Alvin Hsu

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EDUCATION

University of California, San Diego   San Diego, CA
Bachelor of Science in Computer Science   *Sept 2020 – Jun 2024*
- GPA: 3.82/4.00
- Coursework: Data Structures, Algorithms, Database, Operating System, Software Engineering, Software Tools

EXPERIENCE

Software Engineer Intern   Jun 2022 – Sept 2022
Art of Problem Solving   *San Diego, CA*
- Working with **Beast Academy(BA)**, an advanced comic-based math program for students ages 6–13
- Developing **2+** new engines used to create new interactive problem types through **multi-layer abstraction**
- Redesigning interactivity for new engines to better support touch devices and increase performance by up to **20%**
- Improving previously built engines by adding new features, bug fixes, and optimizing code

PROJECTS

OS Design | *Java, Nachos*   Mar 2022 – Jun 2022
- Functionalized a complete thread systems and implemented system calls and support for multi-programming
- Resolved **synchronization** problems through the use of locks, conditions, and semaphores to provide atomicity
- Designed a memory management system where physical pages are allocated on demand
- Used an **LRU** Approximation cache which increased performance of page swapping by up to **70%**

Heart Disease Risks | *Python, Jupyter Notebook*   Mar 2022 – Jun 2022
- Cleaned, analyzed, and modeled a heart disease indicator dataset with over **200,000+** observations
- Implemented an effective Chi-Squared test for each observation with a **90%** accuracy rate
- Constructed a decision tree and neural network model to evaluate tests on data

Classmate Connect | *Java, Room Database, Android Studio, Nearby Messages API*   Jan 2022 – Mar 2022
- Created a **Full-Stack** Android Application that matches students who took the same classes
- Implemented the search feature using Nearby Messages API to send and receive data
- Utilized Model View Presenter and Observer **design patterns** to streamline the front-end
- Optimized database queries by up to **45%** for the filter option by improving indexing strategies
- Applied and led **Agile** practices along with ZenHub to guide development workflow for the team of 6

StoreRUs | *TypeScript, Docker, Node.js, Express, Postman*   Jan 2022 – Feb 2022
- Implemented back-end logic to make a functioning merchandise store
- Created models and utilized controllers and services to handle **API** requests
- Utilized Postman to test API request and DataGrip to manage database

Functional Graph | *C++*   Nov 2021 – Dec 2021
- Built graph API for shortest weighted/unweighted paths, connected components, and smallest threshold functions
- Improved runtime of traversals utilizing optimized data structures and algorithms by over **30%**
- Employed graph API to analyze over **50+** observations retrieved from an HIV-TRACE study of a HIV dataset

EXTRACURRICULARS

TritonHacks: Developed React website used by **100+** high school students to showcase TritonHack's Hackathon
Early Start: Mentored a High School student on the basics of HTML/CSS/Javascript and built an educational website
Competitive Programming: Participated in coding contests and regularly solves coding problems

TECHNICAL SKILLS

Languages: Java, C, C++, SQL, JavaScript, HTML, CSS, TypeScript, Python, Haskell
Technologies: React, Node.js, Lodash.js, Git, JUnit, Express
Software: Docker, GitHub, GitHub Actions, GDB, Valgrind, Postman, ZenHub, Linux