are compatible with Shared Memory Heterogeneous Systems.
- Developed an enhanced GLSL radix sort algorithm inspired by 'Onesweep: A Faster Least Significant Digit Radix Sort for GPUs,' significantly improving performance and reducing global data movement.
- Developed a formal specification framework using TLA+ and Rust, under the supervision of Professor Tyler Sorensen, to verify and analyze various GPU forward progress models. This framework verifies and analyzes various GPU forward progress models by taking a GLSL program as input and determining whether the program is guaranteed to eventually terminate under a specified progress model.

SQLELF   July 2023 - Dec 2023
Contributing Researcher   *University of California, Santa Cruz*

- Assisted a PhD student from UC Santa Cruz in the development of a research project named SQLELF, an innovative tool that empowers users to probe ELF objects through the expressive power of SQL.
- Incorporating SQLELF into the musl dynamic loader to decrease symbol resolution time and simplify rpath fixup.
- developed a use case showcasing that SQLELF could perform advanced aggregate analysis on multiple object files.