

Abhijat Chaturvedi

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Summary

Machine Learning Engineer with 8+ years of experience building and deploying AI systems across computer vision, NLP, and generative AI. Delivered national-scale digital health infrastructure serving ~500 million citizens, CV models that drove a 40% client sales uplift, and RAG/LLM systems that reduced enterprise overhead and eliminated third-party LLM costs. Combines strong research foundations (M.Tech in AI, IIT Jodhpur; Best Paper Award; 2 software copyrights) with hands-on engineering across the full ML lifecycle.

Skills

- **Generative AI & LLMs:** RAG, LangChain, LangGraph, AI Agents, Prompt Engineering, Tool-Use, LLM Evaluation
- **Machine Learning:** Deep Learning, Computer Vision, Image Processing, Supervised/Unsupervised Learning
- **Frameworks & Libraries:** PyTorch, Pandas, NumPy, scikit-learn, OpenCV
- **Infrastructure & Backend:** Django, Vector Databases (Qdrant), REST APIs, Microservices
- **Cloud Platforms:** AWS, Azure
- **Languages:** Python

Experience

Wittybrains

Oct 2025 – Present

Technical Lead

- Leading a 10-person engineering team building AI-driven chatbots and knowledge assistants using Retrieval-Augmented Generation (RAG), reducing client information-search overhead significantly.
- Built WittyGen, a local open-source LLM platform, eliminating dependency on paid third-party LLM APIs and reducing inference costs to zero for internal workloads.
- Planned and built scalable vector database architectures with metadata-aware search, embedding pipelines, and incremental deduplication for real-time knowledge retrieval.
- Architecting multimodal LLM systems combining text, structured documents, and images to automate decision-making and improve content generation quality.
- Implemented tool-using LLM agents with prompt optimization, reliability guardrails, and fallback logic, reducing hallucination rates and ensuring safe responses.
- Driving integration of AI microservices into enterprise platforms on AWS, improving deployment observability and reducing inference latency.

Typeface

Jan 2024 – Oct 2025

Machine Learning Engineer

- Built CV models for image harmonization and an LLM-based image quality scoring system, directly contributing to acquiring 2 new enterprise clients for the marketing AI platform.
- Improved product features by benchmarking against state-of-the-art algorithms, identifying gaps and incorporating recent research findings into production models.
- Researched and implemented solutions to boost model performance and efficiency, reducing evaluation latency for image quality assessment pipelines.
- Collaborated with cross-functional teams to integrate AI-driven features, including image harmonization and quality evaluation systems, into core product offerings.

TensorTour (Acquired by Typeface)

Apr 2022 – Dec 2023

Research Engineer

- Created PyTorch-based computer vision models for image super-resolution and salient object detection, contributing to a **40% increase in B2B client sales** by improving output image quality.
- Planned and managed REST APIs for deploying machine learning models as scalable services, enabling reliable model inference in production.
- Built and maintained backend infrastructure using Django on AWS to support AI-driven applications serving real-time requests.

CDAC, Noida

Oct 2020 – Apr 2022

Project Engineer

- Contributed to national-scale digital health infrastructure (e-RaktKosh, e-Sushrut) serving ~500 million citizens, building AI-driven recommendation and decision support modules.
- Created and implemented chatbot solutions for healthcare and government clients, reducing manual query resolution time at a nationwide scale.

- Conducted data analysis and predictive modeling on medical and pandemic-related datasets; research recognized with **Best Paper Award** at ETCCS 2020.
- Awarded 2 software copyrights for the Probabilistic Investigation Recommendation System and RaktBot, an AI chatbot for blood-related citizen services.

CDAC, Noida
Project Associate

Aug 2018 – Oct 2020

- Built AI-based recommendation systems for investigation processes, improving case prioritization accuracy.
- Improved chatbot accessibility for a nationwide healthcare management platform, reaching a broader citizen user base.

Projects

Image Quality Metric

- Created evaluation metrics to assess synthetic image quality based on naturalness, object placement, lighting, and edge artifacts.
- Implemented automated methods to quantify realism and detect visual inconsistencies across large-scale image datasets.
- Applied deep learning and statistical techniques to enhance metric reliability and correlation with human judgments.

Image Harmonization

- Developed models to seamlessly blend objects into generated backgrounds, ensuring realistic visual coherence for marketing use cases.
- Addressed inconsistencies in color, lighting, and texture to produce more natural composite images.
- Applied deep learning techniques to improve object integration quality, measurably reducing visible blending artifacts.

Image Super Resolution

- Built deep learning models to upscale low-resolution images while preserving fine detail, improving output quality for downstream generative AI pipelines.

Decision Support System

- Built a comprehensive decision support system for medical practitioners covering case history analysis, medication advice, and treatment recommendations.

Corona Dashboard

- Created an interactive dashboard tracking COVID-19 case statistics, recoveries, and deaths across India and the world during the first wave.
- Project accessible at: <https://coronaindia.github.io/>

Publications

- Abhijat Chaturvedi, & Co-Authors. (2020). A Hybrid Approach to Develop and Integrate Chatbot in Health Informatics Systems. *HEALTHINF*.
- Abhijat Chaturvedi, & Co-Authors. (2020). Study and analysis of Unique Health Identifiers and applicability of Aadhaar as a Unique Health Identifier. *2020 IEEE 17th India Council International Conference (INDICON)*.
- Abhijat Chaturvedi, & Co-Authors. (2021). Questionnaire-Based Prediction of Hypertension Using Machine Learning. *Evolving Technologies for Computing, Communication and Smart World: Proceedings of ETCCS 2020*.

Copyright

- Abhijat Chaturvedi, & Co-Authors. (2020). Probabilistic Investigation Recommendation System.
- Abhijat Chaturvedi, & Co-Authors. (2020). RaktBot: An AI-Based Citizen Centric Chatbot for Blood Related Services.

Education

Indian Institute of Technology, Jodhpur

Feb 2021 – Dec 2023

M.Tech in Artificial Intelligence

Centre for Development of Advanced Computing, Noida

Feb 2018 – Aug 2018

PGDBDA in Big Data Analytics

Greater Noida Institute of Technology, Greater Noida

Aug 2013 – July 2017

B.Tech in Information Technology