

# ALEX THORNTON

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## EDUCATION

### Columbia University

#### Master of Science in Electrical Engineering

New York, NY

May 2022

Specialization: Data-Driven Analysis & Computation

Notable Coursework: High-Dimensional Data Analysis, Deep Learning, Reinforcement Learning, Big Data Analytics

### Binghamton University

#### Bachelor of Science in Electrical Engineering

Binghamton, NY

May 2019

Honors: Summa Cum Laude | Tau Beta Pi | Eta Kappa Nu | Phi Eta Sigma

## TECHNICAL SKILLS

### Software

Python, Linux, Docker, Hadoop, Spark, SQL, DSP, Tensorflow, PyTorch, MATLAB, Big Data, C/C++, Google Cloud, AWS, Convex Optimization, Speech Recognition

### Hardware

Cadence Virtuoso, SPICE, Analog/ Digital IC Design, Compressed Sensing, 5G

## PROFESSIONAL EXPERIENCE

### Lockheed Martin

Syracuse, NY

#### Senior Machine Learning Engineer

Oct 2022 - Present

- Lead multiple Secret / Top Secret classified IRAD programs for advanced signal processing and AI research team
- Wrote a Python package for synthetic aperture radar (SAR) image processing, and personally tested it on a helicopter

#### Machine Learning Engineer

Sep 2021 – Oct 2022

- Designed and evaluated a PyTorch LSTM model for IRAD submarine electronic warfare application
- Transitioned data pipeline to modern AWS data lake with MySQL tables for storage and computation
- Improved data labelling process with multi-hot-encoding, reducing model complexity from  $O(2^n)$  to  $O(n)$
- Taught internal company-wide course on reinforcement learning, with lectures and Jupyter notebook exercises

#### Engineering Leadership Development Program / Software Engineer

Feb 2021 - Sep 2021

- Developed technical and soft skills through rigorous 10-month team lifecycle project and conferences
- Wrote GitLab runner continuous integration (CI/CD) of shell scripts for lab automation
- Upgraded software interface for firmware and hardware upgrade on classified program

#### Systems Engineer Associate

Jun 2019 - Feb 2021

- Delivered technical demonstration as lead systems engineer for prospective \$6 million contract
- Created GUIs and MATLAB tools for helicopter flight simulators and data analysis tools

### SRC, Inc.

North Syracuse, NY

#### Radar Engineering Intern

May 2018 - Aug 2018

- Modelled, analyzed, and verified system design and system performance for advanced radar systems
- Implemented signal processing and data analysis algorithms in MATLAB and Python

## PROJECTS

### SpotifyClassifier

- Top paper & student voted 2<sup>nd</sup> best research project at Columbia University Big Data Analytics Expo – Fall 2021
- Devised machine learning model to interface with Spotify API to classify track genres from song name only
- Performed novel insight into subgenre relationships through analysis from track recommendation collisions

### MR Image Compression

- Designed wavelet transform based MRI scan compression technique to prevent generational image loss
- Developed CNN auto-encoder architecture to minimize latent space while preserving image features

## ADDITIONAL HONORS

- Eagle Scout - Boy Scouts of America, 2013