

Conghao Shen

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EDUCATION

University of California, Berkeley, CA

May 2022

Computer Science B.A.

GPA: 3.971/4.0

Relevant Coursework: **CS170:** Algorithms **CS161:** Computer security **CS61A:** The Structure and Interpretation of Computer Programs **CS61B:** Data Structures **CS61C:** Great Ideas of Computer Architecture (Machine Structures) **CS70:** Discrete Mathematics and Probability Theory **EE16A:** Designing Information Devices and Systems **CSC8:** Foundations of Data Science

SKILLS

Coding Experience: Proficient: Python, Java, C. Familiar: C++, PHP, Go, Javascript

Learning Ability: Able to learn and start to use a new programming language in few days.

Miscellaneous: RISC-V based architecture design, cache-friendly programming, thread-level parallelism (OpenMP, Go), data-level parallelism (SSE & AVX intrinsics, Spark), common data structures and algorithms, RSA encryption, secret sharing scheme, error correcting code, numpy

Working Language: Fluent in English and Chinese. Basic level of Japanese.

What I am working on this semester: Advanced Algorithms, Cryptography, memory safety

HIGHLIGHTED PROJECTS & EXPERIENCE

Byte Scissor

Fall 2019

Personal Project: <https://github.com/tsunrise/ByteScissor>

- Implemented a secret sharing scheme, using C++.
- The tool splits a file into fragments. File can be restored if required amount of fragments (any of those) are recovered.
- Wrote finite-field arithmetic code (add/subtract/multiply/inverse) to speed up calculation and avoid overflow error.
- Designed a file format to compress fragment size by 50% and support sanity check.
- Improved spatial locality to make this program cache friendly.
- Used OpenMP to speed up program by 4x on common personal computers.

GAME: CYBERSNAKE

Spring 2019

Course Project: CS 61B: Data Structures – UC Berkeley

- Wrote a multi-player game from scratch – using Java
- Cooperated with another team member using a shared repository
- Built frameworks and kernel by myself, allowing other team members write code to add more functionalities. The kernel includes essential game mechanisms: clock, data saving, user I/O. All other functions were written as plugins.
- Built various tests, including randomized tests and edge cases.

LEADERSHIP & EXTRACURRICULAR ACTIVITIES

UC Berkeley EECS Department

Fall 2019

Academic Intern

- Supported weekly sections of 50+ students.
- Helped students to debug the code and understand core concepts such as trees, heaps, asymptotic, etc.

CalHacks 2019: 48 hour hackathon

Team Lead

- Developed the prototype of a social AR-based App. User can post note anywhere (on the table, near a tree, etc) and others can see it.
- My contribution: use React to build an interactive map, showing the location of the post; assign work to other team members to allow efficient cooperation