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, Gradio, google-Gemini API*   Feb 2025 – April 2025
- 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 **Gradio** for an interactive UI, allowing real-time emotion and action analysis with high accuracy

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

EXPERIENCE

Software Developer Co-op (Part Time)   Aug 2025 — Present
Smart Data Solutions | *Python, SQL, AWS, React*   *Remote*
- Engineered a HIPAA-compliant automated orchestration pipeline using **Camunda BPM** and **n8n** logic on **AWS** for proactive claim anomaly detection.
- Developed a responsive monitoring dashboard, integrating API endpoints to visualize claims data and anomalies.
- Architected the Data Model for the monitoring solution to enable dynamic visualization and efficient reporting of key claims metrics.

Software Developer Intern   June 2025 — Aug 2025
Citi | *Kotlin, XML, Android Studio, Gson*   *Irving, TX*
- Developed a stand-alone dynamic tile rendering system in **Kotlin** for Citi's **Android** app using a **RecyclerView**, **ViewHolders**, and JSON-driven (pulled from **logcat**) parsing using **Gson**.
- Integrated all FICO tile variations with custom builtin **POJO classes**, resolved rendering issues, ensured **CDS design compliance**, and designed it for seamless integration of future tiles.
- Debugged and rendered advanced UI elements like CDSGauge, leveraging **constraint layouts**, **view invalidation**, and **layout inspector tools** for **30+** feature teams to preview tile history and boost customer engagement.

Software Developer Intern   May 2025
CVS Health | *Vertex AI, Google Cloud Platform, Google Gemini, BigQuery, SQL, NumPy, Python*   *Irving, TX*
- 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.
- Utilized **SQL queries** in **Google Cloud Platform** to format data to prepare for the AI text embeddings.
- 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.

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: AWS, Git, Docker, Google Collab, VS Code, Eclipse, MobaXTerm, Figma, Jira, Jupyter, VertexAI
Libraries: Pandas, NumPy, Matplotlib, sci-kit-learn, OpenCV, TensorFlow, PyTorch, shadcn