Gnanavel Premnath

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

Education

Simon Fraser University Burnaby, BC
Bachelor of Science in Computing Science ***July. 2025 (expected)***
Relevant course work: Data Structures/Algorithm, Discrete Mathematics, Database Management, Machine Learning, Computer vision

Projects (Selected)

Brain Tumour Detection | *Python, Machine Learning, PyTorch, OpenCV, Image Processing* ***Dec 25, 2023***

- Developed and trained a neural network model to distinguish between malignant and benign brain tumors from MRI scans.
- Built and fine-tuned convolutional neural network architectures in PyTorch.
- Implemented custom data loaders and training loops to better understand neural network fundamentals.
- Achieved 100% accuracy upon training the model by using an Adam optimizer and Binary Cross-Entropy Loss.

Spell-Check Algorithm | *Python, NLP, Damerau-Levenshtein, DistilBERT* ***Jan 17, 2024***

- Improved DistilBERT base model's accuracy from 0.23 to 0.80 without the use of spell correction module or model.
- Created a function that Incorporates Damerau-Levenshtein distance for enhancing typo's prediction.
- Enhanced the model further by implementing capitalization and apostrophe handling to maintain proper noun & contractions.
- Increased Top-K (selection set) and added a second predictive layer on the function for more precise prediction.

Smart Self-Checkout | *Python, Computer Vision, YOLO, Google Colab* ***Jan 10, 2024***

- Developed a self-checkout system using a custom-trained YOLO model to identify and price multiple grocery items.
- Labelled a series of images and trained using Google Colab with free GPU.
- Programmed the system to recognize between 25+ unique products with its corresponding price.
- Achieved accurate checkout experiences by incorporating automated price calculation based on detected items.

Conversational AI Assistant | *Flask, LangChain, NextJS, TailwindCSS, REST API, MySQL, AWS hosting* ***Nov 8, 2023***

- Designed and implemented custom AI virtual assistant using Flask and GPT-4 OpenAI API.
- Engineered the application 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.

Multimedia Review Platform | *MEAN Stack, TMDB API, Node.js, JWT Authentication, GCP Hosting* ***Dec 1, 2022***

- Implemented a Movie & TV show review system using MEAN stack.
- Integrated TMDb API with Node.js for data retrieval on movies/TV shows and created a tag-based genre search.
- Implemented JWT for user authentication and utilized CRUD operations for user management.
- Hosted the application on GCP (Google Cloud Platform).

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)