Nithish Suresh Babu

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Summary

Results-driven cloud-native software engineer with expertise in building distributed systems using **Go** and **Python**. Proficient in developing high-performance, fault-tolerant applications leveraging **AWS/GCP** cloud services, **microservices architecture**, and **containerization**. Research experience in GenAI with a focus on deepfake detection systems. Passionate about designing scalable solutions that handle high-concurrency workloads while maintaining sub-100ms response times.

Education

University of Michigan *August 2023 – May 2025*

Master of Science in Computer and Information Science

Anna University *August 2018 – May 2022*

Bachelor of Technology in Computer Science and Engineering

Skills & Interests

Languages & Database: Golang, Python, Modern C++, JavaScript, TypeScript, PostgreSQL, MySQL, DynamoDB, SQLite3

Cloud Services & Infrastructure: AWS (EC2, S3, Lambda, Amplify, Bedrock, Cloud Watch, API Gateway, DynamoDB, SQS, SNS, App Runner, Route 53, IAM, ELB, Kinesis, Rekognition, Polly), Google Cloud (Cloud Run, Bigtable, Pub/Sub), Docker, Kubernetes

DevOps & CI/CD: Git, GitHub Workflows, Docker, Microservices Architecture, Serverless Computing, Containerization

AI / ML: Ollama, LangChain, OpenAI, PyTorch, OpenCV, AWS Rekognition

Experience

Research Assistant - Deep Fake (GenAI) *Sep 2024 – Present*

- **AI Detection System Development:** Worked extensively with the GenImage dataset, processing over **1,200,000** real/fake image pairs across **1,000** classes mirroring ImageNet.
- **State-of-the-Art Performance:** Achieved a detection accuracy of **98.5%** in identifying deepfake images, significantly outperforming existing methods by **3.7%** on benchmark tests.
- **Advanced Generator Analysis:** Tested against leading AI/ML models including Midjourney, Stable Diffusion, ADM, GLIDE, Wukong, VQDM, and Big, demonstrating superior detection capabilities across diverse image classes.

Projects

Real-Time Chat Application | *https://github.com/nithish-95/chat-webapp* *Personal Project, 2024*

- **Technologies:** ***Go***, ***WebSockets***, *HTML5, Tailwind CSS,* ***Docker***, *Amazon* ***DynamoDB***, ***SQS FIFO***, *App-runner, Route53*
- Built scalable Discord-inspired chat system handling **2500 concurrent clients** across **8 backend servers** with load-tested message delivery of <**100ms** average, **940ms** max latency; implemented connection pooling to optimize resource usage
- Architected persistent chat storage with **DynamoDB GSIs** achieving **10ms** read/write latency and designed **consistent hashing router** for horizontal scaling and minimal disruption during server failures or rebalancing
- Integrated **AWS SQS FIFO queues** for reliable, ordered inter-server message broadcasting while containerizing with **Docker**, reducing deployment time by **40%** through automated CI/CD pipeline with extensive monitoring and alerting

Tweets Sentiment Analysis using Gen AI | *https://github.com/nithish-95/TwitterAnalysis* *Personal Project, 2024*

- **Technologies:** ***Python***, *HTML5, Tailwind CSS, JS,* ***LangChain***, ***Llama-2***, ***Docker***
- Developed full-stack application classifying tweets by sentiment with customizable time-range and hashtag filters, processing **10,000+** tweets/hour with **92%** accuracy using fine-tuned **Llama-2** model and efficient prompt engineering
- Created responsive interactive dashboard visualizing sentiment distribution, trending keywords, and temporal patterns with real-time updates while optimizing **LangChain** pipelines to reduce per-tweet latency by **35%**
- Achieved **96.9%** uptime during demo week processing **12k+** tweets using containerized **Docker** deployment with auto-scaling capabilities and robust error handling for Twitter API rate limiting

Smart Door with Face Authentication | *https://github.com/nithish-95/SmartDoorAuthentication* *Personal Project, 2024*

- **Technologies:** ***Python, AWS (Kinesis Video Streams, Rekognition, Lambda, DynamoDB****, S3,* ***SNS****)*
- Developed distributed smart door system with secure face authentication via **Kinesis Video Streams** and **Rekognition** (**98%** accuracy, <**2s** response time) with time-limited SMS-based **OTP system** (**99.99%** delivery rate via **SNS**) for authorized visitors
- Built comprehensive visitor management portal handling **500+** registrations with **DynamoDB** CRUD operations, implementing secure access controls and detailed access logs while achieving **99.95%** API availability through **Lambda auto-scaling** for peak demand periods

Weather Forecast App | *https://github.com/nithish-95/weather-wapp* *Personal Project, 2024*

- **Technologies:** ***Go****, HTML5, Tailwind CSS,* ***Docker****, AWS App Runner, Route53,* ***OpenWeatherMap API***
- Built responsive weather application displaying current conditions and **7-day** forecast with **95%** location accuracy using browser geolocation API with IP-based fallback; implemented multiple search methods (city name, zip code, coordinates) with autocomplete suggestions
- Optimized **OpenWeatherMap API** integration handling **50+** requests/second with **Go concurrency patterns**, implementing intelligent caching to reduce API calls by **70%** while reducing cold-start latency by **60%** through Docker image optimization and achieving **99.9%** uptime