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Samir Mishra

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Machine Learning Researcher

Probability and Statistics · NLP · LLMs · Computer Vision · Graph Neural Networks · ML-Ops · Generative AI · Recommendation Systems · Prompt Engineering · Reinforcement Learning

Technical Skills

Languages: Python, C, C++, SQL, NoSQL (Graph DBMS)
Frameworks/Libraries: TensorFlow, Keras, Matplotlib, Seaborn, NLTK, SpaCy, Gym, NetworkX, DeepSnap, OpenCV, Pillow, Tableau, Plotly, Pyviz, PyTorch, PyTorch Geometric, Scikit-learn, Neo4j, Pydantic, Langchain, Streamlit, multiprocessing, abstract base classes, coroutines, concurrent_futures.

Experience

Siemens Technology, Bangalore May 2023 – June 2024
Machine Learning Researcher - Intern

- Developed and implemented Graph Neural Networks (GNNs) for recommender systems in system modelling, contributing to research publications.
- Led the winning team at the Siemens **AVISHKAAR Innovation Hackathon** by developing SDeRM, a GNN-based framework for sustainable decision-making in **Machinery-As-A-Service.**
- Automated and streamlined the recommender system pipeline, improving efficiency, and validation.

Projects

Knowledge graph from Interactive User Queries | Pydantic, Langchain, Networkx, Streamlit, Neo4j Jan 2024

- Extracted structure and knowledge from unstructured text data using Pydantic and Langchain, then built a dynamic knowledge graph in Neo4j for efficient information retrieval.

Sustainable Decision Recommendation Mechanism (SDeRM) | GCNNs Aug 2023

- Built SDeRM to recommend sustainable actions. Analysed product relationships using a product graph, GCNNs, and historical data comparisons.

Night Vision Enhancement | GANs, Image Processing, VAEs, K-means Clustering Aug 2022

- Classify images based on their brightness levels (low or high) by creating a system that pre-processes images and utilises a GAN model to generate clearer and more comprehensible visuals from low-light conditions.

Deep Q-Learning for Slither.io | Deep Q-Learning, Reinforcement Learning, Experience Replay Feb 2022

- Trained a Deep Q-Learning agent to play Slither.io using a simulated environment and Experience Replay, achieving basic human-like behaviour in the game.

Hate Speech Detection | NLP, LLMs, Sentiment Analysis April 2021

- Developed a system to automatically flag offensive content and improve user experience. Employed a curated and preprocessed dataset to ensure model accuracy and reduce bias.

Publications

SNeRM: Graph-based Smart Neural Recommendation Mechanism | PLMSS 7 Nov 2023

- Published a journal in Product Lifecycle Modeling, Simulation & Synthesis (PLMSS) Conference 2023.
- Developed a recommendation system using neural subgraph matching on a heterogeneous graph. SNeRM identifies relevant subgraphs for node prediction through subgraph scoring and filtering techniques.

Inverse Imaging: Reconstructing High-resolution Images | ICITS Springer 27 April 2022

- Published a journal in ICITS Conference 2022.
- Effectively Applied stable diffusion methods to reconstruct high-resolution images in a deep prior fashion using U-Net architecture from scratch.

Education & Certifications

M. Tech CS (AI/ML spl.), IIIT Bangalore 2022 – 2024
B. Tech CSE, Savitri Bai Phule Pune University, Pune 2018 – 2022

Google Advance Data Analytics Professional Certificate [Coursera/Google] March-Current,2024
CompTIA A+ (220-1001&220-1002) [Udemy] Feb-March,2022
DeepLearning Specialization [Coursera/DeepLearning.AI] Aug-Oct,2021

Leadership

- **Siemens Hackathon "AAVISHKAR"(2023):** Led the team, GreenCreators, to victory in the Siemens Hackathon, securing the coveted **"Best Audience Choice Award".**
- **Project Leader, Inverse Imaging (2022):** I spearheaded the development of a machine learning pipeline. This involved delegating tasks effectively, managing project workflow and proposal, time management and corporation.
- **Vice-President, Ethical Hacking Club(2021):** Elected Vice President, demonstrating the trust and confidence of my peers. During my term, I organised workshops to enhance club members' skills" and "increased club membership by 20%".