Avaneesh Madaram

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Education

University Of Waterloo **Sep 2024 - April 2026**
Master's In Data Science And Artificial Intelligence *Waterloo, Ontario*

University Of Ottawa **Sep 2019 - Dec 2023**
Bachelor's In Applied Science, Software Engineering *Ottawa, Ontario*

Skills

Languages: Python, SQL, R, SAS, TypeScript, JavaScript, Java, C++, C#, .NET, MATLAB
Frameworks: HuggingFace, Pandas, NumPy, SciKit-Learn, TensorFlow, PyTorch, Hadoop, Spark, GGPlot, Matplotlib, Seaborn, Tailwind CSS, React, Node.js, Nest.JS, RxJS
Technologies/Tools: OpenAI API, Lang Chain, Git, Tableau, PowerBI, Docker, Jira, Confluence, Figma

Work Experience

Propel Holdings **May 2025 – August 2025**
Data Scientist | ***Python, Scikit-Learn, OptBinning, Shap, Java, LinuxOS*** *Toronto, Ontario*

- Updated current predictive underwriting models using **XGBoost** to identify potential loan defaults, increasing model accuracy by **5%**.
- Automated hyperparameter tuning via **Optuna** with cross-validated search spaces; reduced **multicollinearity** through correlation/VIF checks and feature pruning.
- Applied **SHAP** and **partial dependence diagnostics** to identify key drivers, weak borrower segments, and refine policy thresholds.
- Engineered a **robust feature pipeline** with optimal binning, outlier handling, and targeted encodings to convert raw data into production-ready inputs.

VectorSolv **May 2023 – August 2023**
Full Stack Developer | ***Angular, Firebase, GCP, NestJS, RxJS, LinuxOS*** *Gatineau, Quebec*

- Developed the customer warranty page using **Angular** and **NestJS** through Shape-Up Methodology, which streamlined the user warranty claims process.
- Successfully expanded email compatibility to a broader range of devices, achieving a **50%** increase in accessibility.
- Debugged and resolved software defects in front-end and back-end components, ensuring **smooth user experiences.**
- Utilized **RxJS** observables and operators to manage asynchronous operations, such as **API calls** and user interactions.

Statistics Canada (Canadian Housing Statistics Program) **September 2022 – December 2022**
Data Analyst | ***SAS, SQL, Python*** *Ottawa, Ontario*

- Updated **SAS** and **SQL** programs to the new environment, eliminating over **10 months** of data processing time.
- Successfully integrated raw provincial housing data into a tool, enabling remote execution of **SAS** processes.
- Established groundwork to optimize a 7 step **data processing pipeline**, facilitating efficient data transfer to analysts.
- Played a pivotal role in the Standardization Team, contributing to one of their **highest-priority** data projects in 2022.

Statistics Canada (Electronic Questionnaire) **January 2021 – August 2021**
Programmer Analyst | ***C#, SQL, jQuery, HTML, CSS, Python*** *Ottawa, Ontario*

- Engineered and tested Electronic Questionnaire software for government clients using **JavaScript, C#, CSS, jQuery**.
- Created a **Python** script to develop test cases leading to a **50%** decrease in testing time.
- Tested software using data pulled from **SQL** queries used to test software calculating the employment rate of Canada.
- Redesigned and tested software while working in an **Agile** environment.

Software for Love **April 2020 – March 2023**
Project Manager/Software Engineer | ***Gatsby, React, HTML, CSS, PostgreSQL*** *Ottawa, Ontario*

- Led the redesign of the **SoftwareForLove** website using **Figma** and implemented the design using Gatsby.
- Initiated an **agile** environment and delegated tasks using **JIRA** in an 8 person team.
- Ensured a codebase with over **80%** code coverage for the website, enhancing software reliability and performance.
- Constructed the donation page using **Stripe**, enhancing fundraising capabilities resulting in **$200** raised for charity.

Projects

LLM Normative Reasoning | **Python, Llama, Perplexity** **September 2025 - December 2025**

- Built a **multi-agent LLM pipeline** (Llama 3.1/3.2, Perplexity) with role-based prompts for debate, coordination, and consensus.
- Curated and relabeled **privacy reasoning benchmarks** to capture normative vs. descriptive labels.
- Reproduced and benchmarked **state-of-the-art CI approaches**, evaluating model performance across descriptive and normative tasks.
- **Engineered contextual integrity heuristics** and evaluation harnesses to improve ethical reasoning in LLMs.

Twitter Sentiment Analysis Project | **Python, Hugging Face Models, Streamlit** **February 2025**

- Developed a sentiment analysis model using **Hugging Face** transformers to analyze audience reactions to the Half Time Show.
- Fine-tuned a pre-trained **NLP model** to classify sentiments and visualized trends using **Matplotlib/Plotly**
- Developed a dynamic dashboard using **Streamlit** to visualize real-time sentiment trends and analysis
- Collected and preprocessed live social media data from X using popular and relevant hashtags

March Madness Prediction Model | **Python, SciKit, Pandas, NumPy** **September 2024 - December 2024**

- Evaluated the accuracy of **Neural Network Models** predicting March Madness Games
- Experimented with **Multilayer Perceptrons and Gated Recurrent Units** to predict tournament outcomes.
- Achieved the highest accuracy of **89% for correctly predicted games** for the 2021 season.
- Utilized a feature-rich dataset, including historical team performance, player stats, and seed rankings.

Database Project | **Node.js, SQL, Selenium, Google Cloud Console** **February 2022 - March 2022**

- Constructed a Patient Management System for Dentists using **PostgreSQL** making it easily accessible and scalable.
- Reduced the time for doctors to book patient appointments by **75%**.
- Implemented patient history, dentist appointments, insurance claim and cancel appointment's function using **Node.js**.
- Integrated reporting tools for **patient analytics** and **clinic performance metrics**.