

# Vinay Badnoriya

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## Summary

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AI/ML Engineer skilled in Machine Learning, Deep Learning, Computer Vision, NLP, and Data Analytics. Experienced in real-time detection, segmentation, predictive modeling, LLM workflows, and end-to-end ML pipelines. Strong expertise in Python, TensorFlow, PyTorch, OpenCV, EDA, and deployment-ready AI systems.

## Technical Skills

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**AI/ML:** Regression, Classification, Clustering, Feature Engineering, Model Optimization

**Deep Learning:** CNN, RNN, LSTM, Transformers, Transfer Learning, TensorFlow, Keras, PyTorch

**Computer Vision:** YOLOv5/YOLOv8, OpenCV, Mask R-CNN, U-Net, CNN-LSTM

**NLP:** Text Classification, Tokenization, BERT/LLMs, OCR, Semantic Search

**Programming:** Python, SQL, NumPy, Pandas, Scikit-learn

**Tools:** Jupyter, Colab, VS Code, Git/GitHub, Flask, Streamlit

**Analytics:** EDA, Data Cleaning, Visualization (Matplotlib, Seaborn), Statistics, DAX

**Data Engineering:** ETL, Pipelines, APIs, Automation

## Projects

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### Real-Time Crowd Counting & Face Detection

- Built real-time crowd analytics pipeline using YOLOv5 + OpenCV optimized for dense scenes.
- Enhanced small/occluded face detection (RFE, NWD Loss, Repulsion Loss) achieving 10.1 ms inference.

### Image Captioning + Instance Segmentation (COCO Dataset)

- Implemented CNN-LSTM captioning model and Mask R-CNN segmentation for multi-modal outputs.
- Generated segmented images with captions; evaluated using BLEU and IoU.

### Fake Viral News Detection (LIAR Dataset)

- Built ML pipeline with XGBoost, SVM, Naive Bayes, and Random Forest for fake news detection.
- Performed text cleaning, vectorization, and multi-model evaluation.

### AI Personal Desktop Assistant (Voice-Controlled)

- Developed voice-triggered assistant enabling app automation and system control.
- Integrated speech recognition + modular execution tools.

### Document Research & Theme Identification Chatbot

- Engineered OCR + vector search chatbot using LangChain + LLM pipelines.
- Supports citation tracking and theme synthesis for research documents.

### AI-Powered Drug Discovery Pipeline

- Implemented molecule property prediction + similarity search using DL models.
- Built feature extraction and screening workflow for candidate drugs.

## Certifications

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Machine Learning & Pattern Recognition; Deep Learning (TensorFlow/Keras); Data Science Tools & Techniques; Neural Networks & Deep Learning; Natural Language Processing; Data Analysis Using Python; R Programming for Data Science; Statistics Using Python; Foundation to AI, Data Science & Analytics.

## Education

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**K.R. Mangalam University**, Gurugram  
B.Tech in CSE (AI/ML); CGPA: 7.05

2022 – 2026