

Nithil Eshwar Mani

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Software Engineer with end-to-end experience in **building AI systems, cloud-native applications, and analytics solutions** at scale, seeking to drive impactful, data-driven innovation. Skilled in **LLM pipelines, RAG systems, MLOps, distributed cloud platforms, and full-stack development** with proven ability to improve **model performance, optimize workflows, and deploy scalable solutions** using **AWS, Python, and modern AI frameworks**.

EDUCATION

University at Buffalo 2025
Master of Science (Data Science) CGPA: 3.7/4.0
Courses - Statistical Learning, Data Mining, Data Models and Query languages, Predictive Analysis, Analysis of Algorithms.
College of Engineering, Guindy (CEG), Anna University 2023
Bachelor of Engineering (Computer Science) CGPA: 3.3/4.0
Courses - Machine Learning, NLP, Big Data Analytics, Database Management Systems, Object-Oriented Analysis and Design.

EXPERIENCE

Software Engineer Intern, Green InfoTech (S-corp) - Union City, CA July 2025 - Present

- Worked on the **MedScribe AI** project as part of a 5-person team, which focuses on automating paperwork by transcribing patient encounters, generating notes and filling medical forms.
- Built a **Clinical transcript RAG** to provide context-aware responses. Used **AWS Lambda** and **Amazon Bedrock's** models to generate responses and vector embeddings. Adopting AWS Lambda instead of server-based architectures **reduced costs by 60%**.
- Developed an **AI Call Agent** to automate patient intake (appointment scheduling, insurance information verification). Used **FastAPI** for building **APIs** and **ElevenLabs** for **conversation handling, storage and retrieval**.
- Optimized a **Text-to-SQL agent** to provide SQL results for natural language queries. Used **Vanna AI** to train the model and wrote **70+ SQL query prompts**. Improved performance on complex queries by **60%**.
- Designed an **admin portal** to organize user profiles, analyze user statistics and activity, manage permissions and features. Ensured reliable user **database connectivity, query performance** and enforced **HIPAA compliance**.
- Wrote **terraform** scripts to deploy applications in **AWS Amplify** and **AWS App Runner**. Created **Docker** files to build application images and implemented CI/CD pipelines for automated deployment.
- Utilized **AWS CloudWatch** to monitor application performance and **AWS Cognito** to manage user authentication.
- Improved code efficiency by **20%** by creating API endpoints that return smaller, more specific responses. Performed **unit testing, integration testing** and **API testing** using **pytest** to ensure reliability.

Research Assistant, University at Buffalo - Buffalo, NY February - May 2025

- Collaborated as part of a 4-member team on the development and testing of **UnionLabs**, a cloud-based distributed platform to share data, code, software and hardware resources for research in next-generation networks and wireless Internet of Things.
- Established **AWS EC2-local server** connectivity with API endpoints.
- Conducted thorough **testing of back-end, database, and API endpoints** to ensure robustness and reliability of the platform.
- Improved user **accessibility** and **responsiveness** by **70%** using **React.js**.
- The cloud-based remote-access solution enabled ease and efficiency and **reduced lab costs by 60%**.

PROJECTS

Automated Data Analysis and Visualization (FastAPI, Pandas, React, Typescript) - Built a full-stack **web application** that performs intelligent **data analysis, visualization** and **provides AI insights** on CSV files, reducing manual analysis time by **45%**. **Fine-tuned** the **gpt-oss-20b** model to identify important features, determine data types, and recommend univariate and bivariate analyses.

Question-and-Answer Agent for Research Papers (Langchain, Cypher, Streamlit) - Built a **Q+A agent** for Research papers using **Graph RAGs** for the knowledge base, **Cypher** for data retrieval and **Streamlit** for deployment, **identifying links** between multiple papers and improving performance by **70%** compared to traditional RAGs.

HEP-TH (High Energy Physics Theory) Paper classification using Sci-BERT (TensorFlow, SageMaker AI) - Classified over 30000 HEP-TH papers dating from 1991-2004 as influential and non-influential. Used **AWS SageMaker Blazing Text** for classification and **Sci-BERT** word embedding for tokenising. Performed hyperparameter optimization and obtained **75%** accuracy.

Elastic Net Attack and Inception-ResNet V1 for Retinal OCT images (Pytorch, AWS SageMaker AI) - Optimized the **Inception-Resnet V1** model to detect Choroidal Neovascularization in over **10000 Retinal OCT images**. Trained the model to overcome **Elastic-Net attack**. Improved the accuracy on adversarial examples from **7%** to **51%**.

TECHNICAL SKILLS

- Programming and Querying:** Python, C, C++, R, Java, Golang, React.js, Node.js, Javascript/Typescript, SQL, Cypher
- Software Development and Containerization:** FastAPI, Flask, Django, Git, Docker, Kubernetes, Agile Methodologies
- Databases and Analytics:** MySQL, PostgreSQL, Neo4j, DuckDB, MongoDB Tableau, PowerBI, Google Analytics, Metabase
- AWS Suite:** Amplify, Apprunner, Amazon EKS, Amazon EC2, Glue, Athena, Redshift, Spark, SageMaker, Bedrock, Cognito
- AI and Programming Frameworks:** LLMs (Claude, GPT), Langchain, BigQueryML, Pytorch, Tensorflow, Scikit-learn, Matplotlib
- Certifications:** AWS Certified Machine Learning Engineer Associate, AWS Certified Data Engineer Associate