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 — *Sept. 2023 - May. 2025 (Expected)*
  - GPA: 4.0/4.0
  - Relevant Coursework: Deep Reinforcement Learning, Conceptual Gaps in Machine Learning, Fundamental Algorithms
- **Vellore Institute of Technology** — Vellore, India
  Bachelor of Technology in Computer Science and Engineering — *Jul. 2019 - Jul. 2023*
  - GPA: 3.7/4.0
  - Relevant Coursework: Natural Language Processing, Statistics and Probability, Computer Vision

Work Experience

- **Data, Intelligence, and Computation in Engineering (DICE) Lab** — New York, United States
  Research Assistant — *Sept. 2024 - Present*
  - Pursuing research in multimodality and data-centric ML advised by Prof. Chinmay Hegde at NYU Tandon School of Engineering.
  - Currently focused on improving data curation strategies and benchmarking them on representation learning tasks.
- **AI4Science Group, University of Ottawa** — Ontario, Canada
  Mitacs Globalink Research Intern — *Jun. 2022 - Sept. 2022*
  - Worked on transportation theory and its applications in Density Functional Theory (DFT) under the guidance of Prof. Augusto Gerolin.
  - Developed gradient-based deep learning methods to study high-dimensional optimal transport for simulating the disassociation of atoms efficiently. Code
  - Conducted seminars to introduce machine learning fundamentals to students with non-technical backgrounds.

Teaching Experience

- **Courant Institute of Mathematical Sciences, New York University** — New York, United States
  Teaching Assistant — *Sept. 2023 - Present*
  - Courses - CSCI-UA.0480: Parallel Computing, CSCI-GA.3033: Multicore Processors, CSCI-GA.3033: Graphical Processing Units (GPUs)
  - Assisted students (100+ class size) with parallel programming in OpenMP and CUDA. Graded assignments and student capstone projects.

Publications

2023 WIREs Data Mining and Knowledge Discovery, *Use of artificial intelligence algorithms to predict systemic diseases from retinal images.* R. Khan, J. Surya, M. Roy, S. Priya, S. Mohan, S. Raman, A. Raman, A. Vyas, R. Raman

Projects

1. **Diabetic Retinopathy Detection** Link
   - Trained large-scale CNNs to predict diabetic retinopathy (an eye disease) from a noisy dataset of retinal images.
   - Generated heatmaps using Grad-CAM to identify parts of the image which had the most impact on model prediction.
2. **Multi-lingual Question Answering System** Link
   - Built an multi-lingual question answering system using the HuggingFace API on syntactic rules from multiple languages.
   - Finetuned BERT on the SQUAD dataset augmented with multiple question variants using back translation.
3. **Continual Learning with Policy Gradient Methods** Link
   - Designed novel incremental learning algorithms to train RL agents on a variety of real-world environments (Ex. MuJoCo, Atari).
   - Modified batch-wise policy gradient methods using eligibility traces to eliminate data buffers, particularly for long horizon tasks.

Technical Skills

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

Machine Learning Workflows: PyTorch, Tensorflow, scikit-learn, Gymnasium, HuggingFace

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