Robert C. Foster

CONTACT INFORMATION
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Ph.D. statistician with a strong applied background in the physical sciences and engineering, and experience in research for the social sciences.

RESEARCH INTERESTS

My research interests are novel statistical methods and technologies, and the intersection of Bayesian and frequentist statistics.

EDUCATION

Ph.D. in Statistics

Iowa State University, Ames, IA, October 2016

- Thesis title: Topics in Empirical Bayesian Analysis
- Adviser: Mark S. Kaiser
- 3.65 GPA

M.S. in Statistics

Iowa State University, Ames, IA, December 2010

- Thesis title: Simulation Analysis of a Bayesian Test Plan for Sequential Data from a Homogeneous Poisson Process
- Adviser: Alyson Wilson
- 3.65 GPA

B.S. in Mathematics and Statistics

Oklahoma State University, Stillwater, OK, May 2007

- Summa cum laude
- Minor in Computer Science
- 3.948 GPA
- Honors college degree

EXPERIENCE

Bettis Atomic Power Laboratory, Pittsburgh, PA
Naval Nuclear Laboratory, Statistics and Irradation group

Scientist, Feb. 2020 - Present

- Provide statistical support to the Navy in its mission to produce safe nuclear power for the fleet and serve as instructor in basic and advanced statistical topics for Bettis Reactor Engineering School students and Naval Nuclear Laboratory employees.

Los Alamos National Laboratory, Los Alamos, NM
CCS-6, Statistical Sciences group

Postdoctoral Researcher, Oct. 2016 - Oct. 2019

- Utilized applied statistical skills to perform research in multiple topics, including sources of uncertainty for computation techniques that lie "Beyond Moore's Law" and the statistical properties of resulting errors from propagation of BML uncertainties, simulation of microstructures from samples of additively manufactured materials, and applications of quantum computing in statistics. Additional projects on modeling measurements of earth's magnetic field using geospatial statistical techniques and modeling solutions of differential equations probabilistically

Iowa State University, Ames, IA
Department of statistics

Research Assistant, 2007-2010

- Engaged in multiple consultation projects with various departments and research groups at Iowa State University, including animal science and the agriculture experiment station (AES).

Publications

Foster, R., "A Generalized framework for classical test theory," *The Journal of Mathematical Psychology,* Vol. 96, June 2020 (Link to Preprint)

In Press

Foster, R., Vander Wiel, S., Livescu, V., and Bronkhorst, C., "Towards Recreation of Microstructure of Spatially Varying Materials from Orthogonal Sections," *Computational Materials Science*

Foster, R. "KR-20 and KR-21 for some non-dichotomous data (It's not just Cronbach's alpha), *Educational and Psychological Measurement*

Preprints

Foster, R., Weaver, B. and Gattiker, J., "Applications of Quantum Computing in Statistics," arXiv:1904.06819 [stat.CO]

Technical Reports

Foster, R., Weaver, B. and Gattiker, J., "Combining Observational and Computational Uncertainty in Calibration Experiments," LA-UR-19-30566

Grosskopf, Michael, Gattiker, J., and **Foster, R.**, "Statistical Numerics" (2019)

Foster, R., Weaver, B., Picard, R., and Gattiker, J., "Beyond Moore's Law Uncertainty," LA-UR-18-28596 (2018)

Abendroth, Lori, Marlay, Stephanie, Myers, Anthony J.W., Elmore, Roger W., and **Foster, Robert C.**, "*Regional Corn Planting Date Recommendations for Iowa*" (2010). Iowa State Research Farm Progress Reports. 410.

Other Cited Works

Blog post 'Confidence Interval for wOBA Based on the Multinomial Model,' cited in VanDerwerken, D., ' Slugging percentage is not a percentage – and why that matters,' *The American Statistician* (2019)

Teaching Experience

Iowa State University, Ames, IA USA
Department of Statistics

Instructor **August 2010 to May 2016**

- Principles of Statistics: Fall 2010, Spring 2011, Summer 2011, Fall 2011, Spring 2012, Summer 2012
- Probability and Statistics for Computer Science: Fall 2012, Spring 2013, Fall 2013, Spring 2014
- Engineering Statistics: Fall 2014
- Probability and Statistical Inference for Engineers: Spring 2015, Spring 2016
- All courses other than "Principles of Statistics" taught without direct supervision.

Professional Membership

- American Statistical Association, Pittsburgh chapter

Computing Expertise

Statistical Software: R, JMP, SAS, Matlab
Programming Languages: Python, Java, C
Applications: TEX, LATEX, BIBTEX, Microsoft Office
Operating Systems: Microsoft Windows, macOS, Unix