Patrick Ding

Texas A&M University, Department of Statistics

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Education

Texas A&M University — *College Station, Texas*

PhD Statistics — *Aug 2017 - 2022 (expected)*

Princeton University — *Princeton, New Jersey*

BSE Operations Research and Financial Engineering — *Sep 2011 - Jun 2015*

Experience

Adobe — *Lehi, UT*

Data Science Intern — *May 2018–Aug 2018*

- Implemented nested Monte Carlo estimators of KL divergence between MCMC, variational Bayes, and MAP posteriors of state space models using R, Stan, and C++
- Evaluated machine learning models for predicting loss of accuracy of approximate inference algorithms for state space models
- Demonstrated viability of model for predicting when MAP gives accurate estimates

AllianceBernstein — *New York, NY*

Associate — *Jun 2015–Jun 2017*

- Guided investment decisions in Emerging Markets Multi Asset Portfolio with more than one billion dollars in assets by developing factor regression model for emerging market equity and foreign exchange returns
- Guided investment decisions for variance swap sleeves with tens of millions of dollars in assets by building Matlab tools for back testing market timing and selection strategies and developing regression model for predicting variance swap returns
- Expanded firm's risk management and volatility forecasting capability by modeling option implied volatility surface
- Enabled firm to fulfill more stringent RFPs by creating realistic option simulator in Matlab, supporting complicated trading, expiration, and hedging behavior with multiple assets
- Communicated model results to team through daily updating Excel reports with Matlab COM automation and SQL server

Projects

Multivariate Gaussian probability and sampling review

Patrick Ding, Debdeep Pati — *Mar 2020–Present*

- Compared state of the art algorithms for high dimensional multivariate Gaussian sampling and probability estimation
- Translated algorithm implementations in Matlab and Python to Rcpp and distributed in R packages

Word vectors for variational autoencoding topic modeling

Kristyn Pantoja, Patrick Ding — *Sep 2018–Jan 2019*

- Investigated the benefits of combining word embeddings and autoencoding topic models
- Implemented variational autoencoding topic models using pytorch

Publications

Robust negative sampling for network embedding

Proceedings of the AAAI Conference on Artificial Intelligence — *2019*

- M Armandpour, **P Ding**, J Huang, X Hu (2019). Robust negative sampling for network embedding. *Proceedings of the AAAI Conference on Artificial Intelligence*.

DRUM: End-To-End Differentiable Rule Mining On Knowledge Graphs

Advances in Neural Information Processing Systems — *2019*

- A Sadeghian, M Armandpour, **P Ding**, DZ Wang (2019). DRUM: End-To-End Differentiable Rule Mining On Knowledge Graphs. *Advances in Neural Information Processing Systems*.

Skills

Programming Languages

R – Python – Matlab – Rcpp

Other

Git – Markdown – LaTeX – Rstudio