

# PAAKHI MAHESHWARI

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AI Research Engineer | Software Engineer | Data Scientist

## SUMMARY

Research-oriented engineer exploring computer vision, multimodal reasoning, and embodied intelligence. Experienced in developing AI systems that integrate visual perception with structured memory and contextual understanding to enable adaptive and goal-driven behaviour in real-world settings. Passionate about advancing visual reasoning architectures that bridge perception, action, and memory.

## EDUCATION

Jaypee Institute of Information Technology, Noida-62

Sept 2021 - Jun 2025

Bachelor's Degree in Technology, Computer Science and Engineering

- **RELEVANT COURSEWORK:** Data Structures, Machine Learning, Deep Learning, Natural Language Processing, Soft Computing, Reinforcement Learning, Affective Computing
- Teaching assistant for “Introduction to Literature”— mentored underperforming students and graded assignments.
- **OVERALL GPA: 8.7/10**

## EXPERIENCE

Siemens

July 2025 - Present

Research Engineer (on-contract)

- Developing **AI-native video agents** for real-time industrial safety using deep visual perception and long-term memory.
- Driving an AI memory initiative to design a **two-tier (static + dynamic)** architecture that integrates **vector databases** and **knowledge graphs** for contextual recall and reasoning across visual streams.
- Developing a physical AI framework where autonomous agents use visual reasoning to break down **complex goals into sequential, executable steps**.
- Optimizing homography-based multi-camera tracking for enhanced spatial reasoning and computational efficiency in dynamic environments.

Siemens

May - August '24 ; January - June 2025

Technical Intern - Data & AI

- Built a real-time object detection system using **YOLOX**, integrated with a **FastAPI** backend and **React.js** frontend.
- Improved inference speed from **2→26 FPS** using **DLStreamer**, added user anonymisation with **gstreamer**, and enabled multi-stream processing with layered models.
- Implemented a **Restricted Zone Detection System** with real-time alerts using **OpenCV** tools, and developed a **violations dashboard** for centralized **logging and monitoring**.
- Designed **scalable API endpoints** for continuous video processing and **live safety violation detection**; notified using **email** and live **in-app** notifications.

## LEADERSHIP AND ACHIEVEMENTS

Google Developers Student Club, IIIT

July 2023 - July 2024

Lead

- Directed hackathons like Smart India Hackathon (600+ participants) and hands-on workshops (400+ attendees).
- Managed the core team, ensured seamless event execution, and fostered strong community engagement.

[Kaggle Notebooks and Datasets Expert](#)

- Achieved a viewership of **3000+** data enthusiasts through EDA and machine learning-based implementations.

[Amazon ML Challenge 2024](#)

- Ranked in **top 100** nationally, competing against over **74,000** participants.

Certifications

[Foundational Certificate in Data Science and Programming](#) ( IIT Madras), [Specialisation in Data Science by IBM](#) (Coursera)

[Diplôme d'Études en Langue Française \(DELF B1\)](#) (French Ministry of Education)

Awards

Jaypee Institute of Information Technology, Noida

- **Proficiency Certificate in Artificial Intelligence and Machine Learning**
  - Awarded to the top 2% of the batch for outstanding academic performance and an exceptional final project.
- **Outstanding Performer Award**
  - Awarded for having exceptional academic and extracurricular performance from 2021-25.

PROJECTS

Trade Alert

November 2024

- Developed a real-time stock news alert system using a sophisticated **Retrieval-Augmented Generation (RAG)** pipeline for highly personalized investment insights.
- Leveraged **Pinecone** with **Multilingual-E5** embeddings for efficient semantic retrieval and LangChain integrated with **LLaMA 2.1 (Groq)** for AI-driven dynamic summarization.
- Delivered instant, actionable alerts via **Firebase Cloud Messaging** and **Nodemailer** email notifications to keep users informed.
- Built with the **MERN** stack and fully **dockerized** for scalable, reliable deployment in production environments.

Entity Value Extraction for E-Commerce Optimization

September 2024

- Developed a hybrid OCR and **vision-language model** pipeline for automated entity extraction from product images, enhancing e-commerce data accuracy for product metrics and specifications.
- Combined **PaddleOCR + RegEx** for fast parsing and a fine-tuned **MiniCPM-v2.6** model for high-precision entity recognition.
- Optimized for speed and achieved **87% accuracy** — reducing manual effort in cataloging while improving listing quality

TECHNICAL SKILLS

Languages:	C/C++, Python, SQL, Linux	Specialisations:	Computer Vision, Deep Learning,
Libraries/Tools:	Pandas, Seaborn, Plotly, NumPy, Docker, Kubernetes		Generative AI, Natural Language
Frameworks:	PyTorch, OpenCV, FastAPI, TensorFlow, React.js, DLStreamer, Docker,		Processing, Full-stack Development,
	LangChain, Pinecone, Knowledge Graphs		Video Analytics, Multimodal AI, UI/UX
Other:	MongoDB, PostgreSQL, Git, Streamlit, Firebase		Design