# Alexander Dong

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## Education

**New York University** Sep 2019 – May 2021
*M.S. Data Science, GPA: 3.92* New York, NY

- **Relevant Coursework**: Machine Learning, Big Data, Computer Vision, Deep Learning, Search and Discovery, Natural Language Understanding

**Washington University in St. Louis** Aug 2011 – May 2015
*B.A. Mathematics, GPA 3.92* St Louis, MO

- **Honors Program in Statistics**
- **Honors Thesis:** A Comparison of Lasso and Dantzig Selector in Linear Regression Models

## Professional Experience

**NYU Center for Data Science** Aug 2020 – Ongoing
*Graduate Teaching Assistant* New York, NY

- Graduate Teaching Assistant for Optimization and Computational Linear Algebra, a graduate level course for data science masters students (∼90 students).
- Course covers fundamental mathematics for machine learning applications such as PCA, regularized linear regression, spectral clustering, and gradient descent.

**MIT Lincoln Laboratory** Aug 2015 – March 2019
*Assistant Technical Staff* Lexington, MA

- Researched topics in aircraft survivability, such as: passive radars, communication within radar networks, flight path optimization, and capability of threat aircraft. Regularly presented results to U.S. Air Force research sponsors.
- Designed and developed a library in Python to parse text-based intelligence reports, leading to an automated workflow for reconstructing and analyzing radar connectivity networks.
- Synthesized inputs from multiple aircraft and missile simulation tools in C++ and Simulink in order to optimize an aircraft's flight path given various war scenarios, which enabled our group to rapidly analyze emerging threats.
- Contributed to and maintained a library of physics-based models in C++ and MATLAB that simulate radar detections of aircrafts.
- Acted as a statistical consultant on a multitude of topics including radar statistics, signal processing, and linear regression modeling.

## Project Work

**Data for Justice** *Master's Capstone Project* Fall 2020

- Worked with NYU Marron Institute and Fort Bend County, Texas District Attorney's Office to identify and quantify prosecutorial bias in the criminal justice system.
- Conducted an exploratory analysis which identified recordkeeping issues, leading to changed data collection processes.
- Found that large amounts of bias exist at limited decision-making points, which lead to investigations on why those sources of bias exist.

**Learning to Rank Hotels** *Class Project* Fall 2020

- Worked with RocketMiles, a hotel booking website, to benchmark deep learning methods for search engine/information retrieval ranking on an extremely sparse dataset.
- Implemented MultVAE and word2vec methods in pytorch, and achieved similar performance (on NDCG) to the LambdaMART production model with MultVAE.

**Dataset-Aware Neural Networks** *Independent Project* Summer 2020

- Led a team of five graduate students that incorporated a dataset's principal component vectors as feature engineering for a standard CNN classifier.
- Presented results to the NYU data science community showing that our model works well for very structured/uniform datasets, but does not generalize well to unstructured datasets.

## Technical Skills

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| **Skills** | Machine Learning, Deep Learning, Computer Vision, Recommender Systems, Statistics, Physics |
| **Languages** | Python (pytorch, pandas, sklearn), MATLAB, C++, R, Bash, Spark, SQL, git, LaTeX |
| **Hobbies** | B-boying (9 years), biking, cooking, hiking |