MATTHEW MAITLAND

New York, NY | **Master of Engineering** | (914)-646-9991

matthewmaitland.com | matthew@matthewmaitland.com

Education

Cornell Tech, New York, NY — **August 2024 - May 2025**

Master of Engineering in Computer Science — **GPA:** 4.1

Cornell University, Bowers College of Computing and Information Science, Ithaca, NY — **August 2020 - May 2024**

Bachelor of Science in Information Science**,** Data Science Concentration

Degree Honors: Cum Laude, Dean's List (Spring 2022, Fall 2022, Spring 2024) — **GPA**: 3.5

CET Academic Program, Florence, Italy — **January 2023 - May 2023**

Professional Experience

Cisco Systems, New York, NY, ***Data Science Technical Intern*** — **May 2023 - August 2023**

- Designed and implemented a "playground" using Python for users to explore sustainable network configurations
- Generated design documentation, responded to iterations of feedback from team, and presented to 150 colleagues, including executives
- Leveraged both static internal and user inputted data to generate digestible insights into network-derived emissions
- Used Gradio for UI, and Numpy, Pandas, Matplotlib for back-end and insights

Barstool Sports, New York, NY, ***Data Analyst Intern*** — **April 2022 - August 2022**

- Created Python models to predict and maximize podcast success based on personnel and logistical data
- Used Numpy/Pandas to clean data, Scikit-Learn to make predictions, and Matplotlib to visualize data
- Identified, collected, and cleaned relevant metadata from Barstool Sports' videos and podcasts using Microsoft Excel and Google Sheets
- Assisted in the UI/UX design of an internal platform that centralizes metadata from Barstool Sports' videos and Podcasts

Projects and Research

Minitorch: Building a Deep Learning Framework from Scratch — **August 2024 - December 2024**

- Implemented core machine learning concepts, including tensors, backpropagation, and auto differentiation without using high-level libraries
- Optimized computational graph creation and tensor operations to provide scalability for billions of parameters
- Parallelized higher-order functions using CUDA, achieving significant performance improvements by leveraging GPU acceleration
- Designed custom convolutional neural networks, mimicking features of deep learning frameworks like PyTorch

Algorithmic Pricing Agent with Capacity Constraints — **November 2024 - December 2024**

- Built gradient-boosted decision trees with XGBoost to optimize personalized pricing based on consumer data and purchase behavior
- Applied dynamic programming to manage capacity constraints, maximizing revenue across 2,500 simulation periods
- Developed game-theory-based strategies to enable competitive pricing against adversarial agents

Movie Rating from Text Review Sentiment Analysis with Data Augmentation — **October 2024**

- Earned first place in Kaggle competition of >100 participants by implementing a data preprocessing pipeline and NLP models
- Increased training data by 82% using Logistic Regression to impute high-confidence labels and iteratively augmenting training corpus
- Preprocessed and vectorized text data using TF-IDF with tri-grams and a 50,000-feature limit, capturing contextual nuances

NLP Research of Presidential Speeches to Identify Political Party Affiliation/Philosophy Shift (PDF) — **January 2024 - May 2024**

- Through ensemble sentiment analysis/embedded topic modeling on public speeches, clustered presidents into modern political parties
- Compared modeled labels with true labels in order to map how the speech style and party philosophies have changed over time
- Applied NLP/Deep Learning techniques such as Zero-Shot Learning, tokenization and TfIdf Vectorization

Spotify Song Popularity Predictor — **August 2022 - November 2022**

- Built/trained a Random Forest Regressor to predict song popularity given features from Spotify's API with <4% error rate
- Used K-Means Clustering to identify features with relevant affects on our target variable
- Accessed Spotify API in order to generate random datasets for training and testing

Relevant Coursework

Machine Learning (ML) Engineering, Applied ML, Causal Inference with ML, AI Data/Compute/Algorithms, ML Business Applications, Data Science in the Wild, Advanced Data Science, NLP Research, Large Language Models, Statistical Theory and Applications, Object-Oriented Programming and Data Structures, Business Intelligence, Web Development (Front and Back-End), Calculus, Privacy/Security in the Data Economy, Startup Accelerator

Skills

Technical Skills: Python, R, SQL, PyTorch, Java, C++, JavaScript, HTML, CSS, PHP, d3, Numpy, Pandas, Scikit-Learn, Matplotlib, Git, Excel, Tableau, Boomi, WhereScape, TensorFlow

General Skills: Machine Learning, Deep Learning, ML Engineering, Data Visualization, NLP, Data Engineering, Data Preprocessing, Statistical Analysis, Data Structures and Algorithms, Leadership, Collaborative Problem Solving, Technical/Non-Technical Communication