

# Jaehong Lee (Jay)

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## EDUCATION

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### 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


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### 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. 
- Created software solutions utilizing **HTML**, **CSS**, **JavaScript**, **React**, and **Redux**.
- Planned dynamic, user-friendly interfaces, managing app state for 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

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### 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 **8.56x**.
- Implemented X86 SIMD intrinsics for vectorization with data tiling, resulting in a **61.94x** speedup.
- Applied OpenMP multithreading for parallelization, with data tiling and vectorization, achieving a **515.35x** speedup.
- Integrated loop unrolling with the three optimizations, resulting in a **649.53x** speedup (**8 minutes** to **0.739 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

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### 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
- **Modern HTML & CSS From The Beginning (Including Sass)**  Sep. 2020

## TECHNICAL SKILLS

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