DEEPAK YADAV

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Experienced professional with over 5 years in AI & ML, seeking full-time opportunities to contribute and advance in the field of Artificial Intelligence and Machine Learning.

Experience

Sony | *AI & ML Consultant* | Bengaluru, India — *June 2021 - Present*

- Developed and deployed **vision-based AI applications** for classification, object detection, pose detection, and instance segmentation using high-speed, **edge-processing Sony IMX500 intelligent vision sensor**.
- Engineered an **end-to-end framework** for the performance testing of the IMX500 vision sensor, resulting in a substantial reduction of the verification process from **two months to ten days**.
- Led the development of an **industrial-level Proof of Concept (PoC)** to implement **Smart Factory applications**, including line abnormality detection, worker monitoring, and safety zone monitoring.

Activa Incorporation | *Associate Data Scientist* | Hyderabad, India — *Dec 2019 - April 2021*

- Led the creation of an innovative **AutoML platform**, enabling users to effortlessly train machine learning models by uploading diverse datasets (images, time series, etc.).
- Designed and implemented a comprehensive AutoML pipeline covering data preprocessing, feature engineering, model selection, and hyperparameter tuning.
- Drastically reduced time and effort for model development through automated hyperparameter selection, enhancing efficiency.

Activa Incorporation | *Intern Data Scientist* | Hyderabad, India — *Aug 2019 - Dec 2019*

- Completed a five months internship at Activa, where the primary focus was to develop a **PoC for United Technologies Corp. (UTC)** to address the challenge of automating the **detection of internal cracks in aircraft engines**.
- Developed a **Mask-RCNN based** computer vision model for precise internal crack detection in aircraft engines
- Successfully pitched the **Proof of Concept at T-Hub Hyderabad** by our team, showcasing its potential to automate and enhance efficiency in aircraft maintenance processes.

IIEST Shibpur | *Postgraduate Researcher* | Kolkata, India — *Jul 2018 - June 2019*

- Conducted an in-depth exploration of **fault-detection methodologies in WSNs**, delving into statistical-based and machine-learning-based approaches.
- Engineered a sophisticated algorithm dedicated to detecting faulty nodes within **Wireless Sensor Networks (WSNs)**, contributing to the advancement of fault-tolerant systems.

Education

7.0/10.0 **M.Tech in Information & Technology**, *IIEST Shibpur* | West Bengal, India — *2017-19*

6.8/10 **BTech in Electronics & Communication Engineering**, *UCER Allahabad* | U.P , India — *2010-14*

Courses: Machine Learning | Algorithms| Information and Coding Theory | Advanced Database Management System | Signal and Systems | Microprocessors | VLSI Design and Embedded System.

Skills

Programming	Python (Expert), C/C++ (Proficient), Java, JavaScript (Prior experience)
ML Frameworks	PyTorch, TensorFlow, Keras, Pandas, Scikit-learn, OpenCV, NumPy, Matplotlib, Seaborn, MLFlow, Airflow, Apache Kafka
ML/AI Algorithms	Regression, Classification, Clustering, Dimensionality Reduction, CNNs, RNNs, GANs, Transformer, Random Forest, Gradient Boosting, Tokenization, Language Modeling, Stable Diffusion, Retrieval Augmentation Generation
Deployment	Streamlit, Gradio, Langchain, ReactJS, Flutter, Docker, Kubernetes, Flask, Django, FastAPI, TFX, AWS (SageMaker), Jenkins, Nginx, Git, Bitbucket, SQL, MongoDB, Unit Testing
Other	Data Structures & Algorithms, SOLID Principles, Object-oriented Design, Design Patterns, Low Level Design

Projects

Custom Chatbot Using Large Language Model (LLM) | GitHub Link | Deployment — *Nov 2023 - Jan 2024*

Open Source | Personal Project

- Implemented Custom Chatbot leveraging advanced techniques including **Retrieval Augmentation Generation (RAG), Langchain, and Large Language Models (LLMs)**.
- Enabled the chatbot to respond to user queries within uploaded PDF files, showcasing the document understanding capabilities.
- Successfully deployed the application on **Hugging Face Spaces using Streamlit**, providing an interactive and user-friendly interface.

Stable Diffusion Model Implementation from Scratch using PyTorch | GitHub Link — *Oct 2023 - Nov 2023*

Open Source | Personal Project

- Developed an open-source PyTorch library for **Stable Diffusion Models**, enhancing accessibility to state-of-the-art techniques.
- Empowered users to train new models on their datasets and perform efficient inferences, promoting flexibility and usability.

Fault Detection in Wireless Sensor Networks (WSNs) | GitHub Link | Conference Paper — *Jun 2018 - Apr 2019*

MTech | Thesis Project

- Developed a **Distributed Self-Fault Diagnosis (DSFD)** method for effective fault detection in **Wireless Sensor Networks (WSNs)**.
- Conducted rigorous testing and validation of the algorithm on the **Arduino platform**, seamlessly integrating with Xbee devices
- Contributed valuable insights to the field of WSNs, advancing fault detection methodologies for enhanced reliability and performance.