**Alex Thornton**

1221 Tulip Street, Apt. 327, Liverpool, NY • [alext@caa.columbia.edu](mailto:alext@caa.columbia.edu) • [linkedin.com/in/alex‑thornton](https://linkedin.com/in/alex-thornton) • (585) 362‑9601

**education**

**Columbia University** New York, NY

**Master of Science in Electrical Engineering** May 2022

Specialization: Data-Driven Analysis & Computation

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

**Binghamton University** Binghamton, NY

**Bachelor of Science in Electrical Engineering** May 2019

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

**technical skills**

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| **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() to O()
* 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**](https://github.com/athornton1618/SpotifyClassifier)

* Top paper & student voted 2nd 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**](https://github.com/athornton1618/MRI_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