

# Andrew Farabow

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## Education

### **Virginia Tech (expected grad 2023)**

GPA: 3.15 B.S. in Computer Science w/ stat minor

Relevant Courses: Data Structures, Restricted

Research, Discrete Math, Calculus 1-3, Linear

Algebra, Statistics, Computer Organization I

### **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

### **Research Assistant - Hume Center (Virginia Tech)**

**2019 - present (school year)**

- Working under Prof. Daniel Doyle to train reinforcement learning agents on strategy games.
- Previously designed and trained object-detecting convolutional neural network architectures for drone navigation

### **Research Assistant - BIST (Virginia Tech)**

**2019 - present (school year)**

- Working for the Center for Bioinspired Science and Technology under Prof. Rolf Mueller to use deep learning to facilitate robot navigation via biosonar.
- Previously used the DeepLabCut software package to track bats' movements in images.

### **Machine Learning Engineer Intern - Decipher Technology Studios**

**2018 - present (seasonal)**

- Working on a small team to develop Sense, a new product which provides deep reinforcement learning-powered predictive autoscaling for Decipher's Grey Matter service mesh
- Implemented policy gradient, Q-Learning, and actor-critic approaches to deep reinforcement learning (DQN, DDPG, A2C, PPO, SAC, etc) in Python
- Wrote a microservice environment simulator for offline training with another intern and created a rule-based autoscaler to jumpstart training via imitation learning.
- Added recurrent and convolutional layers to the neural networks to better leverage time-series data
- Collected metrics using Prometheus and Gatling and tested various model architectures on the data
- Created infrastructure to deploy Sense as a service on OpenShift and Elastic Kubernetes Service.

## Activities

### **Judging Coordinator - VTHacks Organizing Team**

**2019 - present**

- Reached out to potential corporate sponsors and faculty judges for Virginia Tech's hackathon
- Handled judging logistics during the event and took note of improvements to implement next year

### **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
- Called cues during shows, maintained safe working conditions and quickly diagnosed and fixed technical issues in a high-pressure environment

### **Participant and Mentor - HackBI (Bishop Ireton High School Hackathon)**

- 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
- Returned to HackBI in 2018 to mentor teams and teach deep learning concepts

## 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