Haobo (Charlotte) Chen

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Education

Columbia University New York, NY

B.S. Computer Engineering, Minor in Biomedical Engineering *Sept. 2024 – May 2026*

- GPA: ?/4.3 (Major GPA: ?/4.3)

Grinnell College Grinnell, IA

B.A. Computer Science, B.A. Japanese *Aug. 2021 – May 2024*

- GPA: 3.96/4.0 (Major GPA: 4.0/4.0)
- Dean's List (five semesters)

Relevant Coursework: Computer Organization and Architecture, Operating System, Analysis of Algorithms, Automata and Formal Languages

Research Experience

GreenerSKU: Lower Carbon Datacenter Operations Research May. 2024 – Present

University of Minnesota Twin Cities *Minneapolis, MN*

- Developed a simulation model to evaluate the carbon emissions of datacenter operations
- Analyzed the impact of different datacenter configurations on carbon emissions
- Identified and analyzed bugs in the simulation model

Autonomous Driving Research Dec. 2023 – April 2024

North Carolina State University *Raleigh, NC*

- Implemented remote control hardware systems to enhance the evaluation of autonomous driving algorithms
- Wrote advanced algorithms for autonomous driving, focusing on optimizing vehicle behavior, safety, and efficiency
- Analyzed the performance of the algorithms in real-world driving scenarios

Japanese Independent Research Sep. 2023 – Dec. 2023

Grinnell College *Grinnell, IA*

- Researched the relationship between Japanese and Chinese languages and its impact on Japanese education
- Held interviews with Japanese professors and students to gather data
- Wrote a 20-page paper on the topic and presented in the Japanese department

Stats2Lab Software Development Research Feb. 2023 – Sept. 2023

Grinnell College *Grinnell, IA*

- Designed and developed three web educational games in Unity using C# (Farmer, Greenhouse, and Coffeetruck) to assist teaching of multivariate statistical models in college courses
- Deployed games to 1000+ students as part of undergraduate statistics curriculum at 5 institutions for testing
- Developed a web application to collect and analyze data from the games

Teaching Experience

Computer Architecture Course Mentor Jan. 2024 – May 2024

Department of Computer Science, Grinnell College *Grinnell, IA*

- Managed weekly prep assignments, check-ins, and general logistics for class
- Held multiple weekly discussions, labs, and homework sessions for students
- Answered questions and provided feedback on assignments

General Chemistry Course Mentor Jan. 2023 – Dec. 2023

Department of Chemistry, Grinnell College *Grinnell, IA*

- Managed weekly prep assignments, check-ins, and general logistics for class
- Held multiple weekly discussions, labs, and homework sessions for students
- Answered questions and provided feedback on assignments

Physics Lab Assistant Sep. 2022 – Sep. 2023

Department of Physics, Grinnell College *Grinnell, IA*

- Tutored students in fundamental physics course sequence (Mechanics, E&M)
- Assisted professor setup lab apparatus

Projects

COOL Compiler | *lex, Java, C++* June 2024 – August 2023

- Developed a compiler for the COOL programming language
- Implemented lexical analysis, parsing, semantic analysis, and code generation

Pintos Operating System | *C, Assembly* May 2023 – August 2023

- Implemented user program support, system call interface, priority thread scheduling, and cached file system of the Pintos Operating System
- Optimized the system by priority scheduling, lazy loading, and cache manipulation

NUMC | *C, Python, SIMD* April 2023 – June 2023

- Replicated the NumPy functions of matrix operation in C and generated python package
- Optmized the package by SIMD, OpenMP, loop unrollling, cache manipulation, matrix transposition

CS61CPU | *C, Assembly* March 2023 – May 2023

- Designed and implemented a skeleton CPU that can execute RISC-V instructions
- Implemented a 2-stage pipeline and branch prediction

Gitlet | *Java, Git, Maven* Dec. 2022 – Jan. 2023

- Developed a simple version control system in Java that mimics some of the basic features of Git
- Used Java standard library to implement init, add, commit, log, branch, checkout functions
- Implemented remote features, allowing collaboration with other people over the internet

Grants

- Grinnell College. Student Research Fund. $4000. Awarded March 2023
- University of Minnesota Twin Cities. Undergraduate Research Opportunities Program. $???. Awarded May 2024