

Madhumitha R

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Professional Summary

Machine Learning Engineer and Full-Stack Developer with 1+ years of experience in Python, Web Development, Prompt Engineering, and end-to-end ML lifecycle—from data preprocessing to model training—with focus on data analysis and clean UIs.

Experience

Tamil Nadu e-Governance Agency

Junior Machine Learning Engineer - NLP

Chennai, Tamil Nadu

Apr 2025 – Present

- Developed and maintained **Python-based RESTful APIs** using **Flask** and **MySQL**, designing dynamic query-driven endpoints to automate team list generation for a **Facial Recognition Attendance System**.
- Generated high-quality **ground truth data** by annotating over **1,000 crop images** using **Label Studio** and **CVAT**. Conducted **data wrangling, preprocessing, and cleaning** on a **50K-image dataset**, including **duplicate removal, low-quality image filtering**, and automated validation through **Python scripts**, ensuring high **data integrity** and training data quality.
- Led and mentored a team of interns by standardizing **CVAT annotation workflows**, conducting **quality audits**, and successfully delivering an **image labeled crop dataset**.
- Engineered **full-stack web applications** using **Node.js, React.js, and Tailwind CSS**, delivering workflow tracking dashboards, role-based access control, and administrative management features.
- Designed and trained a **Deep Learning CNN** using **PyTorch** for crop/non-crop classification, improving model accuracy from **72%** (Random Forest baseline) to **97.33%** through data optimization and overfitting mitigation techniques.
- Developed a bilingual **AI-powered pest detection application** with **ReactJS** frontend integration, supporting real-time inference, single-image prediction, and batch image processing workflows.
- Created a **Python-based address standardization and data validation utility** that generated structured **JSON reference datasets** for **38 Tamil Nadu districts**, improving database quality and reducing invalid address records.

Zidio Development

Full Stack Developer Intern

Bengaluru, Karnataka

Jan 2025 – Apr 2025

- Built a **MERN-stack task management application** with secure **user authentication**, responsive **React.js, Tailwind CSS**, and **Material-UI** frontends, and **RESTful CRUD APIs** using **Node.js, Express.js, and MongoDB**. Implemented **user dashboard modules** enabling real-time **task creation**, editing, dynamic prioritization, and lifecycle completion tracking.
- Strengthened expertise in **software development, client-server architecture, API development and integration, database design, debugging, performance optimization, and full-stack application development** through hands-on implementation of production-ready features.

Skills and Interests

Programming Language and Database: Python, MySQL

Frontend Development: HTML, CSS, JavaScript, Bootstrap, ReactJS, Tailwind CSS

Concepts: RESTful APIs, Machine Learning, Data Preprocessing, Data Annotation, Prompt Engineering, Web Development

Tools: Git, GitHub, VS Code, Jupyter Notebook, Google Colab, Spyder, Postman, Figma, ChatGPT, Claude, Google Gemini, Google AI Studio, GitHub & Microsoft Copilot

Libraries & Frameworks: NumPy, Pandas, Matplotlib, Seaborn, Tkinter, Streamlit, Flask, PyTorch, Scikit-learn

Interests: UI/UX Design, Calligraphy, Painting, Mandala Art, DIY Projects

Achievement

Recipient of **“Certificate of Recognition”** by Lady Doak College. (Apr 2022)

Projects

SmartBank - Modular Banking Backend System

[Repository Link](#)

- Engineered a **database-driven banking application** using **Python, Flask, and MySQL**, featuring **authentication and authorization**, customer account management, password reset workflows, administrative controls, and transaction processing through simulated account-to-account fund transfers.

Language Translator using Tkinter and Deep Translator

[Repository Link](#)

- Built a **desktop Language Translator Application** using **Python, Tkinter**, and the **deep-translator** library, enabling multilingual text translation through an interactive GUI with dynamic language selection and automated translation workflows.

Myntra Sales Analysis

[Repository Link](#)

- Conducted **data analysis and exploratory data analysis (EDA)** on a **Myntra sales dataset** using **Python, Pandas, and NumPy**. Developed interactive and statistical **data visualizations** with **Matplotlib** and **Seaborn** to uncover trends, generate business insights, and support data-driven decision-making.

Education

The American College

Master of Computer Applications (CGPA: 8.0 / 10)

Sept 2022 – Apr 2024

Madurai, Tamil Nadu

Lady Doak College

Bachelor of Science in Computer Science (CGPA: 8.3 / 10)

Jun 2019 – Apr 2022

Madurai, Tamil Nadu