

Kausar Patherya

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I build AI agents and workflows that turn multimodal, sensor-rich data into reliable, inspectable systems.

EDUCATION

Georgia Institute of Technology

Atlanta, GA

Ph.D. in Computer Science, GPA: 3.96/4.00

*Jan. 2026 – May 2030**

M.S. in Computer Science, GPA: 3.95/4.00

Aug. 2024 – May 2026

University of Illinois at Urbana-Champaign

Champaign, IL

B.S. in Industrial Engineering, GPA: 3.79/4.00

Aug. 2018 – May 2022

EXPERIENCE

Doctoral Researcher

Jan. 2026 – Present

LLAMAS Lab, Georgia Tech (Advisor: Prof. Francisco Romero)

Atlanta, GA

- Built Flash-Fusion, an edge-cloud system that compiles natural-language questions over IoT sensor streams into schema-aware typed plans, and runs deterministic pandas operators that emit per-query routing, plan, cache, and execution evidence.
- Cut query latency by 95% and token usage and cost by 98% against a raw-telemetry LLM baseline by pairing edge statistical summarization with cloud-side query planning; deployed and evaluated on a university bus fleet.

Graduate Research Assistant

Aug. 2024 – Dec. 2025

WiSciTech Lab, Georgia Tech (Advisor: Prof. Ashutosh Dhekne)

Atlanta, GA

- Reduced cellular payload for fleet monitoring by 73.5% by architecting a tiered IoT pipeline, writing Zephyr RTOS firmware for nRF9160 boards that aggregates inertial data on-device before LTE transmission (github.com/kpatherya/bus-rtos).
- Built Sting-Sense, an interactive analytics layer over that fleet telemetry; applied K-means clustering to identify five driving-behavior profiles and geographic safety hotspots (sting-sense.vercel.app).

Host & Producer

Dec. 2024 – Feb. 2026

Georgia Tech AI Podcast

Atlanta, GA

- Produced 14 episodes interviewing Georgia Tech AI faculty on robotics, continual learning, and trust in autonomy; handled recording, editing, and publication to YouTube and Spotify (georgiatech.ai).

Technology Consultant

Jul. 2022 – May 2024

Ernst & Young

Chicago, IL

- Led cloud-delivery work spanning Azure region selection, Microsoft 365 tenant discovery, and AWS serverless application development with Terraform and GitHub Actions.
- Analyzed enterprise IT market trends for a global MedTech client, distilling insights from 15+ SMEs across data strategy, cloud FinOps, AI/ML, and cybersecurity to inform strategic recommendations.

PUBLICATIONS

Flash-Fusion: Enabling Expressive, Low-Latency Queries on IoT Sensor Streams with LLMs. Kausar Patherya, Ashutosh Dhekne, Francisco Romero. Preprint, Nov. 2025; resubmitting.

📄 arxiv.org/abs/2511.11885 | 📁 github.com/kpatherya/flash-fusion | 🌐 flash-fusion.vercel.app

SELECTED PROJECTS

🔗 POLARIS | OWL-ViT, FastVLM, PyTorch, OpenCV

github.com/kpatherya/polaris

- Designed a staged vision-language pipeline that matches landmarks across seasonal change, chaining keyframe selection, open-vocabulary detection, depth, and RANSAC verification to keep 50k-image datasets tractable.

🔗 Aerial-Ground Robot Platform | ROS 2, VINS-Mono, RealSense, OctoMap

github.com/kpatherya/quad-ugv-mapping

- Integrated a reproducible ROS 2 visual-inertial mapping toolbox for aerial and ground robots, fusing VINS-Mono and RealSense depth through TF-aligned point clouds into OctoMap and validating trajectories on EuRoC sequences.

🔗 AutoCaLC | CausalWorld, Stable-Baselines3, reinforcement learning

github.com/kpatherya/autocalc

- Developed a meta-RL curriculum framework in which a tabular Q-learning teacher uses UCB exploration over validation learning-progress rewards to sequence environment interventions for TriFinger manipulation tasks.

TECHNICAL SKILLS

Programming: Python, SQL, C++, TypeScript

Frameworks & Tools: PyTorch, pandas, Pydantic, scikit-learn, ROS 2, Zephyr RTOS, Docker, AWS, Terraform

Research Areas: LLM agents, AI systems, data systems, sensor analytics, edge AI, vision-language models, reinforcement learning