Jaehong Lee (Jay)

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Education

Simon Fraser University Burnaby, BC
Bachelor of Applied Science in Computer Engineering, Co-op (BASc) *Sep. 2019 – Aug. 2025*

- **Coursework**: computational optimization, statistical inference, probability theory, data analysis, algorithms, data structures, OOP, database systems, operating systems, software engineering, and multi-threading.

Work Experience

Intersystem Controls, Inc. Vancouver, BC
Software Engineering Intern – Frontend *Sep. 2021 - Dec. 2021*

- Led the design and development of a smart touch panel interface for a residential project at a Vancouver hotel. [**Image**]
- Created software solutions utilizing **HTML**, **CSS**, **JavaScript**, **React**, and **Redux**, planning the development of dynamic and user-friendly interfaces while effectively managing application state for an optimized user experience.
- Implemented **REST API** integration using **Postman** establishing communication with the backend systems.
- Conducted comprehensive unit testing using **Jest** to ensure modularization and robustness of components.
- Developed a configurable module, reducing manual input by **80%**, establishing scalable architecture for future projects.
- Collaborated closely with a UX/UI designer to optimize user functionality and plan the interface design, ensuring seamless integration of user experience principles into the smart touch panel interface.
- Participated in intern interviews, evaluating candidates, contributing to the team's growth and transition planning.

Selected Projects

GrabPencil.com – *Solo Project* *Sep. 2023 – Present*

- Created a tutoring platform for university students using **React**, **Node.js**, **Express.js**, **MongoDB**, and **Mongoose**.
- Developed a database search feature with comprehensive filters for easier tutor finding experience.
- Created **Node.js**-based backend **REST API** enabling CRUD operations for tutoring job postings.
- Implemented user authentication, encompassing password hashing and **JWT**-based authentication with cookie storage.
- Utilized **Socket.io** for real-time communication, including online user tracking, and stored chat history in **MongoDB**.
- Incorporated **Bootstrap** for streamlined and responsive frontend design.
- Conducted backend API endpoint testing using **Jest** and **Supertest** for comprehensive validation and reliability.

Hardware-Aware Software Optimization – *Pair Academic Term Project* *Jul. 2023*

- Optimized the General Matrix Multiply algorithm on a 10-core X86 CPU using **C** for increased efficiency.
- Employed data tiling optimization with a tile size of 16, achieving a speedup of **88.14%**.
- Implemented X86 SIMD intrinsics for vectorization with data tiling, resulting in a **98.39%** speedup.
- Applied OpenMP multithreading for parallelization, with data tiling and vectorization, achieving a **99.81%** speedup.
- Integrated loop unrolling with the three optimizations, resulting in a **99.84%** speedup (**8 minutes** to **0.73 seconds**).

Maze Game – *Team Academic Term Project* *Apr. 2023*

- Developed a **Java** game app with **Maven** for project management, using **OOP** principles for robust and scalable code.
- Implemented pathfinding algorithm for enemy movement optimization.
- Utilized Scrum process model for efficient project management and iterative development.
- Employed **JUnit** for unit testing and conducted line and branch coverage testing to validate code effectiveness.

Certificates

Udemy Online Courses

- **JavaScript: Understanding the Weird Parts** *Dec. 2023*
- **The Complete Node.js Developer Course (3rd Edition)** *Feb. 2023*
- **The Complete JavaScript Course 2024: From Zero to Expert!** *May 2021*

Technical Skills

- **Languages**: HTML, CSS, JavaScript, C, C++, Java, SQL, MATLAB, VHDL, LaTeX
- **Frameworks and Libraries**: Node.js, React.js, Redux, Express.js, Mongoose, Bootstrap, Jest, JUnit
- **Technologies and Tools**: Git, Unix/Linux, MongoDB, NoSQL, Bash, Heroku