Akshay Raman

New York, NY
United States

phone: +1 (551) 804-2148
email: ar8692@nyu.edu
web: https://akshayraman.com/

Education

- **New York University, Courant Institute** — New York, United States
  Master of Science in Computer Science, AI Specialization — Sept. 2023 - May 2025
    - GPA: 4.0/4.0
    - Capstone Project: Continual Credit Assignment in RL using Eligibility Traces. Report

- **Vellore Institute of Technology** — Vellore, India
  Bachelor of Technology in Computer Science and Engineering — Sept. 2019 - July 2023
    - GPA: 9.28/10.00
    - Thesis: Neural Optimal Transport. Report

Technical Skills

Programming Languages: Python, C/C++, R, Java, SQL

Machine Learning Workflows: PyTorch, JAX, TensorFlow, Gymnasium, WandB, DeepSpeed, HuggingFace

Tools and Libraries: NumPy, SciPy, Pandas, OpenCV, OpenMP, CUDA, Docker, Git/GitHub, Linux

Research Experience

- **AI4VS Lab, Columbia University** *with Prof. Kaveri Thakoor* — New York, United States
  Machine Learning Researcher — Jan. 2025 - Present
    - Investigating multimodal learning for clinical diagnosis using gaze patterns, retinal scans, and physician notes.
    - Exploring CLIP and vision-language models (VLMs) to combine visual, text, and gaze modalities for improved prediction.

- **DICE Lab, New York University** *with Prof. Chinmay Hegde* — New York, United States
  Graduate Research Assistant — Sept. 2024 - Jan. 2025
    - Pursued research in data-centric ML advised by Prof. Chinmay Hegde at NYU Tandon School of Engineering.
    - Designed data curation pipelines to reduce spurious correlations in large-scale vision datasets, improving model generalization.

- **AI4Science Group, University of Ottawa** *with Prof. Augusto Gerolin* — Ontario, Canada
  Mitacs Globalink Research Intern — June 2022 - Sept. 2022
    - Built deep neural solvers for high-dimensional Optimal Transport to simulate atom dissociation in Density Functional Theory (DFT). Code
    - Compared performance with traditional sinkhorn solvers, demonstrating faster convergence to approximate solutions.
    - Led interactive tutorials and seminars on ML foundations for non-CS students.

Publications

[1] Khan, R. et al. (including Raman, A.) **"Use of artificial intelligence algorithms to predict systemic diseases from retinal images"** *WIREs Data Mining and Knowledge Discovery*, Vol. 13, No. 5 (2023)

Projects

1. **Hierarchical CLIP-based Image Geolocation Prediction** [Link]
   - Trained a custom CLIP-based model on 4M+ MediaEval images, achieving 70% country-level accuracy in image geolocation.
   - Reduced inference latency and memory usage by $\sim 100\times$ via hierarchical feature clustering, enabling real-time predictions.

2. **Consistent Multi-view Object Generation using Finetuned Video Diffusion Models** [Link]
   - Fine-tuned a video diffusion model to generate multi-view consistent object renderings from single-view inputs.
   - Demonstrated that a curated high-quality 1% subset (10K objects) of the Objaverse dataset achieved performance comparable to full-scale training. (1M+ objects).

3. **Diabetic Retinopathy Detection** [Link]
   - Trained large-scale CNNs to predict diabetic retinopathy (an eye disease) from a noisy dataset of retinal images.
   - Used Grad-CAM to generate saliency maps and visualize regions influencing model predictions.

Teaching Experience

NYU CSCI-UA.0202 **Operating Systems** *Course Assistant*	Spring 2025
NYU CSCI-GA.3033 **Graphical Processing Units (GPUs)** *Grading Assistant*	Fall 2024
NYU CSCI-GA.3033 **Multicore Processors** *Grading Assistant*	Spring 2024
NYU CSCI-UA.0480 **Parallel Computing** *Grading Assistant*	Fall 2023