

# MOHAN GREWAL

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## SKILLS

Languages: Java, Javascript, Typescript, Kotlin, Swift, Python, C#, C, C++

Frameworks/Libraries: FastAPI, React, Tailwind CSS, Hugging Face, ANTLR, Z3, Aubio

Tools/Platforms: GitHub, GitLab, Android Studio, Xcode, IntelliJ, Unity, Unreal Engine, JIRA, Render, Vercel

Technologies/APIs: REST APIs, Signal Processing, GPT-2

AI/ML: NLP, Transformer Models, Prompt Engineering, Local Model Hosting

Cloud Hosting Concepts: CORS, Build Pipelines, Environment Variables

General Concepts: Linux, Operating Systems (OS), Static Code Analysis, Domain-Specific Languages (DSLs), Multithreading, Multiplayer Integration, Game AI, Agile Development

## EXPERIENCE

### Software Engineer Intern | Android Studio/Xcode Kotlin/Swift

Rivian

January 2023 - August 2023, Vancouver, BC

- Focused on improving developer QA efficiency by identifying and resolving mobile app issues in Kotlin/Swift, directly reducing bug resolution time in customer-facing apps.
- In a team of 3, engineered a debug menu facilitating QA testers to create JIRA tickets automatically from the app, streamlining bug reporting.
- Developed an automated testing suite for mobile developers adapted from Python, expediting code testing and feature deployment.

### Software Engineer Intern | Unity C#

East Side Games

September 2020 - April 2021, Vancouver, BC

- Developed UI and implemented a weekly subscription service for the TPB app using Unity IAPs (In-App-Purchases) for Android and iOS.
- Designed and implemented a Subscription prototype, serving as the foundation for the subscription service, and a visual debugging menu for employees to use to allow solving issues with the service easier.
- Engaged in agile development methodologies, focusing on sprints and daily stand-ups for enhanced organization and efficiency.

## PROJECTS

### Guitar Guide | Android Studio Java/Kotlin, Aubio C/C++, ML/AI Integration Python

Personal • [github.com/mohangrewal101/GuitarGuide](https://github.com/mohangrewal101/GuitarGuide) • October 2024 - Present

- Developing an Android app that detects chords from guitar music using signal processing with the Aubio library.
- Implementing real-time chord recognition and visualization features, with plans to add tuner feedback using a circular pitch indicator.
- Integrating AI models to extract and display playable guitar notes from songs, offering users an specialized learning guide.

### AI Workout Plan | FastAPI Python, React Javascript, Vercel, Tailwind CSS, Hugging Face Models API

Personal • [github.com/mohangrewal101/Workout-AI-Planner](https://github.com/mohangrewal101/Workout-AI-Planner) • April 2025 - June 2025

- Built and deployed a live, full-stack AI-powered workout planner with React, FastAPI, and Tailwind CSS that generates personalized workout routines and rotating fitness tips based on user goals.
- Trained a logistic regression model using scikit-learn to utilize AI to intelligently rank and filter 40+ fitness tips based on muscle group focus.
- Hosted backend on Render and frontend on Vercel, enabling public access via [workout-ai-planner-one.vercel.app](https://workout-ai-planner-one.vercel.app).

### Path-Reachability | IntelliJ Typescript/Javascript, Z3

Academic • [github.com/mohangrewal101/Path-Reachability](https://github.com/mohangrewal101/Path-Reachability) • March 2024 - April 2024

- In a group of 5, created a static analysis tool used to visualize viable execution paths through a given TypeScript program, aiding in early detection of logic bugs. Users can upload a Typescript file through the user interface, and after some processing the tool displays the full list of possible execution paths through the program.
- The analyzer handles if statements with Boolean and number values, and can handle variable re-assignments, while exploring every single path.
- Contribute to the evaluation of paths by converting the path conditions into a usable Z3 input, so that Z3 can automatically process and return satisfiable and unsatisfiable paths.

### Form-Builder | IntelliJ Typescript, ANTLR

Academic • [github.com/mohangrewal101/Form-Builder](https://github.com/mohangrewal101/Form-Builder) • January 2024 - February 2024

- In a group of 5, engineered a robust domain specific language (DSL) form builder platform that allowed for the creation of quizzes/forms for students/teachers to use for either practice/testing.
- The DSL, based off of Typescript, follows a JSON format to allow for easy form-creation, and through 5 user studies the DSL implements many improvements.
- Tasks included using ANTLR to convert parse trees in an AST format, by utilizing the Visitor pattern so that the input could be run through an Evaluator more easily.

### Panic Titanic | Unity C#

Personal • [github.com/2020-21-UBC-Game-Dev-Team-3/team3-game](https://github.com/2020-21-UBC-Game-Dev-Team-3/team3-game) • September 2020 - March 2021

- Collaborated in a team of 10 to develop a 3D game similar to Among Us, focusing on voting systems and multiplayer aspects.
- Implemented real-time voting using remote procedure calls (RPCs) and updated tasks for all 10 players.
- Engineered an intricate voting system with enumeration and Photon integration for real-time updates.

## EDUCATION

### Bachelor of Science in Computer Science

University of British Columbia • Vancouver, BC • 2024