

# Allen Yu

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## Education

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Georgia Institute of Technology, MS in Computer Science

Expected: Dec 2025

University of Washington, BA in Geography: Data Science

June 2023

## Technical Skills

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**Languages:** Python, Java, JavaScript/TypeScript, HTML/CSS, C, C++, C#, SQL

**Frameworks & Libraries:** React, Next.js, gRPC, Flask, Spring Boot, Hibernate, Tailwind CSS

**Tools:** Git, Docker, Postman, PostgreSQL, MongoDB, AWS, Google Cloud Platform

## Projects

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### Report Tracker

Demo

- Developed a full-stack report tracking web app using Next.js, Spring Boot, PostgreSQL, and AWS enabling users to efficiently log and manage reports through a calendar-based interface.
- Assisted a local environmental company in streamlining their report management process, successfully tracking 300+ client reports, resulting in more timely client responses.
- Implemented secure user authentication using Spring Security and JWT tokens, ensuring robust data protection.
- Automated data migration from Google Sheets to PostgreSQL using Python, saving the team 1-2 hours per week previously spent on manual data entry and updates.

### Tune Snip

Demo

- Developed a full-stack music web app allowing users to search and recognize over 18 million songs, achieving 95% detection accuracy and improving user engagement.
- Developed a RESTful API with Flask, designed and optimized MongoDB schema for efficient data storage, Dockerized the backend for easy deployment across environments, and deployed the app on Google Cloud Run, enabling high scalability and availability.
- Integrated external APIs to fetch song metadata, utilizing multithreading for asynchronous processing, reducing response times by 44%.
- Integrated Firebase OAuth for secure authentication, enabling users to log in and access their song detection history, achieving 99% login reliability.

### gRPC-based Distributed File System

Repo

- Developed a high-performance gRPC-based distributed file system in C++, implementing synchronous and asynchronous RPCs for remote file operations.
- Enhanced system concurrency by implementing mutexes and write locks to prevent race conditions, ensuring synchronized file access among multiple clients and preventing file corruption.
- Addressed synchronization issues by adjusting the modified time when the CRC values matched, reducing redundant checks and minimizing both network and memory overhead.

### Cosmic Crusaders

Demo

- Collaborated with a team of 6 to design and develop a level-based space shooting game with AI-powered enemies in Unity, contributing to game mechanics, optimizations, and player progression features.
- Optimized asteroid spawner using the object pool technique, improving performance by reducing instantiation overhead and ensuring smoother gameplay with mineral, health, and boost drops when asteroids are destroyed.
- Developed upgrade shop functionality, enabling players to purchase upgrades as they level up or collect enough minerals, enhancing player progression and engagement.