Nicholas Syring – Résumé

Personal Information

Nicholas Syring
Ankeny, Iowa
Email : nasyrin@gmail.com
URL : https://nasyring.github.io/
https://github.com/nasyring

My Work

I develop, apply, and teach statistical methods, theory, and computation.

Skills

Programming languages :

- ⋆⋆⋆ r : lme4, rcpp, shiny, stan, tidyverse
- ⋆⋆ python : matplotlib, numpy, pandas, pyspark, scikitlearn, sqlite3
- ⋆⋆ c++ : for use with r/rcpp
- ⋆ SAS
- ⋆ Matlab
- ⋆ Unix/bash

Collaborative tools : Github, Confluence, Jira

Statistical Modeling Competencies :

— Linear models including linear mixed, generalized, and generalized linear mixed models
— Quantile regression
— Penalized semi- and non-parametric regression, Gaussian process regression and regression splines
— Bayesian statistics including high-dimensional regression and classification, additive regression trees
— Monte Carlo and MCMC (Metropolis-Hastings, Gibbs)
— Bootstrap
— Stochastic process models including Brownian motion, square-root diffusion, mean-reverting, and jump models

Employment History

Research Scientist/Biostatistician, 2023-Present Corteva Agriscience

Design and analysis of agricultural experiments, particularly in partnership with South and East Asia clients

Assistant Professor, 2020–2023 Iowa State University, Department of Statistics

Teaching graduate and undergraduate statistics courses, advising students, conducting research, collaboration with scientists, competing for grant funding, department service

Postdoctoral Lecturer in Statistics, 2018–2020 Washington University in Saint Louis

Teaching undergraduate statistics courses, advising students, conducting research

Data Scientist, 2017–2018 Allstate Insurance

Designing and implementing A/B tests to maximize user engagement with mobile app, pipelining power analyses, interpreting and communicating experimental results

Data Scientist Intern, Summer 2017 Allstate Insurance

Natural language processing, topic modeling, sentiment analysis in the context of call center conversations, monitoring for regulatory purposes

Statistician Intern, Summer 2013 Capital One

Predicting credit default risk using tree-based models and random forests, model interpretation, comparison with logistic regression

Actuarial Analyst, 2009–2011 State Farm Insurance

Life insurance product pricing, mathematics of time value of money and mortality risk, market research

PhD Statistics, 2017 University of Illinois at Chicago, Advisor : Dr. Ryan Martin

Dissertation on the large-sample properties of Bayesian posteriors based on pseudo-likelihood loss functions and/or moment conditions
Graduate work experiences with :
— Research Assistant, Dr. Kelly Hsieh, UIC School of Public Health, 2014
— Visiting Research Scientist, NASA Langley Area Research Center, 2014

MS Statistics, 2013 Northern Illinois University

Thesis on application of regression for multivariate binary responses in large databases

BS Actuarial Science, 2009 Illinois State University

Pedagogical Projects

I maintain the following series of notes, case-studies, and walkthroughs using the Bookdown package for R and the R and python programming languages on my github.io site.
— Introductory Statistics and Probability : a first course in statistics and probability for students with a background in calculus
— Linear Models : a beginning graduate level course in analysis of variance and linear regression covering practical applications and an introduction to Gauss-Markov theory
— Advanced Models : generalized linear, linear mixed, and generalized linear mixed models
— Financial Mathematics : modeling derivatives using stochastic differential equations, Monte Carlo-based methods for pricing, model calibration

Statistics Journals

— N. Syring and R. Martin. Gibbs posterior concentration rates under sub-exponential type losses. (2022+) **Bernoulli**. Forthcoming. https://arxiv.org/pdf/2012.04505.pdf
— N. Syring. Robust posterior inference for Youden's index cutoff. (2021). **Communications in Statistics - Theory and Methods**, 1-16. https://doi.org/10.1080/03610926.2021.1969409.
— N. Syring and R. Martin. Robust and Rate-Optimal Gibbs Posterior Inference on the Boundary of a Noisy Image. (2020). **Annals of Statistics.** 48(3) :1498-1513. https://doi.org/10.1214/19-AOS1856
— N. Syring, L. Hong, and R. Martin. Gibbs Posterior Inference on Value-at-Risk. **Scandinavian Actuarial Journal.** (2019). https://doi.org/10.1080/03461238.2019.1573754.
— N. Syring and R. Martin. Calibrating General Posterior Credible Regions. **Biometrika.** (2018). https://doi.org/10.1093/biomet/asy054.
— N. Syring and R. Martin. Gibbs Posterior Inference on the Minimum Clinically Important Difference. **Journal of Statistical Planning and Inference.** 187 (2017) : 67-77. http://dx.doi.org/10.1016/j.jspi.2017.03.001.
— C. Liu, R. Martin, and N. Syring. Efficient Simulation from a Gamma Distribution with Small Shape Parameter. **Computational Statistics** 32, 4 (2017) : 1767-1775. https://doi.org/10.1007/s00180-016-0692-0.
— N. Syring and M. Li. BayesBD : An R Package for Bayesian Inference on Image Boundaries. **R Journal.** 9, 2 (2017) : 149-162. https://journal.r-project.org/archive/2017/RJ-2017-052/index.html.

Peer-reviewed
papers

Conference Proceedings

— N. Syring and R. Martin. Stochastic optimization for numerical evaluation of imprecise probabilities. (2021). Proceedings of the Twelveth International Symposium on Imprecise Probability : Theories and Applications, in **Proceedings of Machine Learning Research**. 147. https://proceedings.mlr.press/v147/syring21a.html.
— R. Martin and N. Syring. Validity-preservation properties of rules for combining inferential models. (2019) Proceedings of the Eleventh International Symposium on Imprecise Probabilities : Theories and Applications, in **Proceedings of Machine Learning Research**. 103 :286-294. http://proceedings.mlr.press/v103/martin19a/martin19a.pdf.

Book Chapters

— R. Martin and N. Syring. Direct Gibbs posterior inference on risk minimizers : construction, concentration, and calibration. (2022) **Handbook of Statistics**. Elsevier. https://arxiv.org/pdf/2203.09381.pdf.
https://www.sciencedirect.com/science/article/abs/pii/S0169716122000189.

In Review/Revision

— N. Syring, F. Miguez, and J. Niemi. Valid predictions of group-level random effects. https://arxiv.org/abs/2202.01848.

Teaching

Iowa State University

— STAT 642 : Probability Theory II
— STAT 500 : Statistical Methods I (2 times)
— STAT 342 : Introduction to the Theory of Probability and Statistics II (2 times)
— STAT 588 : Statistical Theory for Research Workers, Instructor (2 times)

Washington University St. Louis

— MATH3200 : Elementary to Intermediate Statistics, Instructor (5 times)
— MATH475 : Statistical Computation, Instructor

North Carolina State University

— ST311 : Introduction to Statistics, Instructor

University of Illinois at Chicago

— STAT381 : Applied Statistical Methods I, Instructor

Advising

Iowa State University

— PhD Thesis Committee Member for Eryn Blagg, Statistics
— PoS Committee Member for Zhengqiang Ni, Genetics and Genomics Graduate Program, Animal Science
— PoS Committee Member for Md Azizul Islam, Apparel, Events, and Hospitality Management Graduate Program
— PoS Committee Member for Ibne Farabi Shihab, Computer Science
— CyBound Summer Program - supported by C-CHANGE : Jarad Niemi and I co-advised Roger Castillo Ramos on his Summer project to visualize agricultural data (e.g., yield, nitrogen emissions) using R Shiny.

Washington University St. Louis

— MATH500 : Independent Work, Summer 2019

BayesComp 2023 Invited Talk, *TBA*, March 2023, Finland

International Society of Bayesian Analysis Meetings Invited Talk, *Gibbs posterior distributions : What are they ? Why do we need them ? And, what's next ?*, July 2022, Montreal

Conference on Applied Statistics in Agriculture and Natural Resources Contributed Talk, *Valid predictions of group-level random effects*, May 2022, Utah State University/remote

CMStatistics 2021 Invited Talk, *Asymptotic concentration of Gibbs posterior distributions*, December 2021, London/remote

SIAM CSE21 Invited Talk, *Frequentist calibration of posterior distributions*, March 2021

Bayesian, Fiducial, Frequentist Workshops Invited Talk, *Advances by Next-Generation BFFs : Gibbs Posterior Distributions*, February 2021

WHOA-PSI 4 Poster Presentation, *Treatment Selection Problems*, WUSTL–08/2019

ISIPTA 2019 Contributed Talk, *Validity-preservation properties of rules for combining inferential models*, Uni Ghent–07/2019

Bayesian, Fiducial, and Frequentists (BFF 6) Poster Presentation, *Gibbs Posterior Inference on Youden's Index cutoff*, Duke–05/2019

Statistics Seminar *Inferential models in errors-in-variables models*
WUSTL–11/2018,

Joint Statistical Meetings Invited Poster Presentation, *Inferential Models for Instrumental Variables*, Baltimore–07/2017

Summer Research Conference *Image Boundary Detection via a Gibbs Model*, IIT–05/2016

Undergraduate Mathematics Seminar *Misspecified Statistical Models : What happens when the model is wrong ?*, Wheaton College–11/2015

Statistics Seminar *Scaling the Gibbs posterior*, University of Illinois at Chicago–09/2015,

Statistics Seminar *On Bayesian inference without a model*, University of Illinois at Chicago–11/2014

Manuscript Reviewer

— Journal of Machine Learning Research
— Scandinavian Journal of Statistics
— Journal of the Royal Statistical Society, Series B (2 times)
— Statistica Sinica
— Journal of the American Statistical Association
— Sankhya
— Bayesian Analysis
— Journal of Statistical Planning and Inference
— SIAM Journal of Uncertainty Quantification
— Technometrics
— Statistics and its Interface

Committee Work

— STAT-ers Advisor (2 times) 2020-2022
— Honors and Awards Committee Member (2 times) 2020-2022
— Graduate Curriculum and Exam Review Committee 2022
— Tenure-eligible Assistant Professor Search Committee 2022
— Exam Writing, MS Methods I 2020, PhD Methods II 2022
— Exam Committee 2021