Girish Kumar Adari

AI and Machine Learning Specialist

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Available from May

EDUCATION

Northeastern University, Boston, USA
Khoury College of Computer Sciences — Expected December 2024
MS in Artificial Intelligence — GPA: 3.66/4.0
Relevant Courses: Foundations of AI, Machine Learning, Natural Language Processing, Pattern Recognition and Computer Vision, AI for human Computer Interaction, Algorithms, Program Design Paradigms.

Vellore Institute of Technology, Chennai, India — June 2020
B.Tech in Electronics and Communication Engineering, — GPA: 8.32/10.0
Related Courses: Computer Networks, Operating Systems, Computer Organization and Architectures, Signals and Systems, Digital Signal Processing, Embedded C and Linux, Object Oriented Programming, Data Structures and Algorithms, Statistics, Linear Algebra

TECHNICAL SKILLS

Programming Languages	: C++, Python, Java, SQL, Matlab, Bash
Machine Learning/Deep Learning	: PyTorch, TensorFlow, Keras, Scikit-learn, CNN, LSTM, BERT, GANs
Data Analysis & Visualization	: Numpy, Pandas, Matplotlib, Seaborn, OpenCV
Development Tools & Cloud	: Git, Docker, Jenkins, AWS, Microsoft SQLServer
Frameworks & Libraries	: Flask, NLTK, Spacy, OpenGym

EXPERIENCE

TransUnion, Chennai, India — November 2020 - July 2022
Associate Developer

- Spearheaded customization of IdVision using REST and SOAP APIs, enhancing security and reducing identity fraud by 10%.
- Optimized database workflows with MS SQL Server, using Azure Pipeline to streamline processes, reducing downtime by 20%.
- Implemented stringent security protocols using HCL Appscan and Checkmarx, securing data integrity and reducing vulnerability breaches by 95%.

CERTIFICATIONS

AWS Certified Solutions Architect – Associate — Amazon Web Services (AWS)
Issued Jul 2022 - Expires Jul 2025
Credential ID LB8NQ9G25JB41FGB

PUBLICATIONS

Machine learning in genomics: identification and modeling of anticancer peptides, Data Science for Genomics, Academic Press, 2023, Pages 25-68, ISBN 9780323983525

PROJECTS

AI-Driven Video Game Character Forge: A Multimodal Approach with Generative AI

- A Multimodal Approach with Generative AI" to automate the generation of 32,000 unique, theme-based game characters from 646 different characters across 13 games, leveraging Stable Diffusion, DreamBooth, and LoRA.
- Streamlined character design workflows, significantly reducing manual design iterations and enabling rapid prototyping, which enhanced creativity and efficiency in game development.
- Demonstrated the innovative application of generative AI in video game design, achieving high thematic accuracy and variability, showing it helps character creation processes.

NLP-driven music generation system

- Engineered a novel NLP-driven music generation system, analyzing and transforming 1,830 songs' lyrics into detailed musical compositions through the integration of sentiment analysis, keyword extraction, and topic modeling, showcasing the potential of AI in creative industries.

- Utilized a comprehensive dataset from the Lakh MIDI Dataset and APIs from Genius and Spotify for robust musical and lyrical analysis, leading to a nuanced understanding of song themes for accurate prompt construction in music generation.
- Compared generated music to original compositions, achieving close tempo and spectral feature alignment with the original music files using Facebook's MusicGen models, demonstrating the effectiveness of NLP in enhancing music creation processes.
- Conducted subjective listening tests to validate the emotional and thematic fidelity of generated music, affirming the project's success in producing technically sound and emotionally resonant music pieces.

Human-Centric RL Based Equity Portfolio Allocation Tool

- Spearheaded the development of a reinforcement learning-based system for equity portfolio management using historical data from Dow 30 companies. Integrated Deep Q-Networks (DQN) and Deep Deterministic Policy Gradient (DDPG) to dynamically adapt to market changes with a focus on risk mitigation, achieving a 22.29% annual return and a 1.72 Sharpe ratio.
- Designed and implemented a user interface with Streamlit for real-time AI-based trading recommendations and dynamic portfolio updates. Conducted extensive user testing and feedback collection through a custom survey to enhance system usability and effectiveness, tailoring AI tools to user behaviors and preferences, thus revolutionizing financial portfolio management through a blend of AI and human judgment.

AI-Driven Workout Assistant

- Developed a pose estimation framework to analyze and ensure correct exercise performance. Employed machine learning algorithms including Decision Trees, KNN, LSTM, and Bi-LSTM to assess exercise form accuracy in real-time.
- Utilized the 'InfiniteRep' dataset, which includes various exercises for comprehensive performance analysis. Our system offers significant applications in personal training, physiotherapy, and home workouts by providing automated guidance for optimal exercise performance.

Chatbot to Analyze PDF Documents

- Developed a chatbot utilizing Flask, LangChain, and LLM (GPT-3.5-Turbo), capable of assimilating content from PDF files and responding to inquiries related to the document.

Anime Image Generation with DCGAN

- Implemented a DCGAN to create anime-style images from random noise, fine-tuning hyperparameters for image quality. Employed adversarial loss functions and stochastic gradient descent for optimization. Fine-tuned hyperparameters, including learning rates and network architectures, to achieve the desired balance between image quality and training stability. Achieved an Inception Score of 2.8.
- The trained model generated 200 unique anime characters.

AI controlled agents playing Tetris game

- Created Tetris-playing agents utilizing Greedy search, NEAT, and Deep Q-learning algorithms. The results demonstrated NEAT agent outperformed other agents, attaining highest score.

Image Manipulation Tool

- Developed a user-friendly Java image manipulation application, allowing users to load, save, and modify images adhering to the Model-View-Controller (MVC) architecture and with various design patterns.