

Charlie Hou

Website: <https://houcharlie.github.io/>
Github: <https://github.com/houcharlie>
Email: hou.charlie2@gmail.com

1788 Trinity Rd
Canton, MI 48187
734-928-8872

Education

Princeton University, Princeton, NJ *Sept 2015-June 2019*
Bachelor of Science in Engineering, Operations Research and Financial Engineering
Minors: Applied Math
Overall GPA: 3.81/4.0 (School's top quintile)
Relevant Coursework: Functional Programming, Algorithms and Data Structures, Introduction to Programming Systems, Real Analysis, Applied Machine Learning, Mathematical Statistics (grad class), Statistical Learning Theory (grad class), Large Scale Optimization for Data Science (grad class), Deep Learning Foundations (grad class), High Dimensional Probability (grad class)

Experience

Uber (Advanced Technologies Group), San Francisco, California, **Research Intern** *June 2019 – Aug 2019*

- Computer vision and AI research

Goldman Sachs, New York City, New York, **Model Risk Strat Intern** *May 2018-Aug 2018*

- Improved mathematical rigor of simulations on stress-testing model, implemented changes in code using Slang (GS programming language). These changes impacted projections made by \$250 million
- Designed and implemented a model monitoring system in Slang and SQL that gives periodic summaries and alerts the firm to unexpected behaviors on an ongoing basis based on current data
- Quantitatively validated appropriateness of machine learning loan model using R

Advised Projects

Multi-shot learning in graphs (Advised by Prof. Miklos Racz)

- Designed a new algorithm to recover node orderings from multiple graphs. The algorithm quickly approaches perfect accuracy as the number of graphs grows empirically. Proved that algorithm converges given enough samples
- Used concentration of measure to prove the rate at which the algorithm converges to ground truth

Convergence analysis of one-block ResNets (Advised by Prof. Yuxin Chen)

- Implemented a modified ResNet in Pytorch, ran simulations and found that this modified architecture has good landscape properties: empirically, all reachable local minima are global minima.
- Showed that in the one-dimensional case that a large portion of critical points are also global minima

Interpolated peeling: New learning algorithms for vertex order recovery (Advised by Prof. Miklos Racz)

- Created new algorithm, Interpolated Peeling, that gives more precise control over order recovery

Personal Projects

Wall Street Bets

- Used a multinomial naïve bayes model on Reddit posts, using Python and scikit-learn to trade stocks

School Activities/Misc.

Tiger Chef Champion (Winner 2018, Participant 2016/2017) (a school-wide cooking competition)

Princeton Club Tennis, *A-team member*

Sept 2015-Present

Technical Skills

Proficient: Python, R, SQL, Java

Familiar/Experience with: C, C++, MATLAB, Javascript, Ocaml, Hadoop, MapReduce, C#

Software packages: Tensorflow, Pytorch, scikit-learn, PANDAS, scipy, jupyter, glmnet, igraph