AVANTIKA PATIL

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OBJECTIVE

Results-driven AI/ML Engineer for developing and deploying end-to-end solutions in Computer Vision and Natural Language Processing. Skilled in building scalable ML pipelines, optimizing model performance, and applying cutting-edge deep learning techniques to solve real-world problems. Eager to contribute to innovative, impactful projects at the intersection of AI and practical application.

EDUCATION

M.Tech in Artificial Intelligence and Machine Learning, Symbiosis Institute of Technology 2024 – 2026
Relevant Coursework - Supervised and Unsupervised Machine Learning, Deep Learning, Computer Vision, Natural Language Processing (NLP),Reinforcement Learning, Graph Neural Networks (GNNs), Generative Adversarial Networks (GANs), MLOps

B.Tech in Artificial Intelligence and Machine Learning, D.Y.P College of Engineering & Technology 2020 – 2024
Relevant Coursework - Supervised and Unsupervised Machine Learning, Deep Learning, Computer Vision, Natural Language Processing (NLP), Cloud Computing, Operating Systems (OS), Data Visualization, Database Management Systems (DBMS)

TECHNICAL SKILLS

Languages: Python, R, SQL
Frameworks & Libraries: Agentic AI, TensorFlow, PyTorch, Keras, OpenCV, Scikit-learn, HuggingFace, LangChain
Tools & Platforms: AWS, Docker, Google Cloud, Vertex AI, Google ADK, FASTAPI

CERTIFICATIONS

Introduction to Computer Vision and Image Processing by IBM
Introduction to Artificial Intelligence by IBM
AWS Academy - Cloud Foundations by Amazon
Data Analysis and Visualization with Power BI by Microsoft

WORK EXPERIENCE

Artificial Intelligence Intern (Xlogia tech,Pune) Jun 2023 – Aug 2023

- Worked closely with data scientists to clean, preprocess, and evaluate data for accurate model training.
- Contributed to the testing and validation of AI models, ensuring they met predefined performance criteria.

Artificial Intelligence Intern (Comtrance Technology , Remote) Jun 2022 - Aug 2022

- Led workshops on Python for data analysis, machine learning, and computer vision, demonstrating real-world use cases.
- Developed an automatic employee attendance system with computer vision pipeline achieved 88% accuracy.

PROJECTS

Temporal Deep Learning for Stock Trading Signal Classification from Multi Timeframe Chart Image (*View on GitHub*)

- Developed a temporal-visual deep learning framework that combines Vision Transformer (ViT) feature extraction with Hybrid BiLSTM-Attention and BiGRU architectures for BUY/HOLD/SELL trading signal classification from multi-timeframe stock chart images.
- Achieved 68.42% test accuracy, outperforming Fine-tuned ViT (57.71%), Temporal Transformer (61.21%), and Hybrid BiGRU (58.82%); temporal sequence modeling improved classification performance by 6.35%.
- Tech Stack:Temporal modeling, Vision Transformer (ViT), BiLSTM, BiGRU, Multi-Head Attention.

AdaptSchedule (*View on GitHub*)

- Built a CTDE-MARL hospital scheduling platform with 5 AI agents for appointment optimization, achieving 73.7% no-show prediction accuracy, 4.74-minute duration prediction MAE, and 99%+ natural language booking accuracy.
- Engineered a Dockerized FastAPI-Streamlit microservices ecosystem capable of handling 10,000+ appointments/day, with automated reminder delivery, real-time AI decision-making, and 100% integration test success.
- Tech Stack: Python, PyTorch, Stable-Baselines3 (PPO), Multi-Agent Reinforcement Learning (CTDE), FastAPI, Streamlit, OpenSearch, Redis, Celery, Docker, Gmail SMTP, Pydantic.

Mild Steel Degradation Detection (*View on GitHub*)

- Developed a Streamlit-based web application for instant image analysis, corrosion zone highlighting, and severity-based classification, achieving over 90% user accuracy and generating automated corrosion assessment reports.
- Tech Stack- Structural Similarity Index (SSIM), CLAHE (Contrast Limited Adaptive Histogram Equalization), Morphological Image Processing, Adaptive Thresholding, Image Preprocessing,Python

GangaFlow (*View on GitHub*)

- Devloped an AI-powered solution for detecting and classifying pollution in the Ganga River.
- Tech Stack-Integrated YOLOv8, U-Net, and AlexNet, Python

PUBLICATIONS

- **Patent (Published):** *EXPLAINABLE AI-BASED IMAGE ANALYSIS FRAMEWORK FOR QUANTITATIVE ASSESSMENT AND PREDICTION OF STEEL STRUCTURE SURFACE DEGRADATION*, Application No. 202621035935 A, 2026
- **Journal Publication (Q1 BMC Plant Biology):** *Rose leaf disease classification and severity estimation using an interpretable vision transformer-based multi-task framework*, BMC Plant Biology, 2026 Link
- **Journal Publication (Q1 Springer):** *Heterogeneous Graph Kolmogorov-Arnold Networks for Spatio-Temporal Wind Power Forecasting*, *Smart Grids and Sustainable Energy*, Springer, 2026 Link
- **Conference Publication (IEEE):** *GangaFlow: A Multi-Model Deep Learning Framework for Real-Time River Pollution Detection Using Drone Imagery*, ICoICC 2025, IEEE, pp. 1-6 Link

ACHIEVEMENTS

- **Secured the 1st Runner-up Position at The Great Ninja Hack 2K25 (DYPCET Kolhapur)** for the Mild Steel Degradation Analysis Using Microscopic Imaging and Deep Learning Project.
- **Runner-Up, Paper Presentation** "Mild Steel Degradation Analysis Using Microscopic Imaging and Deep Learning", NICMAR University, Pune
- **Winner, Smart India Hackathon (Internal)** AI-based adaptive traffic signal control system at SIT
- **Finalist of Smart India Hackathon 2023**.
- Led 60+ volunteers as **Joint Women's Secretary at Rotaract Club** organizing education and book donation drives
- Secured **multiple ranks in debate and public speaking** competitions