Yeonsu (Timothy) Kim

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EDUCATION

University of California, Berkeley May 2024

Electrical Engineering & Computer Science B.S, GPA: 3.97/4.00, College of Engineering Dean's List (5 / 6)

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

PROJECTS

Collaborative Content Management System

- Engineered RESTful content management subsystems with role-based CRUD functionalities 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.
- Introduced a secure and robust collaborative post editing environment, equipped with advanced access controls such as invitation-based sharing and the option to revoke access permissions.
- Established a comprehensive suite of unit and integration tests using Mocha and Chai frameworks to validate performance.

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

- Architected process and thread life cycles, appropriately allocating kernel and user memory to support synchronous and isolated system call operations that are memory-safe during system operation and upon termination.
- 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 time and memory efficiency.
- Collaborated closely with team members, writing test suites and leveraging debugging techniques on GDB to improve performance, bottlenecks, and 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 – Current*

- Served as a President for a campus Christian organization of about 100 members, managing leadership/ministry, worship and media, transportation, and finance teams.
- Organized and coordinated events including weekly campus service, welcoming events, and bi-annual retreats and sports day.
- Actively participated in weekly Bible study and homeless outreach, collaborating with pastors and members of local churches.

TECHNICAL SKILLS

Languages: JavaScript, C, Python, Java, SQL, Go, HTML/CSS, MATLAB
Frameworks and Tools: Git, Node.js, Express, PostgreSQL, MongoDB, React, Tailwind CSS, pug