Andy**Liu**

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education
BS Mathematical Sciences
Minor Computer Science

Carnegie Mellon University
Pittsburgh, PA

Class of 2017

programming
Python, C/C++

tools
Pytorch, Huggingface, Pandas, Sklearn, DyNet, Keras, Tensorflow, LaTeX

coursework
machine learning, parallel algorithms, probability theory, real analysis, financal engineering, functional programming

hobbies
tennis, speedcubing, German-style board games

experience

Bloomberg, LP September 2017 - Present

Senior Research Engineer - AI Dialogue Modeling

- Research, develop, and productionize neural network solutions for Natural Language Understanding tasks on financial language text, such as:
  - Intent classification for trader/broker instant messaging workflows
  - Named Entity Recognition+Disambiguation for security mentions
  - Slotfilling for offer detection and extraction
- Internally published a white paper on stratified sampling and evaluation on large-scale datasets after developing such a system for annotation of large conversational datasets.
- Developed custom tokenizers/normalizers for training word2vec and RoBERTa embeddings from scratch over large, unlabeled, internal, financial text datasets, which outperform publicly available pretrained embeddings on downstream tasks.
- Identified issues with dataset quality, correlated them with model errors, and developed several human-computation systems (such as evaluation of workers against experts, data provenance databases, and few-shot learning-based auto-annotation) to solve these problems, which led to measurable improvements in model performance.
- Won first place in an internal hackathon with a prototype to improve configuration and visualization of hypertune jobs, which was later productionized by the platforms team.

Akuna Capital June 2016 - August 2016

Quantitative Trading Intern

- Formulated mathematical conditions for automated trading under slippage. Used Python to build a framework for backtesting, signal processing, and model tuning.
- Developed high-Sharpe volatility index trading strategies using statistical regression and empirical backtesting. Traded live risk for the last two weeks of the internship.

Old Mission Capital June 2015 - July 2015

Quantitative Trading Intern

- Built tools to perform time series analysis on the historical performance of commodity ETF rebalances during roll periods.
- Used statistical computing tools in Python to analyze fill quality of trades and provide visualization of results across different exchanges and time intervals.

Department of Computer Science - Carnegie Mellon University September 2014 - May 2017

Teaching Assistant

- Supported 15-251, "Great Theoretical Ideas of Computer Science", an intermediate discrete mathematics course with an emphasis on theoretical computer science.
- Supported 15-451, "Algorithms Design and Analysis", a proof-based computer science course centered around the design and analysis of algorithms.

hackathons

Citadel Datathon March 2017

Runner-up

- Second place in a data science competition with a field of 42 teams. Teams were given an open prompt to analyze 2015 Uber ride data in New York City.
- Used linear regression with L1 regularization (LASSO) to predict Uber pickup demand using NYC NTA zone demographics as features. Also trained GBM and Ridge Regression models.
- Produced an executive summary with visualizations of ride pickup hotspots, interpretation of learned model parameters, and predictions of underserved zones.

Tartan Data Science Cup February 2017

Winner

- Won first place in a data science hackathon with a field of 30 teams. Teams were tasked with predicting 'bad' loans using borrower characteristics (e.g. annual income, credit score, etc.).
- Trained GBM, Random Forest, and Logistic Regression models on a loans data set using sklearn in Python. Tuned model hyperparameters with cross-validation.
- Presented key results and methodology to a panel of Capital One Data Scientists.