Sarabesh Neelamegham Ravindranath

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Education

Master of Science in Data Science   08/2023 – 05/2025
Indiana University Bloomington – Luddy School of Informatics - **CGPA: 3.90/4.00**
- Relevant Coursework: *Applied Machine Learning, Elements of Artificial Intelligence, Intro to Statistics, Computer Vision, Applying ML techniques in Computer Linguistics/Natural Language Processing, Exploratory Data Analysis, Autonomous Robotics, Deep Learning Systems*

Recent Experience

Faculty Assistant - Data Science , Indiana University School of Optometry   01/2025 – Present
- Facilitated faculty with data analysis and modeling tasks for the **Walking Project**, analyzing complexity of terrains using different physical measures.
- Improved 3D reconstruction workflows of terrains by optimizing processes, reducing time spent per model by **25%**, and enabling faster analysis of terrain complexity.

Emerging Tech Intern, AI Specialist - Musco Lighting , Des Moines, Iowa   05/2024 – 08/2024
- Engineered an MLOps framework using **DVC** and **GitLab CI**, automating validation and training pipelines, which resulted in a **40% reduction in model deployment time** and enabled quicker iteration cycles, from **7 days to 4 days**.
- Implemented **YOLOv5** pipelines for a ball detector project, integrating a model registry and experiment tracking with **MLflow** to enhance model performance tracking and error detection.
- Engineered an automated **Lambda pipeline** for dataset version tracking and updates using **DVC** across **NFS** and **S3**, streamlining the data management process and reducing manual dataset update time by **80%**.
- Researched and set up a **model registry** using **MLflow**, with remote storage on **S3** for seamless model versioning and deployment, used to track models across **5+ projects**.

DevOps Engineer, MTS II - VMware , Bangalore, India   02/2022 – 06/2023
- Enhanced **VMware Tanzu application platform (TAP)** testing and CICD across the major cloud environments by automating installation of **EKS, TKGM in AKS, and TKGS in AKS**.
- Streamlined new test scenarios in the **GO e2e test framework**, and increasing test coverage from 20% to 75%.

Cloud Engineer - Presidio , Chennai, India   05/2019 – 01/2022
- Spearheaded the design and implementation of CI/CD pipelines in **Jenkins** and **GitHub Actions**, and implemented **IaC** with **Terraform** on **AWS** for the clients (ViacomCBS, Statsperform, Wex).

Relevant Projects

Multi-Robot Path and Route Planning with Graph Neural Networks   01/2025 - Present
Developed decentralized coordination using reinforcement learning policies on Neural network-based models for route and path planning, while designing a simulation to evaluate real-time multi-robot scenarios with obstacles. Currently working on enhancing this approach by incorporating imitation learning to pre-train models, followed by fine-tuning with PPO.

Image Reconstruction from Functional Magnetic Resonance Imaging (FMRI)   09/2024 - 12/2024
Reconstructed high-resolution images from fMRI data using **latent diffusion models** and **CLIP** for embeddings.
https://github.com/sarabesh/Neural-Recon

Comparison of Retrieval-Augmented Generation (RAG) Systems   08/2024 - 12/2024
Compared **Graph RAG** and **Vector RAG** systems for information retrieval and generation, leveraging **Neo4j**, **LangChain**, and **Ollama** to evaluate efficiency and scalability. https://github.com/sarabesh/HybridRAG

Skills and Tools

Programming Languages: Java, Groovy, Golang, Python
Development Frameworks: Spring, Flask
ML Libraries & Tools: Scikit-learn, NumPy, TensorFlow, PyTorch, Hugging Face, LangChain, SpaCy, MLflow, DVC, ROS2, Open3D
ML Models: Transformers (ViT), LLMs (BERT, GPT, LLaMA 2), Diffusion Models, RL Models (DQN, Vanilla Policy Gradients, PPO)
Cloud Providers: AWS
DevOps Tools & Services: Docker, Kubernetes, VMware Tanzu, Terraform, CloudFormation, Chef, Helm, Jenkins, Git, Concourse, GitLab Pipelines
Operating Systems: macOS, Linux, Windows
Databases: MySQL, RDS, DynamoDB
Certifications: Certified Kubernetes Admin, Certified Kubernetes Security Specialist, Terraform Associate, AWS Solutions Architect Associate (Expired)