

NATHAN G. WELCH

EDUCATION

UNIVERSITY OF WASHINGTON

Seattle, WA, 2015 - 2020 (expected)

Doctor of Philosophy, *Statistics*

Advised by Adrian Raftery

Research Focus: Development of statistical and forecasting methods for clustered/hierarchical spatial data

GEORGETOWN UNIVERSITY

Washington, DC, 2013

Master of Science, *Mathematics and Statistics*

UNIVERSITY OF ALABAMA AT BIRMINGHAM

Birmingham, AL, 2007

Bachelor of Science, *Mathematics, Summa Cum Laude*

- MCTP Mathematics Fellowship recipient, 2007
National Science Foundation
- Mathematics Fast-Track Scholarship, 2005-2007
National Science Foundation

SELECTED EXPERIENCE

ANALYTICS & PROGRAMMING

Algorithms for Threat Detection working Group – University of Washington, Seattle, WA, 2017 – 2018

- Led exploratory spatial analysis of social media data collected over several years and spanning multiple countries
- Analyses identified and helped resolve otherwise irreparable systematic biases introduced by the data collection process

MITRE Sponsored Research – National Patient Safety Partnership (NPSP), McLean, VA, 2014 – 2015

- Member of a select, cross-disciplinary team mining electronic health records from multiple children's hospital centers
- Implemented probabilistic machine learning methods to discover systemic errors in medication ordering processes

Federal Aviation Administration (FAA) – Center for Advanced Aviation System Development, McLean, VA, 2013 – 2017

- Leveraged Hadoop ecosystem tools, e.g. PySpark, to discover trends in terabytes of data spanning several years
- Researched & implemented (density) clustering method to hunt anomalous flight patterns recorded ADS-B transmissions

MANAGEMENT STRATEGY

Department of Homeland Security – Science & Technology Directorate, Washington, DC, 2012

- Led cost risk analysis for multibillion dollar cyber security program by applying deep knowledge of mathematical statistics
- Analysis set the foundation for the program's future cost risk methodology

Department of Commerce - Bureau of the Census, Washington, DC, 2011

- Briefed Deputy Director in addition to directly advising the CIO and Associate Director for Economic Programs
- Co-led Analysis of Alternatives for a cloud computing acquisition decision, proving \$40M increase over initial estimate

WORK HISTORY

UNIVERSITY OF WASHINGTON

Teaching Assistant/Lecturer, January 2018 – Present

MITRE, *Not-for-profit federally funded research & development centers advancing technology infrastructure for U.S. agencies*

Lead Data Scientist, July 2013 – Present

Senior Quantitative Analyst, February 2011 – June 2013

BOOZ ALLEN HAMILTON, *\$5B per annum consulting firm providing leading-edge expertise to public and private sectors*

Senior Consultant, January 2009 – January 2011

Consultant, January 2008 – December 2008

SKILLS

ANALYSIS: Data Mining, Machine Learning, Bayesian Statistics, Stochastic Optimization, Cost Estimation/Risk

PROGRAMMING: Proficient: R, Python, Pig, SQL, Pyspark; Familiar: Bash, Git, Java; Interests: C/C++, Scala