Andrew Farabow

github.com/AndrewAF1 linkedin.com/in/andrew-farabow
703-474-6270 contact@andrewfarabow.com

Education

Virginia Tech (2019 - 2023)
Major GPA: 3.42 B.S. in Computer Science with Major in Data-Centric Computing, Minor in Statistics
Courses: ML Security, Data Analytics and ML 1&2, Regression Analysis, Mathematical Statistics 1&2

Skills

Programming: Python, C, Java, R, Scala
Frameworks: PyTorch, Lightning, Tensorflow, Keras, Scikit-learn, Pandas, Numpy, RLLib, OpenAI Gym
Other: metric learning, reinforcement learning, transformers, CNNs, GANs, Linux, Git, GCP, Docker

Work Experience

Machine Learning Engineer - Vake (via Farabow Machine Learning Consulting LLC) **June 2023 - present**
- Working on algorithms to detect and identify dark vessels in satellite imagery.

Machine Learning Engineer Intern - Vake **July 2022 - May 2023**
- Developed a few-shot ship-recognition algorithm using deep metric learning. Details subject to NDA.

Research Assistant - Sanghani Center (Virginia Tech) **May. 2021 - May 2023**
- Created a library of epidemiological models, datasets, and other tools for forecasting COVID-19 and seasonal flu cases.
- Created a user-friendly, scikit-learn inspired interface and structured the library to maximize code reuse.
- Implemented compartmental, statistical, and machine learning models, as well as datasets and evaluation metrics.
- Used a Temporal Fusion Transformer Model to submit predictions to the CDC FluSight Competition.

Research Assistant - BIST (Virginia Tech) **Nov. 2019 - Sept. 2022 (school year)**
- Helped develop a ConvNet-based algorithm to predict the position of a bat-inspired sonar sensor within a forest area.
- Tested various model architectures, pre-training techniques, and visualization methods (saliency maps, UMAP, etc).

Research Assistant - Hume Center (Virginia Tech) **Sept. 2019 - Dec. 2021 (school year)**
- Built a grid-based, OpenAI Gym-compatible simulation called SensorGrid that replicates 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.

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.

Publications

- Zhang, L., Farabow, A., et al. (2022). *Small-scale location identification in natural environments with deep learning based on biomimetic sonar echoes.* Bioinspiration & Biomimetics.

Awards

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

Best Overall at HackBI **January 2017**
- Wrote 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 - 2022**
- Oversaw 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 large structure that safely supported numerous people.
- Coded and designed circuits for custom Arduino and Raspberry Pi-based lighting effects and optical illusions.

Projects

Movie Neural Style Transfer - For the capstone project component of my degree, my team created a dataset of frames from original and recent Star Wars movies and trained a CycleGAN to modernize the visuals.
Disrupting Disrupting Deepfakes - Developed a method of removing adversarial perturbations, exposing a weakness in proactive deepfake defenses, for a graduate-level class on ML in Security.