Mukul Chandrakant Mahadik

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Work Experience

National Renewable Energy Laboratory (NREL) · **Golden, Colorado**
Software Engineer Intern | *Python, Docker, MongoDB, GitHub Actions, AWS (ECR, CodeBuild)* · **08/2023 – 10/2024**
- Refined data processing in model build and analysis pipeline, transforming raw data into inferred values with comprehensive automated unit and integration testing.
- Optimized system scalability through time complexity improvements, enhancing overall performance.
- Troubleshot and resolved model build pipeline failures in staging and production environments using CloudWatch logs.
- Streamlined and automated DevOps processes by restructuring CI/CD workflows with GitHub Actions.
- Implementing data export/import functionality for timeseries data purge and restore, improving database efficiency and data lifecycle management.

Oracle Financial Services Software · **Bangalore, India**
Software Development Engineer | *PL/SQL, XML, Oracle DB, Oracle OFSAA, ETL* · **07/2021 – 05/2022**
- Implemented OFSAA LLFP fintech solutions in SIT, UAT and provided post-implementation support in Production environments for 2 international financial banking firms.
- Engineered 6 GUI based workflow runs for ETL pipelines with numerous tasks and integrated them with backend scripts to process data from Pre-staging to end-user report generation stage.
- Enhanced UI for Individual Assessment (IA) module based on XML Forms Framework by customizing 4 UI Forms and 8 PL/SQL scripts to process over 300k customer records by proposing to debug existing legacy code.
- Generated PL/SQL scripts for data manipulation and validation to automate manual tasks for filtering source data that helped reduce execution times by 20% while generating end-user reports containing customer data for over 6 months.
- Documented technical designs and deployed code packages across environments via WinSCP/PuTTY client-server apps.

Technical Skills

Languages: Python, Java, C++, HTML, CSS, JavaScript, TypeScript, PL/SQL, Go
Frameworks: REST API, Node.js, Express, React, Next.js, Flask
Databases: PostgreSQL, MongoDB, Oracle DB, AWS DynamoDB, Supabase
Generative AI: Anthropic, OpenAI, Groq, Streamlit, RAG, LLMs, Deepgram
Cloud Platforms: OpenStack, AWS Cloud Services (EC2, S3, SQS, Lambda, Cloudwatch, ECR)
DevOps: Docker, GitHub, GitHub Actions, Kubernetes, Kafka
Developer Tools: Git, Linux, Bash, VSCode, Postman, Figma, Documentation, Agile

Projects

Microservices Video to MP3 Converter | *Python, Docker, Kubernetes, RabbitMQ, MongoDB* · **09/2024 – 09/2024**
- Engineered a distributed system for converting video files to MP3 format using microservices architecture.
- Implemented secure JWT user authentication, message queuing with RabbitMQ, scalable storage, notifications.

Kafka Confluent Cloud Pub-Sub | *Kafka, Java, Python, Go, Node.js, Spring Boot, Docker* · **09/2024 – 09/2024**
- Implemented Apache Kafka producers/consumers using Confluent Cloud with topic management, data serialization.
- Containerised multi-language environment showcasing Kafka integration, demonstrating cross-platform compatibility.

Voice AI Interviewer Agent | *TypeScript, NextJS, Vapi, Supabase, Groq, GenAI, ShadCN UI* · **07/2024 – 07/2024**
- Engineered an AI-powered voice interviewer, leveraging Groq for fast inference and Vapi for voice interactions.
- Implemented evaluation system with custom metrics, utilizing Supabase for authentication and storage.

YouTube Conversation Chatbot | *Python, MongoDB, Streamlit, Deepgram, Together.ai, LLM* · **06/2024 – 06/2024**
- Built video search with Generative AI RAG chain, audio transcription, vector embedding, MongoDB vector search.
- Developed responsive Streamlit frontend integrating LLMs to query embedded video data and retrieve relevant info.

Cloud-based Video Face Recognition App | *AWS, Python, Flask, Docker, OpenStack* · **02/2023 – 04/2023**
- Designed a 3-tier hybrid cloud architecture leveraging AWS and OpenStack for Web, App, and Data tiers integration.
- Prepared Python scripts for: Lambda triggers, S3, DynamoDB; auto-scaled 20 EC2 instances via SQS and Cloudwatch.

Education

Arizona State University · **Tempe, Arizona**
Masters in Computer Science | **GPA: 3.90 / 4.0** · **08/2022 – 05/2024**
Software Courses (Requirements; Design; Verification, Validation, Testing), Data Processing at Scale, Cloud Computing

National Institute of Technology Hamirpur · **Hamirpur (H.P.) , India**
Bachelors in Electronics and Communication | **GPA: 8.73 / 10** · **08/2017 – 05/2021**

Extracurriculars

AICamp Generative AI Hackathon for AI Agent and RAG | *Overall Winner* · **06/2024 – 06/2024**
- Won the AWS for Startups prize for creating a multimodal AI assistant that automates browser tasks on behalf of users.

Coding Experiences: Debugging Made Easier | *Blog Website* · **10/2021 – 06/2024**
- Maintaining blog with posts - "Adding Local Directory to GitHub Repository" and "Renaming Multiple Files At Once".