SAI NITHISH MAHADEVA RAO

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Education

M.S. in Artificial Intelligence *Sep 2023 – May 2025*
Khoury College of Computer Sciences, Northeastern University, Boston, MA GPA 3.95/4.0
Relevant Coursework: Supervised ML, Unsupervised ML, Reinforcement Learning, Algorithms
B.Tech. in Computer Science and Engineering *Aug 2017 – May 2021*
SRM University, Tamil Nadu, India
Relevant Coursework: Artificial Intelligence, Algorithms and Data Structures, Databases, Computer Network.

Skills

Programming Languages: Python, Java, TypeScript, C, C++, JavaScript
Web technologies: React.js, Spring Boot, Redux, Node, Swagger, PHP.
Python frameworks and libraries: PyTorch, Pandas, NumPy, TensorFlow, SciPy, OpenCV, matplotlib.
Tools, Software and OS: Docker, Git, Kubernetes, Visual Studio Code, IntelliJ idea, Linux, Jenkins.
Database: MySQL, SQLite.

Experience

Tata Consultancy Services (Client: Elisa Oyj) | Tamil Nadu, India *Jun 2021 - Aug 2023*
Software Development Engineer

- Spearheaded the development of a cutting-edge B2B procurement system for a major telecom client, reducing customer onboarding times by 80% and optimizing purchasing processes.
- Architected and implemented multiple custom APIs, enabling seamless integration with diverse external systems and enhancing overall system interoperability.
- Engineered robust CI/CD pipelines using GitHub Actions, significantly reducing deployment time by 60% and minimizing errors in the production environment.
- Led cross-functional collaboration efforts with business units across regions and companies to create an integrated procurement system, aligning with diverse stakeholder requirements.
- Designed and developed an automated testing environment, incorporating external system integration, which drastically reduced testing times and improved overall quality assurance processes.
- Implemented comprehensive unit and integration testing protocols, ensuring robust functionality and reliability across all developed systems.
- Partnered with the Quality Assurance team to pioneer automated testing initiatives, facilitating timely delivery of high quality, defect-free code
- Received the prestigious "CONTEXTUAL MASTER AWARD" in July 2023, recognizing exceptional expertise in delivering client-centric solutions.

Projects

Improved LLM Factual Grounding with Retrieval-Augmented Generation | Northeastern University
(Generative AI - Hugging Face - LangChain - Pinecone)

- Spearheaded Enhanced the capabilities of a large language model (LLM) by developing a Retrieval-Augmented Generation (RAG) system, utilizing Hugging Face Transformers and LangChain.
- Integrated Llama-13b-chat for text generation and implemented Pinecone vector stores for efficient document retrieval using pre-trained sentence embeddings.
- Optimized the system by leveraging LangChain libraries (HuggingFacePipeline and PineconeVectorStore), improving factual grounding and accuracy of the LLM responses.

VisAIble: AI-Generated Image Detection with Explainable AI | Northeastern University, Boston, USA
(Computer Vision - Deep Learning - EfficientNet - Grad-CAM - LIME - Explainable AI)

- Fine-tuned EfficientNet-B0 model achieving 63% accuracy in distinguishing real from AI-generated images using 140K face dataset.
- Implemented Grad-CAM and LIME visualization techniques to interpret model decision-making, enhancing transparency in AI detection systems.
- Developed comprehensive training pipeline with learning rate scheduling and early stopping, reducing overfitting while maintaining model generalization.

Comparative Analysis of PPO and SAC for Locomotion Control | Northeastern University, Boston, USA
(Reinforcement Learning - PPO - SAC - OpenAI Gym - Continuous Control - MuJoCo)

- Evaluated Proximal Policy Optimization and Soft Actor-Critic algorithms on OpenAI Gym's Hopper-v4 and HalfCheetah-v4 environments.
- Achieved 100% success rate for sustained hopping with SAC versus 20% with PPO, demonstrating superior stability in complex locomotion tasks.
- Analyzed computational trade-offs, revealing 6x training time for SAC with 2.7x reward improvement in HalfCheetah environment.