

# Mahesh Vegiraju

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## Education

**University of California, Santa Cruz**  
Bachelor of Science Computer Science  
Minor in Biology

Expected — June 2023  
GPA: 3.5

**Relevant CS Coursework:** Programming Abstractions in Python, Assembly Language & Computer Systems, Embedded Systems & C Programming, Data Structures and Algorithms, Computer Architecture, Introduction to Computer Networks, Computer Systems Design, Foundations of Programming Languages, Introduction to Software Engineering

**Relevant Biology Coursework:** General Chemistry I, General Chemistry II, General Chemistry III, Cell & Molecular Biology, Biology: Development & Physiology, Genetics

**Involvements:** Santa Cruz NeuroTech, Cycling Club, Brooks Lab

## Experience

**Brooks Lab** Feburary 2022 - Present  
Santa Cruz, CA  
*Undergraduate Researcher*

- Working with long read & short read simulated data to compare statistical data between the two

**Acorn Basket Studios** June 2019 - August 2019  
San Jose, CA  
*Software Engineering Intern - Game Mechanics*

- Helped implement object collision & procedural generation of the game map
- Worked in the ActionScript framework to make the game accessible to a wider audience

## Projects

### Huffman Compression Algorithm

- Implemented Huffman Compression and Decompression in C
- Created fundamental data structures including nodes, priority queues and stacks
- Used these fundamental data structures in tandem

### Content Scraper

- Uses BeautifulSoup to scrape comics and videos from websites
- Automatically opens new chapters/episodes in a new window

### Hamming Encoding

- Implemented the error correction Hamming encoding algorithm in C
- Used data structures like bit vectors and bit matrices

### Simple Motion Detection

- Implemented a simple motion detection algorithm
- Created sliding window Averagerators

### Core of PyTorch

- Created a simplified version of the core of PyTorch
- Implemented gradients and auto propagation

### Faster Merge Sort

- Made Merge Sort run faster using UNIX and POSIX child processes
- Also made a multi-threaded implementation using POSIX threads

### Pintos Project

- Improving the Pintos learning Operating System
- Changed the way Pintos puts threads to sleep as to not use busy wait
- Implemented a priority ready queue that takes into account processes' priority when scheduling onto the CPU

## Skills

### Programming Languages

- Python, Java, C, C++, MIPS Assembly, RISC-V Assembly

## **Technologies**

- Git, Bash, LaTeX, ActionScript, BeautifulSoup