Agam Pandey

⚲ Roorkee,India   ✉ agam.pandeyy@gmail.com   📞 +91 9118205853   in LinkedIn   ⌥ GitHub

Education

Indian Institute of Technology, Roorkee   *August 2022 – Present*
BTech in Civil Engineering; CGPA: 7.71/10.0; Courses: BE-350 ML & DL, IEC-03 AI Techniques, CSL-537 DL.

GD Goenka Public School, Lucknow   *April 2019 – May 2021*
High School Diploma (Senior Secondary Education); Percentage: 95.2%; Coursework: Physics, Mathematics and Computer Science.

City Montessori School, Lucknow   *April 2008 – May 2019*
Secondary School Certificate (Equivalent to GCSE/O-Level); Percentage: 96.6%; Coursework: Physics, Mathematics and Computer Science.

Experience

AI Intern   *Bangalore, Karnataka*
Swiggy, CEO's Office   *May 25 – August 25*

- Built a multi-agent conversational assistant for Swiggy Scenes using Cimba AI, enabling event/food recommendations and autonomous booking/cart actions.
- Developed prompt-driven backend services with LangGraph and Firebase Functions, integrating natural language intent with action execution pipelines (Computer Use Agents).
- Built an internal CRM for the Scenes sales team using React,Node.js, and Firestore, for lead assignment and automation and deployed all services using Docker, conducted UAT in ephemeral environments, and contributed to CI/CD workflows for production rollout.

AI Engineer Intern   *Remote, New Delhi*
Akki AI ⎘   *December 24 – April 25*

- Designed and implemented a modular multi-agent AI framework using CrewAI and LangGraph, enabling memory-aware (HybridRAG) agent orchestration and dynamic task allocation in collaborative workflows.
- Adapted recent RLHF literature to design agent evaluation protocols, including preference scoring and feedback logging, to inform future reward modeling and agent fine-tuning strategies.
- Deployed and scaled CrewAI agent clusters on AWS EC2, using FastAPI for API routing and agent coordination, and implemented asynchronous task execution with Celery for distributed workloads.

AI Engineer Intern   *Remote, Florida, US*
EzAIx Inc. ⎘   *March 25 – April 25*

- Developed Computer using onboarding assistant using a multi-agent architecture with OpenAI CUA, LangGraph, and GPT-4 Vision to assist users with Microsoft Suite applications.
- Built autonomous UI agents capable of interpreting user state and intervening when users were stuck, using retrieval-augmented generation (RAG) to extract guidance from onboarding documentation.
- Enabled real-time context understanding and agent actuation by integrating vision, dialog, and task agents with Selenium for software-level automation and HCI.
- Implemented end-to-end microservices for agent workflow orchestration using FastAPI, Celery for async task execution, and MongoDB Atlas for vector-based retrieval across multi-tenant environments.

Data Science Intern   *Remote, Roorkee*
Mindshift Analytics ⎘   *August 24–October 24*

- Developed and implemented scalable algorithms for comprehensive analysis of fuel consumption and vehicle dynamics using large-scale GIS datasets in the mining industry with a team of 04 members.
- Applied Ramer-Douglas-Peucker (RDP) for trajectory simplification, DBSCAN for clustering, and developed custom algorithms for data preprocessing, cleaning, and anomaly detection.
- Optimized data pipelines to extract actionable insights on vehicle performance at Jharkhand mining sites.

Software Development Intern *Gurgaon GitHub* ☑

Strabag-Efkon India ☑ *June 2024–July 2024*

- Developed a Fleet Optimization algorithm tool with custom ML pipelines and Linear Programming library (PuLP) for reduced response time of emergency vehicles with double coverage of accident locations, to be implemented on Hyderabad-ORR, ensuring 8 & 10-min primary & secondary time, 100 % coverage & 80% reliability.
- Built modular scripts in Python which is now being scaled by the company on other Indian National Highways.

Research and Publications

- Agam Pandey, et al. *"CroPA++: Exposing Vulnerabilities in Vision Language Models and Enhancing Adversarial Transferability of Cross-Prompt Attacks"* NeurIPS Reliable ML Workshop ☑ [OpenReview] ☑

- Agam Pandey, et al. *"Revisiting CroPA: A Reproducibility Study and Enhancements for Cross-Prompt Adversarial Transferability in Vision-Language Models."* MLRC ☑ Transactions on Machine Learning Research (TMLR) ☑ [OpenReview] ☑ Best Paper Award ☑

- Agam Pandey, et al. *"StegGNN: Learning Graphical Representation for Image Steganography."* Submitted to ICCV 2025 (CV4DC Workshop). [Manuscript rejected; under revision for resubmission]

- Agam Pandey, et al. *"Zero-Shot Vision Language Reasoning via Dual-layer Scene Graph Chain of Thoughts"* AAAI-26 Student Abstract ☑ Paper ☑

- Agam Pandey, et al. *"TransPatch: Learning a Universal Adversarial Patch for ViT–CNN Cross-Architecture Transfer in Semantic Segmentation"* AAAI-26 Student Abstract ☑ Paper ☑

Projects

ByeLabs: Local-First Multi-Agent AI for Automated Roster Processing | Hi- *GitHub* ☑ *Finals* ☑
Labs AIQuest Hackathon 2025

- An end-to-end automated roster system converting diverse raw mails into structured Excel exports and analytics.
- Fine-tuned SLM (Qwen3-4B-Instruct) with GRPO and LoRA adapters for robust schema-aware data extraction, normalization, and validation from noisy unstructured documents.
- A fully local processing pipeline with observability, versioning, rollback, and production-grade monitoring (Prometheus, OpenTelemetry, Grafana), ensuring data quality, auditability, and compliance without reliance on third-party APIs.

StegGNN: Learning Graphical Representation for Image Steganography *OpenReview* ☑ *GitHub* ☑

- GNN-based cover-agnostic image steganography framework,40.46 dB PSNR and 0.96 SSIM on benchmark datasets.
- StegGNN achieved an AUC of 0.56 in statistical steganalysis, requiring over 100 samples for 95% detection accuracy.
- Outperformed SOTA CNNs and invertible neural network methods in visual quality and imperceptibility metrics.

FeedCode | Data Science Group, IIT Roorkee *GitHub Repo* ☑

- Contributed in designing multi-agents LLMs to analyze developers' coding styles, providing personalized feedback.
- Created a MongoDB database by scraping questions from Codeforces to build user coding-style reasoning.
- Working with guardrails to check syntax errors in code, ensuring reliable and accurate real-time feedback.

Knowledge Graph Embeddings for GraphRAG LLMs | Data Science Group *GitHub* ☑ *Gitbook* ☑

- Quantitively analyzed CLIP/USE's image & text embeddings with UMAP,t-SNE and PCA for dimension reduction.
- Integrated knowledge graph embeddings to enhance contextual understanding for RAG-LLMs.
- Developed deployed pipeline to create Knowledge Graphs for images and text within a same vector space.

Multimodal Agentic GraphRAG: Zomato Nugget | Data Science Group *GitHub* ☑

- Developed RAH Chatbot, a Gen AI HybridRAG system with multimodal chunking and a MongoDB data lake.
- Weaviate (vector+BM25), Neo4j (graph) with a LangChain ReAct agent (TinyLlama) for contextual responses.
- Deployed application with Docker + FastAPI with LangFuse observability, enabling scalable end-to-end analytics.

Spatiotemporal Attention for Trajectory, Conflict Zone Prediction with PET *GitHub* ☑

- Developed and trained SDT-ATT model for highway trajectory forecasting using real-world lane-change datasets.
- Modeled vehicle interactions with social tensors, temporal attention for 20-frame history and 30-frame prediction.

○ Optimized PyTorch pipeline for applications, enabling conflict zone prediction and multi-agent collision avoidance.

Gynecology Assistant Bot | IEC-03 AI Techniques *GitHub Repo* ↗

○ Developed a RAG model with LangChain and Pinecone for contextual retrieval and conversational with Llama.

○ Optimized for CPU-based deployment, integrating Ollama's LLaMA v3.2 model for local inference.

○ Implemented modular AI pipeline with components including dataset preparation, recursive text chunking, and retriever chains, evaluated through QA ground truth, LLM-based scoring, and retriever accuracy checks.

Tech Enhanced AI Interview Platform| Techshila | STC IITR *AI Interview Platform* ↗

○ Developed ML model for interview question generation, using Mistral 7B LLM fine-tuned with Q-LoRA adapters.

○ Integrated Faster Whisper for Automatic Speech Recognition & CTranslate2 for automatic speech-text conversion.

○ Deployed the model on HuggingFace, with a frontend for inputs and a Flask API backend for audio processing.

Vision Language Model fusion with trained Yolov8s | Data Science Group *GitHub* ↗

○ Developed an object detection query system with YOLOv5s and VLMs for enhanced image annotation and Q/A.

○ Fine tuned Llama-7b on custom Q/A dataset, used Llava-13b Vision Language Model for answer generation.

○ Built Flask RestAPI endpoints for querying alternatively used Streamlit for deployment.

Realtime LiDAR-Camera Sensor Fusion for Autonomous Vehicles | Transportation Dept.,IIT Roorkee *Private Repo* ↗

○ Research Intern) Trained Yolov8s on custom traffic annotation dataset from Roboflow for object detection/tracking.

○ Depth estimation(m) and Depth Maps of tracked videos with MiDaS, ZoeDepth and GLPN models with error+-5m.

○ Working on ROS real time sync of Lidar(10Hz) & Camera(25Hz) for fusion of Camera & Lidar's estimated depth.

Skills

Languages: Python,SQL

Software Packages: PyTorch, AWS ECR/EC2/S3, Docker, FastAPI, LangChain, Sklearn, Vercel and CrewAI.

Extra Curricular

Program Committee Member | AAAI 2026 ↗   *May 2024 – Present*

○ Invited as Program Committee Member for AAAI-26 SAPP to review and mentor research paper submissions.

○ Coordinated travel attestations and compliance for student authors, supporting smooth participation in AAAI-26.

○ Recognized as senior author at AAAI-26 SAPP, contributing to program quality and academic standards.

Joint Secretary | Data Science Group, IITR ↗   *May 2024 – Present*

○ DSG, a student run group works on innovative open source projects in the domain of Machine/Deep Learning.

○ Organized hackathons and discussions for the the members and held discussions on DL topics.

○ Worked on projects in Graph Embeddings, NLP, Computer Vision, VLMs and Model Deployment.

Joint-Secretary |Athletics IITR, Institute Sports Council ↗   *July 2024 – Present*

○ Co-Led the institute team of 50+ athletes with the Secretary, fostering a strong track & field culture.

○ Coordinated training sessions, events like Annual Athletics Meet and Fitness Camp for campus residents.

○ Institute level achievements: Inter Hostel Sports Meet'24: Team Gold (Captain), Gold (5000m), Silver (800m, 4x400m Relay); Institute Colors Trophy'24: Gold (5000m, 1500m, 4x400m Relay);

Vice President-Analytics | SocBiz, IITR ↗   *Feb 2023 – Present*

○ Society of Business (SocBiz) is the business club of IITR covering three domains: Analytics, Consult & Product.

○ Mentored a team of 7 juniors for Analytics, covering Prob & Stats, SQL, EDA, ML models in weekly sessions.

○ Organized Intra-college events like Winter Analytics with over 600+registrations.