Manthra Natarajan

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EDUCATION

The University of Texas at Dallas   **Aug. 2023 – May 2026**
Bachelor of Science in Computer Science, GPA: 3.7, AES Scholar   *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, nezt-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 scaleability

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

Dr. A-Eye | *CNN, Flask, JavaScript, Python*   Aug 2023 – Dec 2023
- Collaborated to develop a **CNN** model for detecting the stage of diabetic retinopathy, aiding in early diagnosis
- Integrated the model into a **Flask** web interface, supporting doctors in fast paced clinical settings
- Presemted the model to a panel of judges, receiving positive feedback for its potential impact on patient care

EXPERIENCE

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 Engineering 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
- Parcitipated in tabling events in Ohio to demo the application to a prospective clients

Lead Instructor   Oct 2023 — March 2025
iCode   *Plano, TX*
- Mentored students on the basics of Java programming, OOP, python, and Arduino
- Managed classes of 16 students, handled summer camps, and increased enrollment by 50%
- Communicated with my director about grading and classroom issues

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, Autodesk Inventor
Libraries: Pandas, NumPy, Matplotlib, sci-kit-learn, OpenCV, TensorFlow, PyTorch, shadcn