Mengyao Huang

1929 Plymouth Road APT 4027, Ann Arbor, MI 48105
(+1) (734) 263-3205 | huangmy@umich.edu | Github: https://github.com/MengyaoHuang

Education

University of California, Berkeley — Berkeley, CA
Haas School of Business
PhD student in Marketing Science — *Aug. 2020 -*

University of Michigan — Ann Arbor, MI
Department of Mathematics
Master of Science in Quantitative Finance and Risk Management & Data Science Certificate Program; GPA: 3.60/4 — *Sept. 2017 - May. 2019*

Relevant Courses: Numerical Analysis, Stochastic Analysis, Statistical Learning, Data Mining, Machine Learning, AI Foundations, Data Manipulation and Analysis, Financial Mathematics, Computational Finance

Dalian University of Technology — Dalian, China
School of Mathematical Sciences
Bachelor of Science in Mathematics and Applied Mathematics & Bachelor of Economics in Finance; GPA: 3.67/4 — *Sept. 2013 - Jun. 2017*

Relevant Courses: Calculus, Algebra, Differential Equations, Optimization Methods, Complex Analysis, Real Analysis, Functional Analysis, Probability and Statistics, Time Series Analysis, Operations Research, Game Theory, Principles of Economics, Econometrics

Research Interests

Bayesian Statistics, Machine Learning methods for Big Data in Marketing Research

Research and Working Projects

- **Marketing Research**: Advisor: Prof. Fred Feinberg — *May. 2018 - present*

  ***Topics**: Data Processing, Machine Learning, Bayesian Inference, Choice Model, Matrix Factorization, Variational Inference*

  - Integrated databases and performed data cleaning with Python Pandas (e.g., outliers filtering, data imputation, categories reduction, dummy variables creation and data normalization); operated data visualization for CRM database with Python ggplot and matplotlib
  - Implemented customer clustering/classification algorithm for CRM database with K-means, K-modes (GOWER distance), Random Forest and Naive Bayes in Python and package "MatchIt" in R
  - Learned EM Algorithm, Gibbs Sampling and discrete choice models; implemented Multinomial Logit Model, Nested Logit Model (with/without cross validation), Linear Mixed Effects Model and PCA Analysis in R and Python scikit-learn & mnlogit
  - Conducted literature review related to Low-rank Matrix Approximation, latent factors interpretation and Recommendation System; implemented Bayesian Matrix Factorization (with/without side information) in Python with MovieLens dataset
  - Implemented Variational Inference with Normalizing Flows algorithm (Rezende & Mohamed 2016) in Python with MNIST dataset and Variational Autoencoder (VAE) and Gaussian Mixture Model in Pyro (with/without Poutine library)
  - Performed discrete choice analysis for “phased decision-making” (e.g., changepoints, multi-stage choices, consideration sets); helped with custom R package modification, output aggregation and visualization

  ***Working Projects**:*

  - Write-up extensive documentation for R package DCmods
  - Literature review for VAE in data matching and its application in data anonymization and data fusion
  - Matrix Factorization application in marketing data imputation
  - Latent factors modeling for digital journalism experiments

- **Social Structure research in Strategy**: Advisor: Prof. Michael Jensen — *Mar. 2019 - present*

  ***Topics**: Web Scraping and Data Integration, Selenium Automation Testing, Natural Language Processing*

  - Performed web scraping (e.g., IMDb, Wikipedia, BookMyShow, Box Office Mojo) to collect seasonality variables, film directors’ demographic information and films’ performance indicators with Python Pandas & Beautiful Soup and VBA in Excel

- Implemented transparent text analysis with Linguistic Inquiry and Word Count (LIWC) and Topic Modeling Analysis with Python scikit-learn (Latent Dirichlet Allocation)
- Set up scraping program through Selenium driver to automate login & searching process; collected rankings of casts and directors by DOM & HTML parsing and text pattern matching
- Working on unconventionality variables collection and unconventionality measure calculation

- **Optimization in Principal-Agent Problem**: Advisor: Prof. Nicolas Hernandez *Nov. 2017 - Oct. 2018*
  - Implemented nonpolynomial approach of actions related agent's utility maximization problem (Renner & Schmedders 2015); tested algorithm efficiency and global optimality with both MATLAB GloptiPoly and modified fmincon method
- **Optimization in Asset Liability Management**: Advisor: Prof. Guotai Chi *Nov. 2015 - Jun. 2017*
  - Implemented optimization algorithm of worst-case Conditional Value-at-Risk (WCVaR) under mixture distribution and kernel density estimation (Zhu & Fukushima 2009) with MATLAB; modified robust portfolio optimization by introducing credit rating transition matrix
- **Complex Ecosystem Evolution Model**: Advisor: Prof. Qiuhui Pan *Mar. 2015 - May. 2016*
  - Conducted evolutionary research in predator-prey system under the influence of external factors; implemented simulations via Cellular Automation and dynamic Monte Carlo (DMC) with MATLAB

Professional Experience

Washtenaw Community College Ann Arbor, MI
Research Analyst in Institutional Research and Analytics Dept *Aug. 2019 - May. 2020*
Mentor: Dr. Mourad Roger

- Updated databases & annual reports using Microsoft Access and Power BI
- Conducted extracurricular research through descriptive statistical analysis; working on further research related to individual course-taking behavior using Market Basket Analysis and data mining techniques (e.g., sequential pattern mining) in Python
- Created Dashboard for college operation management using Python dash-bootstrap-components

BOHAI Securities Co., Ltd Tianjin, China
Researcher in Quantitative Trading Division *Jul. 2016 - Aug. 2016*

- Improved stock price cycles estimation through weighted Fourier Transform algorithm; strengthened the performance of quantitative timing model by adopting year-on-year series and adjusting tuning parameters (e.g., length of subsequences)

AXA Group, Hong Kong Branch Hong Kong, China
Assistant Analyst in Market Research Department *Jan. 2016 - Feb. 2016*

- Developed trading strategies based on Fundamental Analysis and indicators including MACD, KDJ, SAR and price-volume relationship
- Analyzed financial time series in EViews; applied multivariate linear regression model and GARCH model to predict Hang Seng Index

Seminars

- **Quantitative Research in Marketing**: Organized by Prof. Puneet Manchanda *Oct. 2019 - Nov. 2019*
- **Special Topics in Marketing**: Organized by Prof. Fred Feinberg *Jan. 2019 - Feb. 2019*

Honors and Activities

President of DUT Mathematical Modeling Association *Sept. 2015 - Sept. 2016*
(DUT Outstanding Student Association Award) *May. 2016*
Certificate of DUT Innovation Practice Training 3-year Program (Mathematical Modeling track) *Jul. 2016*

Third prize in National Mathematical Modeling Contest *Nov. 2015*
First prize in Mathematical Contest in Modeling in Northeastern China (Top 5%) *May. 2015*
DUT Technological Innovation Award (Top 5 out of 180) *Oct. 2014*

Personal

- **Languages**: Mandarin Chinese (native), English (TOEFL iBT: 105, GRE: 325+4.5)
- **Skills**: fluent in Python, R, MATLAB and C++/C; intermediate in SQL, Pytorch-Pyro, Stan, Microsoft Access
- **Interests**: sketching, play squash, social psychology