

Manthra Natarajan

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EDUCATION

The University of Texas at Dallas

Bachelor of Science in Computer Science, GPA: 3.7, AES Scholar

Aug. 2023 – May 2026

Richardson, TX

PROJECTS

ExpressifAI | *Python, OpenCV, PyTorch, google-Gemini API*

Feb 2025 – Present

- Developed a webcam application to detect facial emotions and actions using **DenseNet-161** and SlowFast-r50
- Integrated a semantic generation pipeline using **Gemini API** to translate detections into human descriptions
- Implemented post-session analysis that summarizes all emotions and actions into digestable semantic report

FinanceFlow | *JS, next-auth, Next.js, NodeJS, Pinata, ReactJS, shadcn/ui, TS*

Nov 2024

- Built a financial dashboard with **React** and TypeScript, using **Pinata** for secure data storage
- Displayed real-time trending stock patterns and integrated a chatbot using **OpenAI** and **shadcn/ui**
- Implemented a feature that embeds articles on fintech and added a **next-auth** system to enhance reliability

GuardAI | *Python, JS, React, CSS, Prolog, C, PowerShell*

Jan 2025

- Developed a message analysis system utilizing **NLP** to detect harmful messages, enhancing safety
- Implemented **sCASP** to perform non-monotonic reasoning to detect harmful text, leveraging **Prolog-based** constraint logic programming to infer implicit threats and toxicity detection
- Practiced modular architecture with separate backend and frontend components, increasing scalability

FratTracker | *Express.js, google-Gemini API, MongoDB, NodeJS, ReactJS, TS*

Nov 2024

- Developed a budgeting planner using React and **TypeScript**, streamlining operations for a fraternity
- Automated backend workflows with **NodeJS** APIs, enhancing transaction speed and accuracy
- Integrated a budget health score and generated a readable pie chart using Google Gemini API

EXPERIENCE

Software Developer Intern

May 2025

CVS Health | Vertex AI, Google Cloud Platform, Google Gemini, BigQuery, SQL, NumPy, Python

Hybrid

- Developed a drug name matching system using **VertexAI text embeddings/row** and **cosine simmilarity** to identify matches between inconsistent drug records, increasing productivity to 66% given a single dataset.
- Implemented a simmilarity score system using **NumPy cosine_sim** and a defined threshold of 0.8 to reduce false positives in **BigQuery** master table updates.
- Utilized **SQL queries** in **Google Cloud Platform** to format data to prepare for the AI text embeddings.

Undergraduate Teaching Assistant

Dec 2024 — Present

CodePath

Remote

- Guided groups of 5-6 students through solving LeetCode challenges and DSA with Python and Java
- Assisted students 4hrs/week with Technical Interview Prep for beginners during my office hours
- Collaborated closely with CodePath staff to support and improve the student learning experience

Software Developer Intern

Mar 2022 — Dec 2022

Brains4Drones (Startup)

Plano, TX

- Developed an application SeeMore using **OpenCV** with Python for video/image data processing
- Spearheaded a **Python** script to detect corrupted and/or empty files in pre-labeled drone images
- Parcitedipated in tabling events in Ohio to demo the application to a prospective clients

TECHNICAL SKILLS

Languages: Java, Python, C, C++, MySQL, JavaScript, TypeScript, HTML, CSS, Kotlin, Assembly, Bash

Frameworks: Node.js, Flask, MongoDB, Pinata, Material-UI, .NET, Next.js. Junit

Developer Tools: Git, Docker, Google Collab, VS Code, Eclipse, MobaXTerm, Figma, Jira, Jupyter, VertexAI

Libraries: Pandas, NumPy, Matplotlib, sci-kit-learn, OpenCV, TensorFlow, PyTorch, shaden