Praveen Raj **Mohanraj**

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**EDUCATION**

**Masters in Computer Science** Apr 2025

Ira A. Fulton School of Engineering, Arizona State University (Tempe Campus) CGPA: 4.00

Relevant coursework: Planning/Design in AI (Grade A+), Data Visualization (Grade A+), Semantic Web Mining (Grade A+)

**B.Tech. in Computer Science and Engineering**

Vellore Institute of Technology (Vellore Campus) CGPA: 3.58

Relevant coursework: Data Visualization (Grade A), Database Management (Grade A), Machine Learning (Grade A+)

**SKILLS**

**Programming Languages/ Frameworks**: Python, SQL, JavaScript, Java, ReactJS, Flask, MongoDB, Node.js, Express

**Machine Learning:** Neural Networks, Deep Learning Models, LLMs, Foundation Models, Transformers, RAGs, AI Agents, Prompt Engineering, Fine-tuning, Model Context Protocol (MCP), TensorFlow, PyTorch, Hugging Face Transformers, LangChain

**Data Tools:** Qdrant, FAISS, Pinecone, PostgreSQL, MySQL, NoSQL, CSV Parsing, Vector Stores, Scikit-learn

**General**: Git, Amazon Web Services (EC2, Route53), Microsoft Office suite, CI/CD, Microservices

**WORK EXPERIENCE**

**Energy Analyst | Energy Efficiency Center, Arizona State University** Nov 2023 – April 2024 *Python, SQL, Automation, Microsoft Excel, Data Analytics, Artificial Intelligence*

* Analyzed energy bills and 15-min interval data to uncover 35% average savings across audited facilities.
* Automated processing of energy bills using Python, increasing data handling efficiency by 10x and reducing errors by 95%.
* Led 15+ on-site assessments, delivering actionable recommendations through ASHRAE audit reports.
* Mentored junior interns at ASU EEC during onboarding for energy auditing procedures and automation tools.

**Software Developer |** [**Energy Efficiency Center**](https://eec.asu.edu/about/meet-the-team/)**, Arizona State University** May 2024 – Aug 2024

*JavaScript, React JS, Node.js, Express, MongoDB, AWS EC2, Dynamic Dashboards, Microservices, Performance Optimization*

* Designed and developed the PIEE website for industrial energy projects, boosting efficiency 200×.
* Integrated APIs and databases (Node.js, Express) to process large datasets efficiently, reducing page load times by 40%.
* Developed CI/CD integration to streamline deployment and testing processes, ensuring smooth continuous integration.

**Research Intern | The Centre of Excellence for Road Safety – IIT Madras**  Dec 2022 – Jun 2023

*JavaScript, Tensorflow, Pytorch, Deep Learning, Computer Vision, Real-time Detection, Python, OpenCV, Artificial Intelligence*

• Designed an interactive map with layer control and tooltips that visualize Indian Roads and Administrative Boundaries using Leaflet.js and helped visualize nested JSON data using D3.js.

* Trained neural network pipeline using a live data feed from traffic cameras on roads, achieving near-zero delays.
* The pipeline can detect objects using the YOLOv7 model (f1 score—73.2%), classify traffic signals using the MobileNetV3 model (accuracy—97%), and detect scene text using the CRAFT and PARSeq models (accuracy—89%).

**PERSONAL PROJECTS**

**SQL-RAG Agent |** [**GitHub**](https://github.com/praveen-raj-m/sql-rag) **|** *Python, Ollama, RAG, MCP, JSON Automation* 2025

* Built an offline Retrieval-Augmented Generation (RAG) agent using CodeLlama for natural language to SQL translation.
* Implemented Model Context Protocol (MCP) with automated metadata extraction, improving SQL accuracy by 30%.
* Created a no-code UI for interactive schema creation, CSV ingestion, and foreign key linking, enabling full database coverage with natural language interaction.

**Compliance AI: Policy Comparison Tool |** [**GitHub**](https://github.com/praveen-raj-m/compliance-ai) **|** *Python, React, Ollama, Qdrant, RAG, MCP* 2025

* Developed a full-stack LLM-based assistant to query and compare compliance standards (GDPR, ISO 27001).
* Integrated semantic chunking, vector search with Qdrant, and Model Context Protocol (MCP), improving response traceability by 50% and reducing hallucination by 60%.
* Used Ollama + Hugging Face models with dynamic prompt injection and file parsing for real-time, secure policy analysis.