Vikram Rangarajan

Website: https://vikramrangarajan.github.io/
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Education

Bachelor of Science -- Computer Science – Machine Learning Track, Statistics Minor
University of Maryland, College Park, MD, 20742
09/22 - Expected 05/25
GPA: 4.0
Relevant Coursework: Artificial Intelligence, Machine Learning, Data Science, Parallel Computing, Calculus 1, 2 & 3, Statistics, Linear Algebra, Compilers, Computer Systems, Algorithms, Organization of Programming Languages, Object-Oriented Programming 1 & 2, Discrete Math

Experience & Projects

Shahoveisi Lab, College Park, MD, 20742
Undergraduate Research Assistant
02/24 - Present

- Assisted in creating manuscripts for machine learning research projects related to identifying and managing turfgrass related diseases
- Used methods such as transfer learning and gradual unfreezing to train highly accurate nematode image classifiers
- Performed automatic hyperparameter optimization using Ray Tune to train scikit-learn and PyTorch models to achieve highest metrics
- Performed parallelized automatic image dataset preprocessing using OpenCV and NumPy

SimpleTensor
02/24 - 05/24

- Created a library which provides Tensors with reverse-mode automatic differentiation capabilities using only numpy arrays for the Intro to Artificial Intelligence (CMSC421) class
- Supports many differentiable n-dimensional tensor operations such as matrix multiplication, convolution, element-wise functions, aggregate functions, and arithmetic operations, with support for operations along any axes
- Created MNIST demo using convolutional, dense, and normalization layers and used techniques such as Xavier/Glorot initialization and residual connections
- Fully documented using sphinx at https://vikramrangarajan.github.io/SimpleTensor/

A.M. Best Rating Services, Oldwick, NJ, 08858
Data Strategy Engineer
06/23 - 01/24

- Gained advanced experience with relational databases, Docker, Linux, Python, and Pandas
- Learned to use Azure Data Factory (ADF) to transform and move data on the Azure Cloud Platform
- Used Apache Airflow to orchestrate ETL pipelines between on-prem databases and Azure
- Accelerated a data pipeline's execution time from 90 minutes down to 6 minutes using ADF

Publications

1. Fereshteh Shahoveisi, **Vikram Rangarajan,** Benjamin Waldo, Sadegh Jafari
   Deep Learning Detection of Seven Plant-Parasitic Nematode Genera Associated with Turfgrass
   In Preparation, 2024
2. Fereshteh Shahoveisi, **Vikram Rangarajan,** et al.
   Enhancing Precision Weed Prediction in Golf Courses Using Machine Learning Algorithms
   In Preparation, 2024

Technical Skills

Programming languages: Python, C/C++/CUDA, Rust, Java, OCaml, R, SAS
Technologies: PyTorch, TensorFlow, NumPy, scikit-learn, OpenCV, Git, Linux, Docker, Ray, Azure Cloud Services, SQL, Relational Databases (Postgres, Oracle, SQL Server), Apache Airflow

Awards & Certifications

Astronomer Certification for Apache Airflow Fundamentals *02/24*
UMD Computer Science Semester Academic Honors *Fall 22 - Spring 24*