Aayush Jaiswal

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Junior Artificial Intelligence Engineer with a focus on deep learning and a proven track record of developing efficient AI systems to enhance predictive and generative automation capabilities. Skilled in machine learning, deep learning, and programming, with a strong ability to assess, analyze, and organize large volumes of data.

Skills Summary

Proficient in Python and deep learning frameworks such as TensorFlow and PyTorch.

Extensive experience in machine learning, deep learning, and natural language processing (NLP).

Skilled in developing and deploying ML models, with a focus on generative AI.

Strong programming skills with experience in implementing Python-based machine learning solutions.

Knowledge of engineering and supporting ML pipelines in frameworks like PyTorch, TensorFlow, and vLLM.

Familiarity with Google Cloud technologies and API integration for various NLP models.

Experience

Graduate Assistant Aug 2023 – May 2024

Indiana University *Bloomington, IN*

- Developed advanced 3D Generative AI models including 3D VQ-VAE and VQ-GAN, utilizing diffusion techniques for synthetic brain image generation.
- Mentored 150+ students in Distributed & Cloud Computing and AWS courses, focusing on cloud architectures and big data applications.

Data Scientist / Machine Learning Engineer - 1 Jan 2021 – Mar 2022

Trell, Sequoia Backed Social Media Platform *Remote*

- Led the deployment of a multilingual short video recommendation system, enhancing user engagement by 20% and retention by 45%.
- Improved operational efficiency by 30% by architecting and automating AI model training and deployment using AWS and Prometheus.
- Developed and managed training and deployment pipelines for AI models.
- Collaborated with ML Architects and product development teams to build machine learning products.

Research Assistant Jan 2020 – Jul 2020

Manipal University *Jaipur, India*

- Conducted research on computer vision algorithms for COVID-19 detection, resulting in 2 published papers with 700+ citations.
- Developed an end-to-end AI application for doctors, ensuring low-latency predictions and seamless integration into medical workflows.

Data Science Intern Jun 2019 – Jul 2019

Airtel (Leading telecom provider of India) *Delhi, India*

- Improved marketing campaign effectiveness by 10% through the development of user behavior-based clustering algorithms.
- Collaborated with cross-functional teams to understand market requirements and best practices.

Projects

3D Conditional Diffusion Model | *Python, PyTorch, TensorFlow, GPU, Slurm, W&B, Generative AI*

- Developed advanced 3D Generative AI models including 3D VQ-VAE and VQ-GAN, utilizing diffusion techniques for synthetic brain image generation.

Multi-Lingual Short Video Recommendation System | *TensorFlow, AWS, GCP, SQL, Docker, MLFlow, CI/CD*

- Implemented a custom AI two-tower recommendation system, enhancing retrieval speed by 50% and adapting to real-time user behavior.
- Developed a fully automatic retraining pipeline using AWS Lambda to tackle data drift.

RAG based AI Agent for Code Repositories | *Python, Transformers, Vector Databases, RAG, LangChain, LLM*

- Created a code assistant using the DiPY codebase and implemented a LangGraph RAG pipeline using local LLM for prompt engineering.

Real-time data pipeline using DBT | *Python, SQL, GCP, DBT*

- Enhanced data analytics efficiency and reduced access times by 15% through the development of real-time data pipelines using DBT.

Rapid SARS-COV-2 Detection | *Python, TensorFlow, OpenCV, AWS, Flask API, EC2*

- Achieved 96% accuracy in COVID-19 detection from X-ray and CT scans using AI techniques and published findings in reputable journals.

Brain Image Segmentation using Vision Transformers (ViT) | *Python, PyTorch, Hugging Face*

- Developed a 3D CNN neural network with an attention mechanism to identify tumor regions in MRI images, achieving 95% accuracy.

Monitoring for Cloud-Native Environments | *AWS, Prometheus, Grafana, Kubernetes, PromQL, S3*

- Implemented scalable monitoring on AWS, enhancing system reliability, uptime, and performance insights by over 30%.

Publications

3D Conditional Diffusion Model for Synthetic Brain Image Generation TBD
Aayush Jaiswal, JongSung Park, Eleftherios Garyfalladis *2024*

- Developed 3D VQ-VAE and VQ-GAN models using Python and PyTorch, achieving high-quality synthetic brain images with improved latent representation.
- Contributed to advancements in medical imaging, enhancing diagnostic capabilities and research methodologies.

Classification of the COVID-19 Infected Patients Using DenseNet201 Based Deep Transfer Learning Taylor & Francis
Aayush Jaiswal, Neha Gianchandani, Dilbag Singh, Vijay Kumar, Manjit Kaur *2020*

- Achieved 96.25% accuracy and AUC of 0.97 in classifying COVID-19 from chest CT scans using DenseNet201 and deep transfer learning techniques.
- Utilized Python and TensorFlow to provide a faster, non-invasive alternative to RT-PCR for COVID-19 diagnosis, significantly reducing false positives and negatives.

Rapid COVID-19 Diagnosis Using Ensemble Deep Transfer Learning Models from Chest Radiographic Images Springer
Aayush Jaiswal, Neha Gianchandani, Dilbag Singh, Vijay Kumar, Manjit Kaur *2020*

- Designed ensemble models using Python and TensorFlow, achieving 98.25% accuracy in differentiating COVID-19, viral, and bacterial pneumonia from chest X-rays.
- Validated on two datasets, models demonstrated high sensitivity and specificity, enabling effective large-scale COVID-19 screening.

Education

Indiana University Bloomington Aug 2022 – May 2024
Master of Science in Data Science *GPA: 3.60*

Manipal University Jaipur Aug 2017 – May 2021
Bachelor of Technology in Computer Science *GPA: 3.70*