MUKESH VISWANATHAN

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EDUCATION

Master of Science in Computer Science, **Western Michigan University,** Kalamazoo, MI **August 2019 – December 2021**

Bachelor of Technology in Computer Science, **Amrita Vishwa Vidyapeetham University, India** **July 2015 - April 2019**

TECHNICAL SKILLS

Programming Languages: Proficient: Python, Java, GoLang

Frameworks: Django, Junit, Swagger, fastapi, Springboot, webflux, Kafka, jdbc, OpenTelemetry

Libraries: OpenCV, Keras, sklearn, Tensorflow, NLTK, PyTorch, jQuery, NumPy, Pandas

CI/CD and Other Tools: Docker, JIRA, Jenkins, Maven, Kubernetes, Gradle, LLM based automation

Databases: MySQL, MariaDB, Postgre, Neo4j, ElasticSearch, Splunk, Azure, GraphQL

Cloud Technologies: Amazon Web Services (AWS): AWS Lambda, Elastic Beanstalk, Amazon S3, AWS CloudFormation; Microsoft Azure: DevOps, SQL Database; Google Cloud Platform (GCP): Google Compute Engine, Google Kubernetes Engine (GKE)

WORK EXPERIENCE

***Software Engineer III,* Walmart Global Tech** **January 2022 - present**

- **OpenTelemetry Application Development**: Proficient in developing OpenTelemetry framework related libraries for Tracing, Metrics and Logs, with a focus on monitoring errors and anomalies within microservices architectures.
- **Auto Instrumentation via OTel agent**: Enhancing tracing sdk to include pipeline for Kafka, webflux, JDBC, LLM based models of services and others to automatically instrument in applications via eBPF interceptors and Cloud Native Platform ingestions.
- **Anomaly Detection with Machine Learning**: Leveraged TensorFlow and advanced Machine Learning techniques to handle anomaly detections, facilitating the identification of root causes for issues and in-depth analysis.
- **API and Microservice Architecture**: Designed and implemented APIs and Microservices with an emphasis on load balancing, event production to Kafka and Splunk, and data retrieval for subsequent aggregation.
- **High-Performance Data Handling**: Engineered highly efficient logic for bulk data insertion and retrieval from Elasticsearch, achieving a throughput of up to 1 million transactions per second while minimizing overhead.
- **Big Data Expertise**: Proficient in Big Data operations, collaborating with global registries to efficiently trace calls back to Kubernetes VMs, ensuring high performance in large-scale environments, by developing advanced APIs for Splunk ingestion.
- **Automation and DevOps**: Spearheaded the development of automated infrastructure for APIs and Microservices, streamlining the build, release, and deployment processes across various environments.
- **Automation in Gatekeeping with AI**: Developed an algorithm to automate application gatekeeping for deployment, ensuring compliance with enterprise standards and protecting against vulnerabilities. The system also generates automated code corrections via pull requests using Generative AI.
- **Build Sequencing with AI**: Independently created a comprehensive pipeline to sequence the build process for all feature developments, starting from textual commands on a Git push and continuing through to deployment in a production environment.
- **Cloud Native Integration**: Developed sdk patches for GCP and Azure to seamlessly host Microservices within a unified cluster, optimizing resource usage and enhancing overall system performance metrics.

***Software Engineer Intern*, Walmart Global Tech** **May 2021 – August 2021**

- **Real-Time Application Metrics**: Spearheaded the development of an advanced metrics system for real-time transactional data analysis within applications and services, facilitating proactive root-cause analysis.
- **Neo4j Graph Database Implementation**: Orchestrated the transition from Elasticsearch (ES7) to Neo4j, optimizing data storage performance and scalability while accommodating complex relationships.

***Machine Learning/AI Researcher*, Western Michigan University** **April 2020 – May 2021**

- **Optimizing Cost and Power Efficiency in Additive Manufacturing**: Utilized Topology Optimization techniques and Machine Learning algorithms (Scikit-learn and TensorFlow) to enhance cost and power efficiency in Additive Manufacturing processes.
- Developed a Random Forest learning algorithm to predict stress hotspots within objects based on geometric features, significantly improving manufacturing quality control.

***Software Engineer,* Intelizest Technologies** **May 2018 - July 2018**

- Built a recommendation engine that is trained to suggest available garages/storages for rental/sale to target users by calculating the similarity between sparse customer behavior vectors using distance measure such as Euclidean distance.
- Developed a hybrid filtering system based on Content-Based and Collaborative methods that computes a matrix factorization using singular-value decomposition to cluster user-item data for essential querying, searching and comparison.

SELECTED PROJECTS

Medical Prognosis: Developed an application that predicts Diagnosis based on symptoms scraped from the medical data and formulating multimodal Disease Risk Prediction algorithm by developing Clustering and Decision Tree models using TensorFlow.

Audio Recognition: Developed an FFT algorithm for audio-to-spectrogram conversion to reverse engineer music recognition.