

AKANKSHA TYAGI

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M.S. graduate in Computer Science with experience building AI-integrated web applications using React/Next.js, FastAPI, PostgreSQL, RAG, vector search, and MCP tooling.

EDUCATION

UNIVERSITY OF ARKANSAS **GPA: 3.75/4.0** Fayetteville, AR
Master of Science in Computer Science May 2026

Selected Coursework: Image Processing, Privacy Enhancing Technology, Full Stack Deep Learning, Machine Learning.

COLLEGE OF ENGINEERING ROORKEE (COER) Roorkee, India
Bachelor of Technology in Information Technology May 2017

SKILLS

Languages & Web: Python, TypeScript, JavaScript, SQL, C/C++; React, Next.js, Node.js, FastAPI, REST APIs, HTML/CSS

AI/ML: LLM Integration, RAG, AI Agents, MCP, PyTorch, Reinforcement Learning, Graph Neural Networks

Data & Cloud: PostgreSQL, pgvector, MongoDB, Supabase, AWS, Docker, Git, Linux

PROJECTS

AdvisorDesk - AI-Powered Advisory Content Platform May 2026 – Present

- Architected a full-stack advisory platform for financial firms: two Next.js frontends (an internal CMS for creating, editing, tagging, and releasing guidance, plus a client-facing app) on a shared FastAPI backend with Google OAuth, containerized with Docker and deployed on AWS.
- Implemented a RAG assistant to answer client questions over live advisory content with vector search (Supabase pgvector) and OpenAI, returning grounded answers with source citations.
- Engineered an agentic content layer exposing CMS operations as MCP tools, so a content manager can draft, tag, search, and publish through natural language instead of manual UI steps.

Real-time Pedestrian Detection and Safety Alert System (UArk) Jan 2025 – Apr 2025

- Deployed a real-time pedestrian detection system on the NVIDIA Jetson Nano with YOLO and MobileNet SSD models trained on CityPersons and Caltech datasets.
- Optimized edge inference with quantization, pruning, TensorRT, and DeepStream, and delivered audio-visual alerts for pedestrians entering restricted roadways and vehicles speeding through red lights.

EXPERIENCE & INTERNSHIPS

Cybersecurity Lab (UArk Affiliated) Jan 2024 – May 2026
Research Assistantship **Advisor:** Dr. Qinghua Li Fayetteville, AR

- **Reinforcement Learning for Fuzzing:** Trained RL agents for automated test-case generation, improving vulnerability discovery and code coverage over baseline fuzzing methods.
- **Master's Thesis - AI-Based Anomaly Detection in Cyber-Physical Water Testbeds:** Designed AI-based anomaly detection models for cyber-physical water testbeds, strengthening security and resilience of critical infrastructure.
- **Generative Vision - Diffusion & LDMs:** Implemented DDPM and latent-diffusion models for high-fidelity image synthesis and text-to-image generation (cross-attention U-Net), evaluated on ALOT, CelebA-HQ, and LAION with FID/IS.

Reinforcement Learning for Traffic Optimization (IIIT-H Affiliated) Jun 2022 – Dec 2023
Research Internship **Advisor:** Dr. Praveen Paruchuri Hyderabad, India

- Simulated multimodal traffic environments in SUMO to optimize lane-level dynamics and vehicle-to-vehicle coordination.
- Prototyped and benchmarked RL policies on grid-world and real-world-inspired road networks, reducing electric-vehicle traversal time against baseline methods.

Codeventure Tech Llp Jun 2021 – Apr 2022
Software Engineer Roorkee, India

- Shipped a city complaint management system in PHP, WordPress, HTML, CSS, and JavaScript, streamlining civic issue reporting and response times.

PUBLICATIONS

- [Improving Lane Level Dynamics for EV Traversal: A Reinforcement Learning Approach](#) - VEHITS 2024, pp. 134–143. Co-authored with M. Lowalekar and P. Paruchuri.

Honors: Nominee for Best Student Paper Award at the VEHITS-2024 conference.

- [A Reinforcement Learning Approach to Multi-Parametric Input Mutation for Fuzzing](#) - IEEE CSR 2025, pp. 174–179. Co-authored with M. L. Uwibambe and Q. Li.