Gajanan Vigneswaran

Whitby, ON
(647) 451-9995 | gajanan.vig@gmail.com | github.com/gajanan229

Summary

Third-year Computer Science student at Toronto Metropolitan University with a 4.11/4.33 GPA and expertise in machine learning, data-driven analytics, and full-stack development. Skilled in Python, SQL, and data visualization, with hands-on experience building solutions to complex problems. Proven ability to translate complex datasets into actionable insights, optimize processes, and collaborate in team environments.

Skills and Interests

- **Programming Languages:** Python, Java, C, HTML, CSS, JavaScript
- **Developmental tools:** Git/GitHub, Unix/Linux environments, React.js, Node.js, TensorFlow, and Keras, Scikit-Learn
- **Interests:** AI, Machine Learning, Web Development, Cybersecurity

Education

Toronto Metropolitan University (formerly Ryerson University) Toronto, ON
Bachelor of Science in Computer Science (BS) **GPA 4.09/4.33** Sep 2023 - Apr 2027

Relevant Coursework:

- Programming Courses: Introduction to Computer Science in Python, Introduction to C, Introduction to UNIX, C and C++, Object Oriented Programming in Java, Object Oriented Analysis and Design in Java, digital system design with VHDL, computer architecture with assembly
- Algorithm Courses: **Data Structures and Algorithms**
- Mathematics Courses: Calculus I - II, Linear Algebra, Discrete Mathematics, Probability and Statistics I with R

Work Experience

Toronto Metropolitan University Translational Medicine Laboratory Toronto, ON
Research Assistant May 2024 - Aug 2024

- **Awarded** the Undergraduate Research Opportunities Award from the TMU Faculty of Science.
- Developed a deep learning model to improve **multimodal medical image registration**, a process that aligns medical images from different sources (e.g., MRI and CT scans) to reduce costs while improving diagnosis and treatment.
- Conducted a **literature review** on deep learning techniques for image registration, analyzing 25+ research papers.
- Designed and implemented a **Siamese Network** to learn an image similarity metric for more precise alignment.
- **Presented** project proposals to my professor and led knowledge transfer sessions for incoming master's students.
- **Technologies:** Python, TensorFlow, NumPy, matplotlib, Jupyter Notebook.

Estée Lauder Markham, ON
Process Operator Jul 2021 - Aug 2021

- Maintained production flow and met operational targets by efficiently managing process controls.
- Participated in safety audits and emergency response protocols to uphold workplace safety standards.
- Ensured strict compliance with safety, and quality regulations across multiple processing units.
- Rotated across various production lines, gaining versatility in handling different operational tasks.

Charley Ronick's Pub and Restaurant, Whitby, ON
Food Packer and Prepper Jul 2021 - Aug 2021

- Packed and prepared food for delivery services, and assisted wait staff with food delivery and order-taking during peak.
- Operated efficiently in a high-pressure, fast-paced environment, balancing multiple tasks while upholding service quality standards.
- Communicated effectively with kitchen and service staff to ensure accurate and timely order fulfillment.
- Delivered exceptional customer service by proactively addressing special requests and ensuring order accuracy.

Projects

Movie Rating and Recommendations Website

- Developed a Flask web app for movie ranking and recommendations, with user authentication, a movie data API, and SQL database management via SQLAlchemy.
- Engineered a content-based machine learning recommender system using Scikit-Learn.
- Designed a user-friendly platform for movie enthusiasts, enabling personalized rankings and recommendations.
- Technologies used: **Python**, Scikit-Learn, SQL, API integration, HTML, CSS, Bootstrap, Flask (back-end)

Digit Recognition App

- Trained a convolutional neural network on a dataset of 60,000 hand-written digits using TensorFlow and Keras.
- Implemented a user-friendly GUI using Tkinter, enabling users to draw digits for recognition.
- Technologies used: Python, TensorFlow, NumPy, Tkinter GUI library.

Image Watermarking Desktop App

- Developed a user-friendly graphical interface for adding and saving custom watermarks to images
- Designed the app using object-oriented design principles to make the code modular, scalable, and easier to read
- Technologies used: **Python**, Tkinter GUI library

ASL Flashcard App

- Developed a Flashcard application for learning American Sign Language (ASL) with a dynamic word repetition based on user performance.
- Integrated Selenium for word lookups in ASL, enhancing learning with quick access to relevant resources.
- Technologies used: Python, TensorFlow, NumPy, Tkinter GUI library.

AI Job Application Email Assistant

- Developed an AI assistant with Langchain to automate personalized job application emails, reducing drafting time.
- Engineered a Retrieval-Augmented Generation (RAG) pipeline analyzing resumes and job descriptions (PDF/DOCX) to generate highly relevant email content using OpenAI (gpt-4o).
- Designed an intuitive interface featuring document uploads, key skill extraction, editable outputs, and copy-to-clipboard functionality for a seamless user experience.
- Technologies Used: Python, Streamlit, Langchain, OpenAI (ChatOpenAI, gpt-4o), Sentence Transformers, FAISS.

Bookstore Project

- We collaboratively built a user-friendly GUI for an online bookstore, featuring user profiles and efficient order management.
- Designed UML class and use case diagrams to outline system structure and user interactions
- Technologies used: **Java**, JavaFX front-end, NetBeans

Family Travel Map Tracker

- Developed an interactive web application for tracking visited countries, allowing users to add family members and countries they've travelled to, resulting in a personalized and visual record of their travel history.
- Built an interactive web app for tracking visited countries, allowing users to add family members and create a personalized visual travel history.
- Designed a dynamic UI with EJS templates, enabling country colours to update based on the user for an engaging experience.
- Tech stack: **JavaScript**, Node.js, Express, EJS, PostgreSQL, HTML, CSS.

RESTful Blog API & Client with Authentication

- Developed a RESTful API with Node.js, Express, and PostgreSQL for blog post CRUD operations.
- Integrated user authentication with Passport.js, including local and Google OAuth strategies.
- Ensured secure password storage and validation using bcrypt.
- Restricted post management actions to authenticated users based on their roles.
- Built a dynamic front-end using EJS to display and manage blog posts interactively.
- Technologies used: JavaScript, Node.js, Express, PostgreSQL, EJS, Passport.js, Axios, HTML, CSS.

Notes App with the PERN stack

- Built a RESTful API with Node.js, Express, and PostgreSQL to enable user-specific CRUD operations for notes.
- Developed a React frontend with secure JWT-based authentication, allowing users to manage personal notes dynamically.
- Implemented authentication middleware to restrict data access, ensuring security and user isolation.
- Designed a scalable architecture integrating secure session handling and token verification for seamless user experience.
- Technologies used: **JavaScript**, PostgreSQL, Express.js, React, Node.js, bcrypt, JWT, HTML, CSS.

Portfolio Blog with AI Chatbot Integration, gajanan.live

- Developed a full-stack personal portfolio blog using React.js and Node.js, enabling dynamic project ranking and filtering that resulted in an interactive, visually appealing showcase of projects.
- Engineered a robust backend with Express.js and PostgreSQL to manage project data efficiently, ensuring seamless CRUD operations and real-time updates.
- Implemented secure user authentication and admin controls, empowering authorized users to add, update, and rank projects while enhancing content management and security.
- Integrated an AI-powered chatbot using OpenAI's Chat API to answer user queries about skills, work experience, and projects, resulting in enhanced user engagement and seamless information access.
- Technologies used: **JavaScript**, React.js, Node.js, Express.js, PostgreSQL, Tailwind CSS, HTML, CSS.

AI-Powered Resume & Cover Letter Generator

- Developed an intelligent application that automatically generates tailored resumes and cover letters by analyzing job descriptions and master resumes using multi-agent AI workflows orchestrated through LangGraph.
- Built a comprehensive Streamlit web interface with real-time content editing, PDF generation capabilities, and interactive workflow management across four distinct stages.
- Integrated Google Gemini with structured output validation using Pydantic models to ensure reliable content generation while implementing custom rate limiting to respect API constraints.
- Designed modular architecture with comprehensive test coverage, including document parsing, AI agent functionality, and end-to-end workflow validation.
- Technologies used: LangGraph, Google Gemini API, Streamlit, LangChain, FAISS, Pydantic, PyPDF, python-docx

VeriFYP: AI-Powered TikTok Fact-Checking System

- Engineered a multi-agent fact-checking system using LangGraph and Google Gemini AI to combat TikTok misinformation with automated content analysis and evidence-based response generation.
- Implemented autonomous research agents using Tavily API for evidence gathering, plus "red team" critique agents for response validation and accuracy review.
- Built a React interface with real-time progress tracking, enabling seamless monitoring of AI analysis stages.
- Technologies Used: Python, **LangGraph**/LangChain, **Google Gemini API**, Flask, **React**, TypeScript, Tavily API.