# 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.
**Skill Set:** thread-level parallelism (OpenMP, Go), data-level parallelism (SSE & AVX intrinsics, Spark), common data structures and algorithms, cyptography (common symmetric and asymmetric algorithm, secret sharing scheme), error correcting code, web skills (React, Go)
**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/substract/multiply/inverse) to speed up calculation and avoid overflow error.
- Designed a file format to compress fragment size by 50% and added sanity check to ensure basic data integrity.
- 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.
- Wrote several Java interfaces to allows other programmers to write plugins easily.
- Built various tests, including randomized tests and edge cases.
- Demo video here: https://youtu.be/_tI5urYR_9E

## 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 notes anywhere (on the table, near a tree, etc) and others can see it using their camera. Used Google Cloud API for map data and Apple AR Kit.
- 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