

# Kushagra Agrawal

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## 👤 PROFILE

Data Scientist with hands-on experience building production-grade AI systems, including multi-agent architectures, computer vision pipelines, and GenAI applications, using Python and deep learning frameworks.

## 🧠 SKILLS

**Languages:** Python, SQL, JavaScript

**Machine Learning & AI:** TensorFlow, PyTorch, Transformers, OpenCV

**Databases & Vector Stores:** PostgreSQL, MongoDB, Redis, Pinecone, Chroma

**Cloud & DevOps:** Docker, AWS, Google Firebase, DigitalOcean, MLflow, GitHub Actions

## 📁 PROFESSIONAL EXPERIENCE

- ❖ **AI & Data Science Intern** | Unihox, Pune July 2025 – Dec 2025
- Architected and deployed a production-grade **multi-agent AI system** with Research, Multimodal Fusion, and Orchestration agents **using neural ensemble coordination and consensus-based decision making**.
  - Engineered end-to-end backend for **AI-driven platform processing 1K+ patient records**, with **PostgreSQL, MongoDB, Redis, Pinecone**, and **real-time WebSocket communication**, with data ingestion to **deployment via Docker & DigitalOcean**.
  - Developed **NLP-powered doctor matching engine** with **multi-criteria scoring algorithms**, and dynamic doctor-patient matching through ML-based semantic search achieving over **95% match accuracy** for personalized healthcare recommendations.
  - Enforced **scalable data processing pipelines**, Pinecone vector indexing for 3+ specialized knowledge bases, **optimized connection pooling**, and Redis caching-achieving **<100ms query latency** for semantic search across **5K+ documents**.

## 📁 PROJECTS

- ❖ **NexusAgent.ai** [Link](#)
- Engineered an end-to-end **AI interview Agent platform** using **Google AI SDK and Vapi AI** to deliver real-time, voice-interactive mock interviews with instant performance analysis.
  - Implemented **Vapi Web SDK for seamless voice interactions**, that simulate realistic interview scenarios **with live speech recognition, natural language processing and dynamic response generation**.
  - Designed secure backend infrastructure using **Firebase Firestore for data management**, **Firebase Auth for user authentication**, and **Firebase Admin for server-side operations supporting 50+ interview sessions**.
  - Architected a comprehensive **automation system** using **GitHub Actions for scheduled cron jobs**, delivering **automated email reminders (24h before interviews)**, **weekly performance reports with PDF attachments**, and **streak tracking** to drive user engagement.
- ❖ **Vision Play** [Link](#)
- Developed a computer vision-based system using **YOLO** to perform real-time tracking and trajectory analysis of moving objects, processing **30+ FPS with 90% detection accuracy** across sports analytics and surveillance applications.
  - Applied **camera movement estimation** and perspective transformation to accurately measure object positions in **real-world coordinates** enabling precise spatial measurements.
  - Designed an **advanced tracking system** to compute the **speed and distance** of moving objects using frame- by-frame analysis, maintaining consistent object identity across occlusions and rapid movements in dynamic scenes.
  - Optimized computer vision pipeline through **OpenCV GPU acceleration**, and **YOLOv8 model quantization**, achieving **3x performance** improvement for real-time processing of HD video streams (**1080p @ 30 FPS**) with **<50ms latency per frame** on standard hardware.

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## EDUCATION

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**Bachelor of Computer Applications (BCA)**

07/2024 – 06/2027

 **Amity University**

Noida, Uttar Pradesh

- Cumulative GPA: 9.08/10.0
- Relevant Coursework: Algorithms and Data Structure, Machine Learning, Deep Learning, Probability and Applied Statistics, Database Management System

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## CERTIFICATIONS

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- Deep Learning Specialization – DeepLearning.AI
- Generative AI for Everyone – DeepLearning.AI
- Python for Data Science, AI & Development – IBM