GURMUKH KHAROD

CO-OP SOFTWARE ENGINEER

CONTACT

778 - 798 - 8293

gsk13@sfu.ca

Surrey, BC V4N 2V1

gurmukh-kharod-portfolio.netlify.app/

github.com/GurmukhSKharod

EDUCATION

May 2022 - Present
SIMON FRASER UNIVERSITY

- BCs. Computer Science - Software Systems

Sep 2018 - Sep 2021
DOUGLAS COLLEGE

- Diploma in Computer Science & Information Systems

SKILLS

- **OOP Languages:** Java, C, C++, C#, JavaScript, Python, Haskell, Rust
- **Web Development:** ReactJS, NodeJS, NextJS, ExpressJS, HTML5, CSS3
- **Database:** MySQL, MongoDB
- **Testing & QA**: GoogleTest, Selenium, Hypothesis, libFuzzer, JUnit Testing
- **IDE:** Visual Studio, Visual Studio Code, Eclipse, IntelliJ, Android Studio
- **Embedded Systems:** I2C, GPIO, ADC, MCU R5, SPI, PWM, PCM, UART
- **ML & CV:** Pandas, NumPy, Pytorch, Scikit-learn, OpenCV, LSTM
- **Compilers & Systems**: LLVM IR, Flex/Lex, Bison/Yacc, AST/CFG/SSA
- **Additional Tools:** APIs, JSON, Git, Gitlab, VMs, CI/CD Pipelines
- **Platforms:** Linux, Windows, macOS

PROJECT EXPERIENCE

The Decaf Compiler May 2025 - Aug 2025
Principles of Compiler Design, SFU

- Built a full-scale compiler for a C-based language, using Flex/Lex, Bison/Yacc, and LLVM IR in C++, to implement AST/CFG/SSA, type checking and symbol table gen, achieving 100% codegen coverage.

Solar Sense - AI Solar Flare Forecaster May 2025 - Aug 2025
Artificial Intelligence, SFU

- Constructed an end-to-end forecasting application using React and Python, evaluating scikit-learn and PyTorch LSTM models to predict solar flare classes with 96% accuracy on real-time GOES flux data.

Multiplayer Gesture Embedded System Sep 2024 - Aug 2025
Embedded Systems, SFU

- Built a full-stack multiplayer service using C++ on the BeagleY-AI Embedded System and Node.js with React.js for the Web Client, allowing unlimited active game sessions via HTTP WebSockets.
- Architected client-server modules using OOP and API design patterns for user management and BeagleY-AI synchronization, and to automate tests and deployments with Git and GitLab CI/CD.
- Implemented hand gesture recognition using MediaPipe landmark detection cross-compiled with Bazel, achieving ~95% accuracy.

Package Management Server-Side App May 2022 - Dec 2022
Object Oriented Design in Java, SFU

- Developed a web server using the Java Spring Boot framework to create a JSON-based API with JUnit test coverage, accessible via dynamic endpoints and a Java Swing desktop application.

LEADERSHIP EXPERIENCE

Hackathons & Mentorship Sep 2023 - Sep 2025
SFU CSSS/SSSS and UBC CSSS, Vancouver, BC

- System Hacks 2024 - Winner: Built Chaos Keys, a web typing game.
- NW Hacks 2025 - Best UI finalist: Built GROC grocery price tracker.
- Fall Hacks 2025 - Mentored 30 teams on Git, APIs and deployment.

Lead Programmer of FRC Team - Robotics May 2017 - Jan 2020
North Surrey Secondary School, Surrey, BC

- Served as FRC Lead Programmer (2018) and Mentor (2017 - 2020), using C++ to build competition-ready machines, winning Canadian Pacific Regionals and competing at FIRST Championship Houston.

WORK EXPERIENCE

Product Tester Oct 2021 - May 2022
Best Buy Distribution Center, Langley, B.C.

- Collaborated with an 8-member team to manage 250+ daily units using Excel, reducing downtime and upholding quality standards.