Keshav Worathur

Curriculum Vitae

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Education

2020 - Present **University of Toronto**
B.S. in Computer Science (3.93/4.00)

Awards

2024 **Best Poster Award, UTMSU Undergraduate Research Symposium**
Awarded the best poster award (valued at CAD $1,000.00) for our work using deep learning for brain tumor classification.

Research Experience

2024 **Machine Learning Researcher, Gene2Lead**
Trained deep learning models for predicting the reactivity of amino acids to assist in covalent drug discovery using PyTorch.
Engineered intuitive explanations of machine learning models for chemists using techniques such as Grad-CAM.

Academic Projects

2023 **Brain Tumor Classification with Deep Learning**
Implemented a custom 3D-CNN architecture in Tensorflow to assist in accurately classifying three types of brain tumors in the preliminary stages of diagnosis.
Leveraged explainability techniques to highlight the spurious correlations learned by black-box deep learning models.

2022 **Generative Art Classifier**
Developed a neural network to infer which AI-generated image a respondent is referring to through their survey responses.
Submitted the model to an undergraduate machine learning competition at UofT that placed in the top 10% of over fifty submissions.

Teaching

2023 - 2024 **Undergraduate Teaching Assistant at University of Toronto**
Courses:

- CSC311H5: Introduction to Machine Learning
- CSC343H5: Introduction to Databases
- CSC369H5: Operating Systems

Supported student learning by reviewing machine learning concepts covered in lectures, answering discussion board questions, holding assignment office hours, and giving students writing feedback on assignments.

Extracurricular Activities

2023 **Causality Reading Group**
Gave lightning talks summarizing research papers in causal inference and engaged in discussions about weekly readings from the book *Intro to Causal Inference* (Neal, 2020)

2024 **Markham District GenAI Boot Camp**
Volunteered as a mentor for an intensive two-week boot camp attended by 15+ high school students.
Fostered student learning by creating daily knowledge checks; used live programming demos to teach the basics of generative adversarial networks (GANs) and transformer models.

Coursework and Skills

Machine Learning and Data Mining (94%), Intro to Deep Learning (92%), Intro to Artificial Intelligence (96%), Intro to Image Understanding (91%)

Programming: Python (Tensorflow, PyTorch, scikit-learn), R
Mathematics: Multivariable Calculus, Linear Algebra
Statistics: Bayesian Inference, Linear Models, Latent Variable Models

Relevant Links:

- `https://kworathur.github.io` hosts my academic portfolio, with a detailed write-up about my "Brain Tumour Classification with Deep Learning" project.