

# RAHUL BABU

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## SUMMARY

Software Engineer with 3 years of experience building AI-driven full stack application and analytics. Designed and deployed LLM-powered research assistants and NLP pipelines using Python . Delivered full-stack solutions with using React, JavaScript, Python, Java, and hybrid databases (PostgreSQL, MongoDB) while automating ETL pipelines. Deployed containerized microservices on AWS with CI/CD. ([AWS Certified Solutions Architect – Associate](#)).

## EXPERIENCE

**HOVIAN INC.** | SOFTWARE ENGINEER | CUCAMANGO, CA, US July 2025 - Dec 2025

- Implemented a hybrid backend communication layer using **Node.js** with **REST (HTTP) APIs + WebSockets** to stream real-time Outlook notifications and support AI-generated responses
- Built and maintained the desktop UI (**JavaScript, HTML5, CSS3**), shipping 10+ reusable renderer views (chat, settings, toggles) with tabbed/multi-view navigation for notification + workflow management.
- Developed a **Python**-based AI media module to generate an “Animated GIF” feature (sprite-sheet slicing, pixelation using PIL, GIF assembly using imageio), producing animated outputs from text prompts.

**ASU DECISION THEATER NETWORK** | SOFTWARE DEVELOPER | TEMPE, AZ, US May 2024 - May 2025

- Implemented an ML pipeline in **Python and R** to preprocess and analyze 50K+ census and public health records, training and evaluating **XGBoost + ensemble models** to generate regional risk predictions.
- Performed geospatial opioid risk analysis using **PostGIS**, writing spatial **SQL** (proximity/region joins, hotspot-style aggregations) to map overdose patterns and generate region-level insights for the dashboard.
- Delivered a real-time risk dashboard (**React + TypeScript**) backed by **FastAPI** services, containerized with **Docker** and deployed on **Google Cloud Run** for low-latency filtering.
- Automated data collection using **Python and Selenium**, gathering 1,000+ healthcare survey responses and 795 climate policy documents, analysis and evaluation to measure LLM resilience on heat and healthcare prompts.
- Deployed a **RAG**-based chatbot using **Llama 3, LangChain**, and **Chroma** on Jetstream2 HPC to summarize 100+ interview transcripts for the Maricopa County and support ASU’s LLM resilience research.

**INNOHAT SYSTEMS** | SOFTWARE DEVELOPER | CHENNAI, TN, INDIA Jan 2022 - July 2023

- Designed hybrid storage using **PostgreSQL** for transactions and **MongoDB** for product metadata and user reviews; reduced schema-change overhead while keeping financial data ACID-compliant.
- Built **Flask REST APIs** for checkout, refunds, and shipment events; wrapped 200+ test cases in **pytest**, reaching 85% coverage and minimizing regression bugs.
- Orchestrated **ETL pipelines** in Python (**pandas + SQLAlchemy + PyMongo**) to merge order history with review sentiment data; optimized pipeline runtime by 40% on 20M+ rows + 5M+ docs.
- Built internal and customer facing UI modules using **Angular + TypeScript**, implementing component-based pages and API integration to support operational workflows.
- Containerized services with **Docker** and deployed on **AWS (EC2, RDS, S3, DocumentDB)** with CloudWatch monitoring to maintain stability during seasonal traffic spikes.

## SKILLS

**Backend & API Development:** Python (Pandas, NumPy, Async Programming), Django, Flask, FastAPI, Java, RESTful API Development, Microservices, Scalability, Database Management (SQL, PostgreSQL, MySQL).

**Frontend & Full-Stack Development:** Angular, React, TypeScript, HTML5, CSS3, JavaScript (ES6+), State Management, Component Architecture, Lazy Loading, Node.js & Express, GraphQL, API Integration, Responsive UI Design, Webpack.

**Machine Learning & AI Engineering:** LLM Development (GPT-4, LLaMA), LangChain, RAG Frameworks, Prompt Engineering & Optimization, TensorFlow, PyTorch, Scikit-learn, XGBoost, Hugging Face Transformers, spaCy (NLP).

**Cloud, Data Engineering & DevOps:** AWS, Data Pipelines (ETL, Ingestion, Validation, Warehousing, Transformation), Data Lake, Data Governance & Quality, Git/GitHub/GitLab.

## EDUCATION

**Arizona State University** Aug 2023 - May 2025  
Master of Science in **Computer Science** - CGPA 3.83/4 Tempe, AZ, USA

**Madras Institute of Technology, Anna University** July 2019 - June 2023  
Bachelor of Engineering in **Computer Science** - CGPA 8.69/10 Chennai, TN, India