Anjisnu Roy

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Summary

AI/ML Engineer specializing in designing machine learning systems, self-running AI software, and deep learning models for **Computer Vision (CV)** and **Natural Language Processing (NLP)** applications. Experienced in transforming data science prototypes into production-ready systems, optimizing ML models for high-performance deployment, and developing **large language models (LLMs)** to analyze text, image, and document data. Skilled in object detection, image classification, semantic search, and information extraction. Holder of a **Government of India patent** for an AI-powered drone inspection system.

Experience

Ellume Technologies **July 2025 – Present**
AI Engineer *Mumbai, IN*

- Designed and deployed **Ellume Vision**, an end-to-end solar anomaly detection and forecasting platform with automated ML pipelines and self-running AI workflows for large-scale asset monitoring.
- Developed predictive models for fault detection, degradation analysis, operational cost forecasting, and energy generation forecasting using deep learning and time-series modeling techniques.
- Built a **LangChain**-based SLM/LLM reasoning system for anomaly summarization, operational insights, autonomous ticketing, and guided issue resolution, reducing manual intervention by **30%**.

Itobuz Technologies **September 2024 – March 2025**
Data Science & AI Engineer Intern *Kolkata, IN*

- Transformed data science prototypes into production ML systems — fine-tuning and deploying **5+ models** including LLMs and diffusion models, achieving **15–20% accuracy gains** through deep learning algorithm optimization.
- Applied deep learning algorithms to **text and image/document data**, processed **10,000+ rows** of multi-layered training data, and ran statistical analysis to interpret model performance results.

Techno India University **April 2024 – September 2024**
Research Fellow *Kolkata, IN*

- Developed a novel evaluation metric for **LIME-based Explainable AI (XAI)** explanations — ran tests, performed **statistical analysis**, and interpreted results, improving model interpretability by **20%** and reducing errors by **15%**.
- Solved complex **Computer Vision** problems using mesh-based **image segmentation**, achieving **90% accuracy** and documenting the model architecture and data pipeline for reproducibility.

Projects

ContentCrafter – AI-Driven Social Media Content Generation **Jan 2025 – Feb 2025**

- Built a multimodal deep learning pipeline using **Mistral 1.3B (LLM)** and **Kandinsky Inpaint (diffusion model)** for automated image/document and text data processing with real-time image-text synthesis.
- Integrated **NLP**-based feature extraction and semantic analysis to automate content workflows and improve content relevance across social media platforms.

CrackNet – Drone-Based Structural Defect Detection

- Solved a complex **Computer Vision** problem — engineered a Raspberry Pi drone system using **TensorFlow** and **OpenCV** for real-time **object detection** and **image classification**, achieving **99.3% accuracy** in structural crack detection.
- Optimized the CV model for **high-performance deployment** on edge hardware, reducing inspection time by **50%** and maintenance cost by **40%** via fully autonomous operation.

Patent

AI-Powered Crack Detection Drone – Government of India | Design No: **465500-001** **Registered: July 2025**

- Inventor of an AI-enabled modular drone system for automated structural fault inspection, recognized by the Government of India.

Education

Techno India University **June 2025**
*B.Tech, Computer Science & Engineering – Specialization: AI & Machine Learning | GPA: **8.97/10*** *Kolkata, IN*

Technical Skills

Languages: Python, C++, SQL

Machine Learning: PyTorch, TensorFlow, Scikit-learn, Hugging Face, Deep Learning Algorithms, ML Model Optimization, High-Performance Model Deployment, MLOps

LLM & GenAI: Large Language Models (LLMs), LangChain, LLM Pipelines, Diffusion Models, Self-Running AI Software, Automated Workflows

Computer Vision (CV): OpenCV, Object Detection, Image Classification, Image Segmentation, Image Processing, Document Data Analysis

NLP: Natural Language Processing, Semantic Search, Information Extraction, Text Data Analysis, NLP Pipelines

XAI & Analysis: Explainable AI (XAI), LIME, Statistical Analysis, Model Performance Interpretation, Data Science Prototyping

Backend & Tools: Flask, Django, REST APIs, SQLAlchemy, Git, Linux, Cron Jobs