

Gnanavel Premnath

Vancouver, BC, Canada | gpa21@sfu.ca | +1(604)-722-3592

[GitHub](#) | [LinkedIn](#) | gnanavelpremnath.com

Education

Simon Fraser University

Bachelor of Science in Computing Science

Burnaby, BC

July 2025 (expected)

Relevant course work: Data Structures/Algorithm, Discrete Mathematics, Database Management, Machine Learning, Computer vision

Experience

HCI Research Assistant

January 10, 2024 - present

Simon Fraser University | ixLab | Advised by Lawrence Kim

- Led in-person lab VR studies and conducted usability testing to identify and correct suboptimal posture during gameplay.
- Engineered interactive VR interventions, such as environmental cues and visual feedback, to guide users to correct posture.
- Synthesized quantitative data from VR trails to evaluate posture-correcting strategies and enhance user engagement.

Projects (Selected)

Hackathon (Red Sea App) | *Flask, Machine Learning, ReactJS, MapBox API*

March 9, 2024

- Designed and developed for conflict zones, the app strategically guides users along the safest routes to secure camp sites.
- Integrated forward geocoding and a K-Nearest Neighbours classifier to identify and recommend the safest paths.
- Secured second place (runner up) on the Hackathon track, effectively contributing to the team in a competitive environment.

Brain Tumour Detection | *Python, Machine Learning, PyTorch, OpenCV, Image Processing*

Dec 25, 2023

- Developed a neural network model to distinguish between malignant and benign tumours from MRI scans.
- Built and fine-tuned convolutional neural network architectures and implemented custom data loaders and training loops.
- Achieved high accuracy, contributing to advanced research in medical image analysis and potential clinical application.

Smart Self-Checkout (Group project) | *Python, Computer Vision, YOLO, Google Colab*

Jan 10, 2024

- Developed a self-checkout system using a custom-trained YOLO model to identify multiple grocery items by observation.
- Labelled a series of images and programmed the system to recognize between 25+ products with its corresponding price.
- Enhanced checkout speed by enabling simultaneous multi-product recognition, bypassing the need for single-item scans.

Conversational AI Assistant | *Flask, LangChain, NextJS, TailwindCSS, REST API, MySQL, AWS hosting*

Nov 8, 2023

- Implemented custom AI virtual assistant to support multiple chat sessions, seamless browsing between different sessions.
- Utilized LangChain to fine-tune the model, enabling the AI to learn and generate responses from newly added information.
- Used Next.js and Tailwind CSS for server-side rendering, managed data with MySQL, and hosted the application on AWS.

Volunteer Experience

Competitive Programming | *member*

January 2023

- Engage in collaborative problem-solving and algorithmic challenges to improve coding skills and computational thinking.
- Regularly attend workshops and discussions to learn advanced programming techniques and prepare for competitions.

Technical Skills

Languages: Python, Matlab, C#, C/C++, Java, HTML, CSS, JavaScript, SQL, PHP

Frameworks/Tools: React, NextJS, NodeJS, Express, MongoDB, Tailwind CSS, Docker

Others: Git, Google Cloud, AWS, LaTeX, Notion, Figma, Adobe Softwares, Github, Postman, GitHub

Certifications

Machine Learning Specialization by DeepLearning.AI, Stanford University (Coursera, 2023)