Akash Haridas

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https://www.linkedin.com/in/akasharidas/
https://akasharidas.github.io

EDUCATION

University of Toronto Sep 2022 – Dec 2023 (expected)
MSc in Applied Computing (Computer Science) **GPA: 4.0 / 4.0**
Courses: Computational Imaging, Imitation Learning for Robotics, Natural Language Computing, Visual Computing Systems

Indian Institute of Technology Madras Jul 2022
BTech + MTech in Aerospace Engineering and Data Science **GPA: 9.26 / 10.00**
Courses: Computational Photography, Deep Learning, Systems Engineering for Deep Learning

EXPERIENCE

Advanced Micro Devices (AMD) May 2023 - Dec 2023
Applied Research Intern, Machine Learning and 3D Computer Vision

- Built an automatic system to produce high-fidelity animatable 3D human avatars from a consumer laptop webcam.
- Developed a novel method based on GANs for photorealistic texture synthesis, 3D morphable models, landmark detection, face recognition embeddings and differentiable rendering in PyTorch3D.
- Achieved ~45% higher perceptual quality and ~25% better lighting symmetry compared to existing literature when applied to low-quality webcams, while also satisfying latency constraints for edge devices.
- Contributed a demo app to help AMD showcase the AI inference engine in the upcoming Ryzen mobile chips.

Indian Institute of Technology Madras Jul 2020 - Jul 2022
Student Researcher, Deep Learning for Fluid Mechanics and CFD

- Worked on developing fast and accurate AI algorithms for fluid simulations.
- Trained a ConvNet with physics-based components to correct errors in low-precision simulations.
- Published two first-author research papers and presented at a conference.
- Demonstrated improved computational efficiency and ~45% error reduction: [Paper]

unMazer.ai Summer 2020
Intern, Computer Vision and Product Development

- Event detection using a custom CNN+LSTM network and object detection using YOLOv4 in CCTV road footage.
- Built a procotoring tool to detect cheating in online exams using eye tracking models and OpenCV.
- Instrumental in building three AI-based minimum viable products (MVPs) during the company's initial phase.
- Blog post: [Leveraging AI to Reduce Road Fatalities]

SELECTED PROJECTS

Deconvolution using ADMM with Diffusion Denoising Prior [Poster] [Paper] [Code] Fall 2022
Improved image deblurring under high Gaussian noise by using a pretrained diffusion model as a denoising prior.

DADAgger: Imitation Learning with Disagreement-Augmented Dataset Aggregation [Paper] [Code] Fall 2022
Improved data efficiency of the DAgger algorithm by estimating model uncertainty using ensemble variance.
Resulted in a car-racing agent that learns successfully using 80% fewer queries to the expert.

Find more course projects and side-projects at https://akasharidas.github.io/projects/

SELECTED PUBLICATIONS

Akash Haridas, Nagabhushana Rao Vadlamani, Yuki Minamoto, Deep neural networks to correct sub-precision errors in CFD, Applications in Energy and Combustion Science, Volume 12, 2022

SKILLS

Programming: Python, C++, Julia, MATLAB, CUDA, HTML/CSS, LaTeX
Tools/Frameworks: PyTorch, LangChain, JAX, NumPy, Linux, OpenCV, Pandas, Scikit Learn, Google Cloud Platform, PySpark