Gnanavel Premnath

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Technical Skills

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

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

Others: Git, Google Cloud, AWS, LaTex, Notion, Figma, Adobe Software, GitHub, Postman

Education

Simon Fraser University Burnaby, BC

Bachelor of Science in Computing Science ***Dec 2025 (expected)***

Relevant course work: Data Structures/Algorithm, Discrete Mathematics, Database Systems, ML, NLP, Computer Vision/Graphics

Experience

HCI Research Assistant ***January 10, 2024 - present***

Simon Fraser University | ixLab

- Selected by Ph.D. Stanford Graduate, Dr Lawrence Kim, to conduct research on developing ergonomic interfaces aimed at improving muscle musculoskeletal discomfort and injury risks during VR interactions.
- Led in-person lab studies and usability testing based on intervention scenarios, collected research data to optimize VR interfaces.

Projects

URBAN.I - GitHub ***March 25, 2024***

Hackathon 2024 *Technologies: Flask, LangChain, NodeJS, ReactJS, Chakra UI, SketchUp, Google Earth, REST APIs*

- Created a platform that connects architects and businesses to projects featuring places affected by historical catastrophe.
- Used prompt engineering and LLM within LangChain to filter up to millions of architect websites and suggests best-fitting architects based on user's architectural and sustainability preferences.
- Created a REST API using Flask and Node.js to establish HTTP communications between the server and client.
- Conducted comprehensive acceptance testing to validate the AI match-making algorithm and 3D model integration.
- Recognized by CEO of ViRA360 for most innovative tech of produHacks 2024, best MVP and most likely to become a start-up.

RED SEA - GitHub ***March 9, 2024***

Hackathon 2024 *Technologies: Flask, KNN model, NodeJS, ReactJS, MapBox API, REST APIs*

- Developed a mobile web-app that safely guides refugees in Gaza to camps by using real-time data on conflict zones.
- Utilized MapBox API forward geocoding techniques to convert user addresses into latitude and longitude coordinates.
- Implemented a KNN machine learning model to analyse the coordinates and assign danger scores, providing users with real-time information on conflict zones and potential risks.
- Used Postman to perform testing on database API calls to verify the accuracy of coordinates for precise location mapping.
- Employed Agile methodology for efficient app development ensuring smoother team communication and streamlined delivery.

BRAIN TUMOUR DETECTION - GitHub ***Dec 25, 2023***

Personal Project *Technologies: Python, PyTorch, OpenCV, Image Processing*

- Developed a convolutional neural network using PyTorch to classify MRI images for brain tumour detection.
- Implemented a dataset preprocessing pipeline leveraging OpenCV to convert MRI images into a uniform format for model training.
- Achieved 100% accuracy rate confirmed by a series of tests including model assessment with confusion matrix analysis and verification of prediction outputs against true labels.
- Boosted cost-effective preliminary diagnosis in healthcare by reducing time and resources required for MRI analysis.

Volunteer Experience

SFU Competitive Programming ***July 2022***

- Engage in collaborative problem-solving and algorithmic challenges to improve coding skills and computational thinking.
- Tutored first and second-year undergraduate students in data structures and algorithmic-based programming.