Peter Wills, Ph.D.

Applied Math Ph.D. with experience in machine learning, forecasting, statistics, distributed computing, and engineering.

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TECHNICAL LANGUAGE SKILLS & SUBJECT EXPERTISE

Deep understanding of machine learning, forecasting, statistics, predictive modeling, linear algebra, graph algorithms, and distributed computing. Fluent in the Python ML stack, Scala, Java, Spark, SQL, MATLAB, git, shell scripting, & emacs config. Experienced in both object-oriented and functional programming paradigms.

PROFESSIONAL EXPERIENCE

Senior Machine Learning Engineer, Abnormal Security April 2022 to May 2023

- Product owner of internal email attack detection product; managed roadmapping, architecture, and ML strategy
- Helped shepherd through efficiency improvements that reduced AWS processing costs by 13%
- Shipped decision rules that reduced the internal-attack false-negative rate (missed-attack rate) by >60%

Senior Data Scientist, Stitch Fix May 2019 to March 2022

- Build & maintain a canonical business forecast engine, which backs multiple inventory optimization systems
- Develop backtesting frameworks, dashboards, and continuous alerting systems to monitor forecast fidelity
- Identified low-hanging-fruit improvements to the forecast, resulting in a 60% decrease in (mean absolute) error

Data Science Engineer, FullContact June 2018 to May 2019

- Design & implement graph algorithms for identity resolution in custom NoSQL graph database built atop HBase
- Build data pipeline in Spark that processes TB of data in scalable fashion on the AWS Elastic MapReduce platform
- New approach to graph community hashing improves identifier stability from 95% to 99.95%

Data Scientist, the Trade Desk (ML-driven real-time ad targeting) Oct. 2017 to May 2018

Data Scientist, Entelligent (Quantitative trading & portfolio optimization) Nov. 2016 to Oct. 2017

Research Assistant, University of Colorado (Variety of topics, see papers below) May 2014 to May 2018

EDUCATION

Doctor of Philosophy, Applied Mathematics Sept. 2013 to May 2018
University of Colorado, Boulder, CO

Bachelor of Science, Physical Sciences Aug. 2006 to May 2010
Reed College, Portland, OR

PUBLICATIONS

- P. Wills and F. Meyer. *Metrics for Graph Comparison: A Practitioner's Guide.* PLoS ONE 15(2): e0228728
- P. Wills and F. Meyer. *Detecting Topological Changes in Dynamic Community Networks.* Complex Networks and Their Applications VIII. pp. 211–222.
- P. Wills, E. Iacocca, and M. Hoefer. *Stochastic Thermal Perturbations of Dissipative Droplet Solitons*, Phys. Rev. B 93 144408
- P. Wills, E. Knill, K. Coakley, and Y. Zhang. *Performance of Test Supermartingale Confidence Intervals for the Success Probability of Bernoulli Trials*. Journal of Research of National Institute of Standards and Technology 125 125003