

Abhineet Pandey

apandey@albany.edu | linkedin.com/in/pabhineet | abhineet.xyz

Summary

AI/ML researcher and Ph.D. candidate in Computer Science specializing in large language models, retrieval-augmented generation, agentic AI workflows, multimodal AI, structured model evaluation, and applied computer vision. Experienced in building secure local-compute AI prototypes, RAG systems, proposal-evaluation agents, backend AI services, model integration pipelines, and reproducible evaluation frameworks. Applied research experience spans university-led AI systems initiatives, GE Research collaborations, Siemens Healthineers, DARPA SemaFor-related media integrity work, and healthcare-oriented AI research with Albany Medical Center, GE HealthCare, and UAlbany.

Technical Skills

Programming	Python, C, C++, Java, CUDA, MATLAB, SQL
AI/ML	Large language models, retrieval-augmented generation, agentic AI, prompt engineering, model evaluation, hallucination analysis, computer vision, deep learning, multimodal AI, AI red teaming
LLM/AI Systems	Tool-based LLM pipelines, local model deployment, inference workflows, structured outputs, evaluation agents, backend AI services, API integration, logging
Retrieval & Data	FAISS, ChromaDB, vector databases, embeddings, semantic search, metadata-aware retrieval, cross-encoder reranking, data preprocessing
Frameworks	PyTorch, Hugging Face Transformers, LangChain, Ollama, NumPy, Pandas, OpenCV
Systems	Docker, Linux servers, GPU servers, Git, PostgreSQL, Neo4j, experiment tracking, NVIDIA Jetson edge deployment

Education

University at Albany, State University of New York (SUNY)	Albany, NY
Ph.D. in Computer Science	Expected 2026
M.S. in Computer Science	2017 – 2019
SDMCET, Karnataka, India	Karnataka, India
B.E. in Computer Science	2012 – 2016

Selected Fellowships

- **Summer Graduate Fellowship, AI & Society Research Center and Center for Advanced Red Teaming,** University at Albany, SUNY 2026
Selected for a resident fellowship focused on secure, local-compute agentic AI workflows for red-teaming research proposals, structured feedback generation, and responsible institutional evaluation.

Experience

Summer Graduate Fellow – Agentic AI and Red Teaming	May 2026 – Aug 2026
<i>AI & Society Research Center and Center for Advanced Red Teaming, University at Albany, SUNY</i>	Albany, NY
• Selected as a resident Summer Graduate Fellow to design and prototype a secure, local-compute AI system for red-teaming research proposals. • Developing agentic LLM pipelines that evaluate proposal drafts, apply review criteria, generate structured feedback, and produce section-level recommendations. • Prototyping specialized evaluation agents and consolidating multi-agent outputs into actionable recommendations for institutional research support. • Testing locally hosted model workflows with emphasis on controlled data access, reproducibility, software validation, and responsible AI-assisted evaluation. • Documenting system architecture, evaluation logic, agent behavior, failure modes, and prototype limitations to support future refinement and institutional adoption.	
Research Assistant – LLM Systems	Aug 2024 – May 2026
<i>Office of Strategic Initiatives, University at Albany, SUNY</i>	Albany, NY
• Built LLM-powered assistant systems for retrieval, question answering, recommendation synthesis, proposal feedback, and knowledge automation for internal research-support workflows. • Developed RAG pipelines using FAISS/Chroma, embeddings, metadata-aware retrieval, prompt routing, and	

cross-encoder reranking to improve grounding and answer relevance.

- Designed agentic workflows for proposal evaluation, eligibility reasoning, scoring, structured feedback generation, and recommendation synthesis.
- Implemented evaluation pipelines for hallucination detection, relevance, consistency, groundedness, and response quality across multiple knowledge domains.
- Integrated Ollama and Hugging Face models into local inference workflows with offline indexing, controlled data access, and reproducible validation.
- Produced technical documentation covering system architecture, validation results, model behavior, failure cases, and engineering handoff.

Senior Research Project Assistant – GE Research Collaborations

Jul 2019 – Dec 2021

The Research Foundation of SUNY / University at Albany, SUNY

Albany, NY

- Developed computer vision analytics for GE Research rail applications, including railcar detection, identification, tracking, and re-identification in multi-camera environments.
- Implemented an edge-to-control-center architecture using NVIDIA Jetson AGX Xavier with multiple cameras deployed at operational checkpoints.
- Built safety-focused video analytics for rail crossing protection using instance segmentation and multi-object tracking.
- Contributed to applied AI systems in industrial environments requiring robustness, monitoring, real-time operation, and deployment reliability.

Computer Vision and Deep Learning Research Intern

May 2021 – Aug 2022

Siemens Healthineers

Princeton, NJ

- Developed object detection and tracking pipelines for robotic perception and applied AI systems in healthcare-oriented automation.
- Built training and evaluation workflows covering data ingestion, preprocessing, experimentation, dataset QA, and failure-mode analysis.
- Created synthetic data generation and training pipelines to reduce labeling effort and accelerate model iteration.
- Trained and evaluated monocular depth estimation models for challenging imaging conditions, including reflective, low-texture, and harsh-lighting scenarios.

Research Assistant – Semantic Forensics and Media Integrity

Jan 2020 – Dec 2023

UAlbany Team, DARPA SemaFor / Kitware Collaboration

Albany, NY

- Developed multimodal AI methods for detecting falsified media using object-level cues, scene text signals, and human-pose information.
- Supported model evaluation, reporting, and analysis for media integrity, manipulation detection, and semantic forensics research.

Selected AI Systems & Projects

Healthcare-Oriented Animal Behavior and Seizure Monitoring – GE HealthCare, AMC, and UAlbany Collaboration

On going..

- Developing AI components for video-based animal pose estimation, behavioral analysis, and seizure/state detection under induced and natural medical research conditions.
- Building end-to-end ML workflows for data ingestion, preprocessing, model development, evaluation design, robustness analysis, and reporting.
- Working with multimodal signals and domain-specific constraints to support reliable AI modeling for healthcare-oriented monitoring applications.
- Collaborating with academic, clinical, and industry partners to support translational AI research in medical monitoring and behavioral analysis.

GrantsMate – AI Platform for Funding Discovery and Proposal Evaluation

[Link](#)

- Built an AI-assisted platform for funding opportunity discovery, institutional Q&A, collaborator matching, and proposal feedback.
- Developed agentic pipelines for scoring, eligibility checking, structured feedback, recommendation synthesis, and retrieval-grounded responses.
- Implemented RAG workflows with FAISS/Chroma, embeddings, metadata filters, and validation pipelines for grounded output generation.

FilippoAi – Semantic Matching and Retrieval System

[Link](#)

- Built a scalable semantic retrieval and matching system using FAISS vector databases and Sentence-Transformer embeddings.
- Implemented cross-encoder reranking with MS MARCO MiniLM to improve retrieval precision and contextual matching quality.
- Integrated external data sources and APIs including USPTO, PatentsView, OpenAlex, GitHub, StackExchange, and GDELT for knowledge aggregation.

TexPilot – AI-Powered Local LaTeX Editor

[Link](#)

- Developed an AI-powered VS Code/Open VSX extension for LaTeX writing, debugging, and compilation assistance using local AI inference workflows.
- Designed a privacy-preserving technical writing assistant to improve productivity for research papers, academic manuscripts, and LaTeX-based documentation.

Agent Inspector – AI Coding Agent Transparency Tool

[Link](#)

- Developed a VS Code/Open VSX extension to inspect AI coding agent context, including estimated token usage, visible workspace files, and project-level context exposure.
- Built the tool to improve transparency, privacy, and security in AI-assisted coding workflows across Codex, Claude, Gemini, Copilot, Cursor, Aider, and local agents.

Pipe-Explorer – Remote Server Job Monitoring Tool

[Link](#)

- Built a remote server job-monitoring tool for managing and visualizing running jobs, supporting practical ML experimentation and server workflow monitoring.

Selected Publications

- **ForensiText: ROI-Guided Multimodal Forensics for Scene Text Tampering Detection and Localization**, IEEE AVSS.
- **TextSleuth: A New Dataset and Baseline for Scene Text Manipulation Detection**, IEEE MIPR.
- **Railcar Detection, Identification and Tracking for Rail Yard Management**, IEEE ICIP.
- **Video Analytic System for Rail Crossing Point Protection**, IEEE AVSS.
- **FlagDetSeg: Multi-Nation Flag Detection and Segmentation in the Wild**, IEEE AVSS.
- **Integrating Manual Preprocessing with Automated Feature Extraction for Rodent Seizure Classification**, Epilepsy & Behavior.

Patents & Invention Disclosures

- US20250271454A1, “Sample handlers of diagnostic laboratory analyzers and methods of use,” published Aug 2025.
- WO2025165595A1, “Depth-assisted sample container characterization,” published Aug 2025.
- GrantsMate, UAlbany Invention Disclosure: AI-assisted platform for funding discovery, collaborator matching, and institutional research Q&A.
- Filippo AI, UAlbany Invention Disclosure: AI-enabled patent assessment platform for claims analysis, product-market fit scoring, and valuation estimation.

Service & Leadership

- Member: IEEE and ACM.
- Reviewer for computer vision, AI, and multimedia venues, including ICIP, AVSS/AICity-related venues, and assigned journals.
- Teaching support for Artificial Intelligence, Machine Learning, Computer Vision, Data Mining, Operating Systems, Databases, Networks, and Introductory Computer Science.