Akash Haridas

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

EDUCATION

MSc in Applied Computing September 2022 – December 2023 (expected)
University of Toronto, Department of Computer Science
Courses (ongoing): Computational Imaging, Imitation Learning for Robotics, Natural Language Computing

BTech + MTech in Aerospace Engineering and Data Science 2017 – 2022
Indian Institute of Technology Madras
Courses: Computational Photography, Deep Learning, Systems Engineering for Deep Learning
GPA: 9.26 / 10.00

EXPERIENCE

IIT Madras, Department of Aerospace Engineering July 2020 - July 2022
Student Researcher, Machine Learning for Fluid Mechanics and CFD

- Applied deep learning along with a differentiable fluid solver to correct sub-precision errors in fluid simulations, resulting in improved accuracy and computational efficiency. [Paper]
- Applied neural networks to predict the spectra of pressure fluctuations in turbulent boundary layers, resulting in more accurate models for super/hypersonic aircraft design.
- Published two first-author research papers and gave a talk at an ASME conference.

Anheuser-Busch InBev Summer 2021
Data Scientist Intern, Marketing Analytics

- Interned in the marketing analytics team at the world's largest beer company.
- Improved data-driven allocation of marketing resources across global markets and brands, resulting in an estimated 7% increase in marketing net revenue.
- Automated the team's data processing pipeline using Python (previously done manually in Excel).

unMazer.ai Summer 2020
Deep Learning and Product Development Intern

- Built a deep learning based tool to analyze, detect and flag various features in CCTV footage of road traffic.
- Contributed significantly towards building three company products in their early stage.
- Blog post: [Leveraging AI to Reduce Road Fatalities]

google/jax-cfd
Open Source Contributor

- Identified, traced and fixed a bug in a Google research library.
- Enabled differentiable fluid simulations to run using any floating point precision. Relevant to my research project.

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 sampling efficiency of the DAgger algorithm by estimating model uncertainty using ensemble variance.

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

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

Akash Haridas, Nagabhushana Rao Vadlamani, Modelling Wall-Pressure Spectra in Turbulent Boundary Layers Using Neural Networks, In Proceedings of the American Society of Mechanical Engineers Gas Turbine India Conference, 2021

SKILLS

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