Patrick Ding

Texas A&M University, Department of Statistics

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Education

Texas A&M University   *College Station, TX*

PHD STATISTICS   *Aug 2017–May 2022*

- GPA: 3.92
- Coursework: Bayesian statistics, machine learning, spatial statistics, deep learning, statistical computing

Princeton University   *Princeton, NJ*

BSE OPERATIONS RESEARCH AND FINANCIAL ENGINEERING   *Sep 2011–Jun 2015*

- Certificate in applications of computing

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 regression model for emerging market equity and foreign exchange returns
- Enabled firm to fulfill additional requests for proposals by creating realistic option simulator in Matlab, supporting trading, expiration, transaction costs, and hedging behavior with multiple assets

Projects

Multivariate Gaussian probability and sampling

STATISTICS RESEARCH   *Jan 2020–Present*

- Reviewed two dozen algorithms for high dimensional multivariate Gaussian sampling and probability estimation
- Translated half dozen algorithm implementations from Matlab and Python to C++ and distributed in R packages
- Extending expectation propagation for multivariate Gaussian polytope probability estimation

Semi implicit variational approximation applications

DEEP LEARNING RESEARCH   *Mar 2019–Dec 2019*

- Investigated semi-implicit variational approximations for posterior inference of Bayesian neural networks in PyTorch
- Developed semi-implicit density regression model in PyTorch

Word vectors for variational autoencoding topic modeling

DEEP LEARNING COURSE PROJECT   *Sep 2018–Jan 2019*

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

Topic Modeling the Daily Princetonian

PERSONAL PROJECT   *Jul 2015–Jul 2016*

- Scraped thousands of Daily Princetonian articles and comments using Beautiful Soup and Selenium
- Implemented Gibbs sampler in C++ for topic model to infer article and comment topics

Publications

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

Skills

R	Rcpp – RcppArmadillo – data.table – dplyr – ggplot2 – mlr – R Markdown – Rstudio
Python	NumPy – matplotlib – PyTorch – JAX
Other	Git – Markdown – LaTeX – Unix – Bash – SSH – Matlab – Stan