Derek Miller

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EDUCATION

B.S. Mathematics, Dec 2018

Brigham Young University, Provo UT

- Emphasis: Applied and Computational Mathematics

WORK EXPERIENCE

Advanced Research Analyst, Qualtrics, Provo UT, Jan-Apr 2018

- Built a hierarchical multinomial logit model in Stan for Qualtrics PX conjoint product
- Invented weighted rank difference metric to evaluate model fit quality based on management objectives
- Developed auxiliary software for the PX product

Open Source Contributor, Great Expectations project, May-Sep 2017

- Contributed to open source code base for testing and tracking data sets and pipelines for industrial machine learning applications
- Advised the design of statistical methods for checking distributional assumptions in data sets
- See https://github.com/great-expectations/great_expectations for more information

Junior Data Scientist, Decagon Devices, Pullman WA, May-Dec 2016

- Implemented a Customer Lifetime Value model based on *"Counting Your Customers" the Easy Way: An Alternative to the Pareto/NBD Model* by Fader, Hardie, and Lee
- Built a product-client recommendation engine for sales team

RESEARCH

Research Assistantships

- Quantitative Marketing, Jeff Dotson, BYU, May 2018-present
- Computational Algebraic Geometry, Tyler Jarvis, BYU, Aug 2017-Jan 2018
- Data Science, Michael Dorff, BYU, Aug 2014-Sep 2015

Working Papers

1. "Using Fractional Calculus to Find the Roots of Systems of Polynomial Equations" with guidance from Tyler Jarvis
2. "Do No Harm: Are Rainbow Colormaps Dangerous?"

Work in Progress

1. Clever Randomization and Ensembling Strategies for Accommodating Multiple Data Pathologies in Conjoint Studies with Marc Dotson, Roger Bailey, and Jeff Dotson
2. The role of priors in making conjoint models robust to data pathologies
3. Minima of perceptually uniform color functionals over gamuts with color vision deficiency constraints
4. Conjoint Analysis with Hierarchical Logistic Regression: A case study in Stan

Technical Reports

1. "Evaluating Feature Rankings in Conjoint Analysis with Weighted Rank Differencing"
2. Optimal Spacecraft Reentry with implementation in Python

TEACHING

Instructor, BYU, Math 495R—Soft Skills, Aug-Dec 2017

- Designed and taught a course with the aim to help applied math majors improve non-technical skills related to career development, leadership, and communication

Instructor, BYU, Math 495R—Data Visualization, Jan-Apr 2017

- Held a preliminary workshop about using visualization for data analysis, exploration, and communication
- Designed and taught a course on analytical and data visualization with accompanying resources at github.com/dgmiller/datavis_resources
- Wrote a data visualization coding lab for the Foundations of Applied Mathematics curriculum (see github.com/Foundations-of-Applied-Mathematics)

CONFERENCES AND PRESENTATIONS

MathFest 2015, Mathematical Association of America, Washington D.C.

- Presented research on using Natural Language Processing to identify humorous tweets in real time with application to The Tonight Show's hashtag game.