

Akhil Nampally

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EDUCATION

Georgia Institute of Technology

Bachelor of Science in Computer Science and Mathematics

Atlanta, GA

Expected May 2027

TECHNICAL SKILLS

Languages: Python, Java, SQL, JavaScript, R, HTML/CSS, YAML

Machine Learning: PyTorch, scikit-learn, Hugging Face Transformers, OpenCV, LoRA, CNNs, Vision Transformers, DINOv2/v3

Data & Development: Pandas, NumPy, SciPy, FastAPI, Flask, React, Next.js, Node.js, REST APIs

Tools & Cloud: Git, Linux, AWS (EC2, Lambda), Google Cloud, CUDA, MuJoCo

EXPERIENCE

Robotics & Machine Learning Researcher

Oct 2026 – Present

IRIS Lab

- Developing a real-time **Real-to-Sim** sync framework in **MuJoCo** with **computer vision** and online system identification.
- Building a physics-based **world model** aligning sim states with multi-view **camera observations** at **1–2 mm** error.
- Investigating online physics adaptation for low-latency **MPPI** control and **sim-to-real** transfer under a **50 ms** cycle.

Machine Learning Researcher

Aug 2026 – Present

BrainML, Georgia Tech

Atlanta, GA

- Built a **hierarchical reinforcement learning** system in **PyTorch** with a subgoal manager and goal-conditioned worker.
- Trained a learned **world model** on **1M offline transitions** to predict robot motion for multi-step **motion planning**.
- Built a goal-conditioned worker that reached **96.8% of proposed subgoals** across 50 AntMaze evaluation trials.
- Built reproducible **Slurm/Modal distributed training** pipelines with checkpointing and experiment tracking.

Data Engineer Intern – ML Data Infrastructure

May 2026 – Aug 2026

Meta

Menlo Park, CA

- Migrated a production ML data pipeline to confidence-tiered **LLM** labels, **tripling coverage** at **99.9% consistency**.
- Built automated **SQL data-quality** checks to compare label versions, investigate mismatches, and gate production releases.
- Cut ML data-incident detection from weeks to **the same day** with automated freshness and label-drift alerts.

Machine Learning Engineer

Mar 2026 – Present

ViTAL Lab, Georgia Tech

Atlanta, GA

- Built end-to-end audio **machine learning** pipelines in **Python/PyTorch** for clinical autism-pattern classification.
- Extracted pitch, intensity, voice activity, speech rhythm, and speaker-turn features from multi-speaker audio.
- Implemented **four-fold pair-level cross-validation** to prevent conversation leakage across training and test splits.
- Compared **CNNs** and acoustic-feature models; a linear **SVM** reached mean **0.875 AUC** on the initial 12 conversation pairs.

Computer Vision Researcher

Jan 2026 – May 2026

DREAM Lab, Georgia Tech

Atlanta, GA

- Built a **self-supervised learning** vision pipeline using **DINOv2/v3** patch embeddings to analyze amphibian field images.
- Applied **PCA** and **K-Means** clustering to patch embeddings for fine-grained **image segmentation** and error analysis.
- Developed a **Mahalanobis-distance** classifier for **30,000+ images** to support specimen detection and species analysis.
- Co-authored a [paper](#) on automated image processing to support amphibian migration tracking.

PROJECTS

AntMaze – Hierarchical World Models | *Python, PyTorch, Minari*

[GitHub](#)

- Built a unified **AntMaze** framework comparing **Director**'s implicit and **HWM**'s explicit hierarchical dynamics.
- Improved goal success by **45% relative** over the learned-model baseline across 50 matched seeds.
- Built numerical-parity, action-sensitivity, and same-start evaluations to debug seed, prediction, and policy issues.

ROS Autonomous Navigation – Simulated Robot Navigation | *ROS Noetic, Gazebo, Python, TurtleBot3*

[GitHub](#)

- Built a simulated **ROS Noetic** navigation stack in **Gazebo** with SLAM, AMCL, and path planning.
- Integrated **gmapping**, **move_base**, and DWA local planning for multi-goal **TurtleBot3** navigation.
- Wrote a **Python** goal-sequencing node with action feedback for autonomous waypoint execution.

RelayQ – Reliable Webhook Delivery Service | *Go, React, TypeScript, PostgreSQL*

[GitHub](#)

- Built a **Go** REST API for webhook delivery with idempotent enqueue, retry backoff, and dead-letter recovery.
- Built concurrent workers claiming jobs with **PostgreSQL** SKIP LOCKED and expiring lease tokens.
- Shipped a **React/TypeScript** dashboard to queue deliveries, inspect jobs, and replay dead letters.

LLM-SDQ – Switchable-Precision Language Models | *PyTorch, Hugging Face, LoRA*

[GitHub](#)

- Implemented per-layer 4-bit, 6-bit, and 8-bit **GPT-2** quantization profiles, reducing GPU memory use by **4×**.
- Fine-tuned profile-specific **LoRA** adapters on **SQuAD**, improving F1 by **16% over baseline**.
- Compared fixed and cyclic precision training and tested model robustness against adversarial typo attacks.

Two-Tower RecSys – Two-Stage Movie Recommendations | *Python, PyTorch, scikit-learn*

[GitHub](#)

- Built a two-stage **MovieLens-1M** recommender with two-tower **PyTorch** retrieval and logistic re-ranking.
- Scored full-catalog **Recall/NDCG** on a temporal per-user split against popularity and item-KNN baselines.
- Improved **Recall@10** by **27.5% relative** over item-KNN and raised catalog **coverage@10** from **9.7% to 54.6%**.

Undoable – Reversible AI Coding Workflows | *Python, Git, Developer Tools*

[GitHub](#)

- Built a portable instruction pack that helps coding agents plan, review, split, and roll back risky code changes.
- Created workflows for migrations, feature rollouts, and PR reviews across **Codex**, **Claude**, **Cursor**, and other tools.
- Added an offline evaluation suite measuring rollback-risk detection, commit splitting, and rollback completeness.