Andrew Farabow

github.com/andrewaf1 linkedin.com/in/andrew-farabow
703-474-6270 contact@andrewfarabow.com

Education

Virginia Tech (expected grad 2023)
GPA: 3.2 B.S. in Computer Science w/ Stat minor
Elective Courses: Restricted Research, Mathematical Statistics 1&2 (Probability and Inference), Data Analytics and ML 1&2, Regression Analysis
Gonzaga College High School (2015 - 2019)
GPA 3.98

Skills

Programming: Python, C, Java, R, Matlab
Frameworks: PyTorch, Scikit-learn, Keras, Numpy, OpenCV, Pandas, Matplotlib, RLLib, OpenAI Gym
Other: deep learning, recurrent and convolutional neural networks, reinforcement learning, GANs, autoencoders, data analytics, statistical learning, Linux, Git, Kubernetes, LaTeX, Agile

Work Experience

Machine Learning Engineer Intern - Vake **Summer 2022**
- Using machine learning to automatically detect ships in satellite images.

Research Assistant - Sanghani Center (Virginia Tech) **May. 2021 - present**
- Developing a recurrent neural network (RNN) model to forecast influenza cases for the CDC FluSight Competition.
- Spearheading the effort to create an open-source library of epidemiological models for forecasting the COVID-19 pandemic and the seasonal flu, under the direction of Prof. Naren Ramakrishnan (not yet released).
- Created a user-friendly, scikit-learn inspired interface and structured the library to maximize code reuse and simplify the creation of new models and datasets.
- Implemented compartmental, statistical, and machine learning models, as well as datasets and evaluation metrics.

Research Assistant - BIST (Virginia Tech) **Nov. 2019 - present (school year)**
- Working on a Center for Bioinspired Science and Technology project, led by Prof. Rolf Mueller, involving the use of bat-inspired biomimetic sonar and deep learning for robotic navigation in forested environments.
- Helped develop a ConvNet-based algorithm to predict the position of the sonar sensor within a forest area.

Research Assistant - Hume Center (Virginia Tech) **Sept. 2019 - Dec. 2021 (school year)**
- Built a grid-based, OpenAI Gym-compatible simulation called SensorGrid that replicated key aspects of drone sensing and navigation challenges in a simplified environment, useful for testing reinforcement learning models before deployment to a more computationally-expensive environment, as part of the Raytheon RAAIDS project.
- Designed and trained a Resnet-based object-detecting convolutional neural network architecture, which achieved 97% accuracy on the classification phase of the Lockheed Martin AlphaPilot Dataset.
- Participated in the IC CAE Scholars Program, which involves conducting research with the Hume Center and participating in a number of events (seminars, workshops, etc).

Machine Learning Engineer Intern - Decipher Technology Studios **2018 - 2020 (summers)**
- Improved performance of a recurrent autoencoder used to identify anomalies in service logs by adding self-attention.
- Worked on a small team to develop a predictive autoscaler that uses deep reinforcement learning (RL) to control the resources allocated to a microservice, striking a balance between performance and hosting cost.
- Wrote PyTorch implementations of policy gradient, Q-Learning, and actor-critic deep RL algorithms.
- Wrote a simulator for offline training and a microservice for online training and deployment (on Openshift and EKS).
- Added recurrent and convolutional layers to the neural networks to better leverage autocorrelation within the data.

Awards

David Heilman Research Award **April 2022**
- Awarded by the VT CS department for excellence in undergraduate research.

Best Overall at HackBI **January 2017**
- Won best overall in a programming contest by writing an app that makes use of machine learning and computer vision techniques to interpret hand-written text.

Activities

Head of Logistics - VTHacks Organizing Team **2019 - present**
- Overseeing the team responsible for managing the budget, purchasing meals, recruiting faculty judges, and other tasks.

Stage Manager - Gonzaga Dramatic Association Stage Crew **2017 - 2019**
- Led a team of over 20 students in the construction of a structure over 20 ft. wide and 8 ft. tall.
- Quickly diagnosed and fixed technical issues in a high-pressure environment.

Projects

Computable AI - co-author of a blog on machine learning, writing a Fundamentals of Deep RL series.
Machine Learning Templates - flexible PyTorch implementations of a supervised learning neural network, autoencoder, GAN, and evolutionary algorithm designed for future machine learning projects.
Grease Lights and Magic Mirror - coded and designed circuits for custom Arduino and Raspberry Pi-based lighting effects and optical illusions featured in high school theater productions.