Yeonsu (Timothy) Kim

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EDUCATION

University of California, Berkeley *Aug 2020 – May 2024*

Electrical Engineering & Computer Science B.S, GPA: 3.97/4.00, College of Engineering Dean's List (5 / 8)

Relevant Coursework

Operating Systems, Data Structures, Machine Structures, Optimization Models in Engineering, Computer Security, Efficient Algorithms & Intractable Problems, Discrete Mathematics and Probability Theory, Database Systems, Introduction to AI

CORE SKILLS

Languages: JavaScript, C, Python, Java, SQL, Go, HTML/CSS
Frameworks and Tools: Git, Node.js, Express, PostgreSQL, MongoDB, React, Tailwind CSS, pug
Professional Skills: Communication, Leadership, Public speaking, Time management, Problem-solving

PROJECTS

Collaborative Content Management System

- Developed **RESTful** content management subsystems with role-based CRUD operations using Node.js and Express.
- Employed **JWT tokens** coupled with **bcrypt** for enhanced and robust security in user authentication and access control process.
- Created PostgreSQL models to manage user profiles, posts, and comments. Utilized B-tree and GIN **indexing** methods to implement optimal search filters, including full-text, title, creator, and timestamp.
- Developed a secure collaborative post-editing environment with invitation-based sharing and revocable permissions.
- Created unit and integration tests with **Mocha** and **Chai**, achieving overall **code coverage of 84.6%** measured with **Istanbul.js**.

Real-Time Messaging Application

- Developed a full-stack chat application using the **MERN stack** and **Socket.io**, enabling instant message delivery and real-time updates across users.
- Utilized **Passport.js** for session-based authentication and secure cookies, ensuring user data protection and session integrity.
- Integrated MongoDB with Express server to ensure **real-time data consistency** and dynamic content updates.
- Built a responsive and user-friendly interface with **React** and **Tailwind CSS**, optimized for various devices and screen sizes.

Toy Operating Systems

- Designed process and thread life cycles to optimize kernel and user memory allocation, ensuring memory-safe **synchronous system calls**.
- Developed a set of Linux-like system calls, such as wait, exec, fork, exit, and **shell** functionalities (redirection, piping) with efficient parent-child synchronization among process groups and threads using locks, semaphores, and monitors.
- Developed an LRU Buffer **cache** and extensible file/directory system resembling UNIX FFS structure. Improved inode-to-disk mapping from direct to doubly-indirect linking for significant time and memory efficiency.
- Collaborated on test suite development and GDB debugging to reduce performance bottlenecks and resolve deadlocks.

RELEVANT EXTRACURRICULARS

Berkeley Underwater Robotics *Aug 2022 – Dec 2022*

- Improved the performance of the underwater object detection algorithm by 250% by adding **OpenCV** python's Median-Flow tracking algorithm to the pre-existing HSV filtration-based detection schema.
- Designed submodules on the robot's teleoperation dashboard that monitors the vision system of the underwater robot, collaborating with team members.
- Engineered a hand gesture controller using **Google MediaPipe** API that enables interaction with a virtual touchpad interface.

Karisma *Aug 2022 – May 2024*

- **Led and managed 100-member campus Christian organization**, overseeing leadership teams in worship, media, transportation, and finance, ensuring smooth operations across all departments.
- Coordinated and executed events including weekly campus service, welcoming events, and bi-annual retreats and sports day.
- Expanded organization from 50 to over 100 members through strategic outreach and inclusive programming.