

# Hitesh Kumar Patel

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🌐 hitesh-kumar-patel

## EDUCATION

### VIT Bhopal University

Bhopal, Madhya Pradesh

*B.Tech in Computer Science and Engineering (CGPA: 9.22/10.0)*

*Aug 2023 – Aug 2027*

- Strong foundation in **Data Structures, Machine Learning, Databases, and Probability**, with emphasis on applied AI systems

### O.P. Jindal School

Chhattisgarh

*Class XII (CBSE) – 94%*

*2020 – 2021*

## EXPERIENCE

### AI / Machine Learning Intern

May 2025 – June 2025

*O.P. Jindal Group*

*Chhattisgarh*

- Worked on **AI-enabled IP surveillance systems** using enterprise-grade camera infrastructure
- Applied **computer vision pipelines** for object detection, intrusion detection, and perimeter security
- Gained hands-on exposure to **real-time video streams, edge devices, and operational AI deployments**

## PROJECTS

### AI Research Assistant (RAG-Based) | 🧠

- Built a **document-grounded Retrieval-Augmented Generation system** enforcing strict context-only responses
- Implemented semantic retrieval using **Sentence-Transformers + ChromaDB** with locally hosted LLMs
- Generated structured, verifiable outputs using **Pydantic schemas** with explicit source attribution

### Agentic Research Pipeline with Verification | 🧠

- Designed a **multi-agent workflow** involving query planning, retrieval, verification, and synthesis
- Implemented cross-paper verification to detect **agreement, disagreement, and research gaps**
- Produced structured research summaries suitable for analytical and academic workflows

### Image Caption Generation (CNN-LSTM) | 🧠

- Implemented an encoder-decoder architecture using pretrained CNNs and LSTM-based language modeling
- Applied text vectorization, teacher forcing, and sequence-level training
- Evaluated caption quality using semantic coherence and word-level accuracy

## TECHNICAL SKILLS

**Programming:** Python, C++, SQL

**Machine Learning:** Scikit-learn, TensorFlow, Keras, PyTorch

**Deep Learning:** CNNs, LSTMs, Transformers

**Generative AI & NLP:** Large Language Models, Retrieval-Augmented Generation (RAG)

**Agentic Systems:** LangChain, LangGraph, Multi-Agent Workflows

**Data & Vision:** NumPy, Pandas, OpenCV

**Databases:** MySQL, Vector Databases (ChromaDB)

**Tools:** Git, GitHub, Jupyter, Google Colab, VS Code, Kaggle

## EXTRACURRICULAR ACTIVITIES

### Tech Member

Oct 2024 – Sep 2025

*Software Development Club (SDC), VIT Bhopal*

- Contributing to collaborative development, peer learning, and technical initiatives within the university coding community

## CERTIFICATIONS

**Machine Learning Specialization** — Stanford University & DeepLearning.AI (Credential)

**Machine Learning A–Z** — Udemy (Certificate)

**Deep Learning A–Z** — Udemy (Certificate)

**Competitive Programming:** Solved 100+ problems on LeetCode (Profile)