Isha Madlani

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github.com/IshaM1801

SKILLS

Languages: C | C++ | Python | Java | Rust

Libraries: Numpy | Pandas | Scikit-Learn | Matplotlib | Seaborn | OpenCV

Framework: Tensorflow | Keras | Streamlit | PyTorch

Relevant Coursework: Data Structures, Algorithms | OOPS | Probability and Statistics | Database Systems | Computer Organisation and Architecture | Digital Electronics

Personal Interest: Scientific Machine Learning | Reinforcement Learning | Applied AI in Healthcare

ML Coursework:: Machine Learning Specialization by Andrew NG | Deep Learning Specialization by Andrew NG | Generative AI by Large Language Models | Generative Adverserial Networks Specialization | Natural Language Processing

PROJECTS

Urban Chemical Dispersion Modeling using Physics-Informed Neural Networks (PINNs)
Predicted precise concentration of chemical tracer across a compact urban region using PINNs

-Developed a Physics-Informed Neural Network (PINN) to model the dispersion of hazardous chemical tracers in urban environments, solving the **Convection-Diffusion Equation.**
-Engineered the model with **6 dense layers**, experimenting with activation functions like **Tanh, GELU, and Swish** to optimize convergence and stability.
-Conducted hyperparameter tuning, including training over **5000 epochs** with a **learning rate of 0.0001**, and transitioned from **Adam to L-BFGS optimizer** for improved optimization performance.
-Utilized **Glorot initialization** for weight distribution, ensuring faster convergence and reduced training time. -Achieved an **L2 error** score of 0.45, demonstrating good model accuracy.

MLLM Shakti–Multimodal Image Conversational Military Chatbot
Developed a conversational AI chatbot for BEL capable of processing videos, images and text.

-Integrated **OWL** and **QWEN-2** models to process text and image inputs.
-Implemented **advanced attention mechanisms** and optimized **IPRM** and **ROPE** for enhanced model accuracy.
-Curated and preprocessed a **custom image dataset**, ensuring diversity and alignment with project-specific require-ments.

•Credit Card Behaviour Score Prediction
Developed a predictive model to assess credit card default probabilities, enabling robust portfolio risk management.

-Implemented **advanced tree-based models** (Random Forest, Gradient Boosting, Extra Trees, TabNet) and **neural networks**, achieving **97% accuracy** on validation data. -Conducted extensive **exploratory data analysis and data cleaning**, identifying critical insights and addressing miss- ing values and outliers. -Evaluated models using advanced metrics for imbalanced datasets, including G-Mean, MCC, Cohen's Kappa, and weighted F1 scores, **prioritizing false negative penalization**.

AWARDS

Gandhian Society Elocution Competition Winner
Ranked among 50 out of 1200 participants Worldwide

Zonal Level R-Ward Elocution Winner
Ranked first at the zonal level R-ward competition in Maharashtra

Ranked 2nd in the National Level Elocution AISM
2019 runner up