Nitin Gupta

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Education

University of South Carolina

***M.S.**: Computer Science; **Concentration**: Artificial Intelligence* — *Aug 2025 – May 2026* ⊥ GPA: 3.7/4.0

***B.S.**: Computer Science; **Minors**: Data Science, Mathematics* — *Aug 2021 – May 2025* ⊥ GPA: 4.0/4.0

Relevant coursework: Machine Learning Systems, Artificial Intelligence, Database Design, Software Engineering, Pattern Recognition, Neuromorphic & Edge Computing, Big Data Analytics

Skills

AI & Machine Learning: LLMs (RAG, PEFT, LoRA), Computer Vision, MLOps, PyTorch, Hugging Face, CoreML, Scikit-learn, NLP, Model Evaluation

Languages & Frameworks: Python, C++, Java, SQL, NoSQL, Swift, R, JavaScript, CUDA, LaTeX, REST APIs, Microservices, Apache Hadoop

Engineering: Docker, CI/CD, Git, Linux, Agile/Scrum, OOP, Unit Testing

Spoken: English, Hindi, Punjabi, Spanish

Key Projects Delivered

GAICo: Generative AI Evaluation Framework — GAICo

- *Problem*: Existing Gen AI evaluation tools are fragmented and lack support for multimodal outputs, leading to inconsistent quality assurance in high-stakes applications
- *Solution*: Engineered and deployed a standardized Python library (13K+ downloads in first 2 months) that unifies metrics for text, images, and audio, streamlining model auditing within CI/CD pipelines

RoostAI: Enterprise RAG Chatbot — RoostAI

- *Problem*: University stakeholders face difficulty navigating over 500 disparate data sources to locate specific campus information and resources efficiently
- *Solution*: Architected a Retrieval-Augmented Generation (RAG) chatbot using Vector DBs, providing a centralized natural language interface for instant information retrieval

Beacon Of Hope: Analytics & Recommendation Engine — Beacon Of Hope

- *Problem*: Individuals with health conditions struggle to balance biomedical constraints with personal preferences when planning meals
- *Solution*: Engineered a full-stack recommendation system (Python/React) using ML to generate tailored nutrition plans, visualizing adherence trends via interactive calendar-based dashboard

ArtEdge: Mobile Computer Vision & Optimization — ArtEdge

- *Problem*: Running Neural Style Transfer models on mobile devices traditionally suffers from high latency and memory bottlenecks due to limited hardware resources
- *Solution*: Developed a hardware-accelerated iOS application using CoreML and quantization, enabling real-time, on-device inference without cloud dependencies

Publications

Building a Plan Ontology to Represent and Exploit Planning Knowledge and Its Applications — *Discover Data Journal 2025*
Constructed the 1st comprehensive planning ontology to optimize planner selection and generate plan explanations

Towards Enhancing Road Safety in South Carolina Using Insights from Traffic and Driver-Education Data — *AAAI 2025*
Leveraged geospatial AI to analyze statewide data patterns and inform real-world infrastructure policy

Revisiting LLMs in Planning from Literature Review: A Semi-Automated Analysis Approach . . . — *ICAPS 2025*
Built an automated trend-tracking platform to categorize research shifts and track the rapid evolution of LLMs in AI planning.

Promoting Nutrition Adherence with Convenience Using Group Recommendations — *ICDM 2025 Workshop (WAIN)*
Developed a data-driven meal recommender balancing nutrition and convenience

GAICo: A Deployed and Extensible Framework for Evaluating Diverse and Multimodal Generative AI Outputs — *IAAI 2026*
Designed and released a Python library for standardizing AI model auditing and QA; achieved 13K+ downloads in first 2 months

GAICo: Demonstrating a Unified Framework for Multi-Modal GenAI Evaluation — *AAAI 2026 Demo Program*
Demonstration of the GAICo library capabilities presented to the wider AI community

On the Books in South Carolina: Mining for Jim Crow Laws — *USC Libraries*
Applied NLP and machine learning to identify racially restrictive laws in 100 years of post-Civil War legal text

Professional Experience

AI Engineer & Researcher — Columbia, SC
AI Institute of SC — *Aug 2024 – Present*

- Engineered Neuro-symbolic AI pipelines and Multi-Agent workflows to automate NLP reasoning tasks, utilizing Python and PyTorch
- Designed scalable architectures to benchmark multimodal outputs (Text and Image), ensuring reliability for high-stakes AI systems
- Optimized NLP reasoning pipelines using Neuro-symbolic approaches to reduce hallucinations in generative outputs
- Organized Safe AI for Seniors, a full-day hybrid, AAAI sponsored event (80+ attendees) with 8+ expert speakers
- Published 4+ peer-reviewed papers at premier AI conferences on generative AI evaluation, AI planning, and explainable AI
- Peer-reviewed 10+ research papers for top-tier AI conferences, ensuring quality and relevance in the field

Explainable AI Research Intern — Columbia, SC
AI Institute of SC — *May 2024 – Aug 2024*

- Developed an Explainable AI (XAI) framework integrating Knowledge Graphs with LLMs to audit black-box decision-making systems
- Built data analysis workflows using Python to process large-scale traffic datasets, identifying collision patterns to inform safety policy
- Partnered with state agencies to translate complex data insights into actionable engineering recommendations

Machine Learning & Data Visualization Researcher — Columbia, SC
Digital Research Services, University of South Carolina — *Jan 2022 – Apr 2024*

- Built Data Ingestion Pipelines to parse, normalize, and mine trends from 10,000+ historical documents using NLP
- Designed interactive web-based data visualizations for the Digital Research Services department, enhancing data accessibility
- Trained ML classifiers to detect linguistic patterns in unstructured text, achieving 85%+ accuracy for archival analysis

Scientific Data Analyst (C++ / Simulation) — Columbia, SC
Jefferson Lab (DOE National Lab) — *Jun 2022 – Oct 2022*

- Developed high-performance C++ analysis code to process large-scale particle physics simulations, optimizing magnet design
- Implemented statistical models to analyze experimental datasets via SSH on remote clusters, resulting in projected savings of $1M+

Artificial Intelligence Intern — Columbia, SC
Clemson University / SC Governor's School — *Jun 2020 – Nov 2020*

- Researched Reinforcement Learning approaches to game solving
- Developed Python-based ML algorithms to master strategic games, presenting findings at the SCJAS 2021 competition

Leadership & Volunteering

Organizer, Safe AI for Seniors — Columbia, SC
AI Institute of SC — *Nov 2025*

- Public discourse often overlooks the specific safety and accessibility challenges AI poses to the elderly population
- Coordinated a full-day, AAAI-sponsored hybrid symposium, managing logistics for 8+ speakers and 80+ attendees to bridge this gap

Volunteering Ambassador — Columbia, SC
Trew Friends — *Aug 2021 – Dec 2024*

- Organ donation shortages persist partly due to a lack of awareness and engagement within younger demographics
- Directed campus-wide advocacy campaigns, directly resulting in over 300 new registrations to the national organ donor registry

Awards

AAAI Student Scholar (NSF Research Fellowship), encouraging student participation in the AI research community — *Feb 2025*
McNAIR Junior Fellowship for undergraduate computer science research excellence — *May 2024*
Phi Beta Kappa Freshman Award for outstanding academic performance at USC — *Apr 2023*