Yuan Fang

Contact Information
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EMPLOYMENT

Boston University School of Public Health — September 2020 - present
Department of Biostatistics
Postdoctoral Associate
Supervisor: Dr. Kathryn Lunetta

EDUCATION

Doctor of Philosophy , Statistics/Mathematics — August 2020
Binghamton University, Binghamton, NY
Advisor: Dr. Sanjeena Subedi (Dang)
Dissertation Title: "Model-based clustering approaches for non-Gaussian data"

Master of Arts, Mathematics
Binghamton University, Binghamton, NY — May 2016

Bachelor of Science, Mathematical Physics
University of Waterloo, Waterloo, ON, Canada — June 2014

PUBLICATIONS

PREPRINTS

- **Fang, Y.**, Doyle, M., Alosco, M., Mez, J., Satizabal, C., Qiu, W., Lunetta, K., and Murabito, J., "Cross-sectional association between blood cell phenotypes, cognitive function and brain imaging measures in the community-based Framingham Heart Study" (Major revision at *Journal of Alzheimer's Disease*).
- **Fang, Y.**, Subedi, S., "Clustering microbiome data using mixtures of logistic normal multinomial models" (Major revision at *Statistics in Medicine*). arXiv:2011.06682
- **Fang, Y.**, Karlis, D., Subedi, S., "Bayesian infinite mixtures of multivariate normal-inverse Gaussian distributions for clustering of skewed data" (Major revision at *Journal of Classification*). arXiv:2005.05324
- **Fang, Y.**, Karlis, D., Subedi, S., "A Bayesian Approach for Clustering Skewed Data Using Mixtures of Multivariate Normal-Inverse Gaussian Distributions" (Submitted). arXiv:2005.02585

IN PREPARATION

- **Fang, Y.**, MacDonald, C., Clemens, P., Gordish-Dressman, H., Hoffman, E., and Dang, U., "Modeling early heterogeneous rates of progression in Duchenne muscular dystrophy boys".
- **Fang, Y.**, Doyle, M., Alosco, M., Mez, J., Satizabal, C., Qiu, W., Lunetta, K., and Murabito, J., "Association between protein biomarkers with cognitive aging ".

- Franczak, B., **Fang, Y.**, and Subedi, S. "Bayesian parameter estimation for mixtures of shifted asymmetric Laplace distributions".
- Dai, W., **Fang, Y.**, Subedi, S., "Variational Gaussian approximation to finite mixtures of logistic normal multinomial regression models".

PRESENTATIONS

- "Association of blood cell phenotypes of peripheral pnflammation with brain imaging measures", The Gerontology Society of America 2021 Annual Scientific Meeting, online (Poster presentation, Nov 2021)
- "Patterns of cognitive trajectories in the Framingham Offspring Study - some preliminary analysis", Biostatistics Seminar Series, Boston University, Department of Biostatistics (Sep 2021)
- "Cross-sectional asociation of blood cell phenotypes of peripheral inflammation with cognitive functioning ", 2021 Alzheimer's Association International Conference, online (Poster presentation, July 2021)
- "Bayesian infinite mixtures of multivariate normal-inverse Gaussian distributions for clustering of skewed data", Fields CQAM Focus Program on Data Science and Optimization, Conference on Data Science, Toronto, Canada (Nov 2019). ***Invited***
- "Bayesian infinite mixtures of multivariate normal-inverse Gaussian distributions for clustering of skewed data", 2019 American Mathematical Society Fall Eastern Sectional Meeting, Binghamton, NY (Oct 2019). ***Invited***
- "A Bayesian approach to parameter estimation and clustering of skewed data using mixtures of multivariate normal-inverse Gaussian distributions", Binghamton University Research Days Poster Session (Poster presentation April 2019).
- "Bayesian approach to parameter estimation and clustering for the mixtures of multivariate normal-inverse Gaussian distributions", Statistics Seminar, Binghamton University Department of Mathematical Sciences (April 2018).
- "Bayesian estimation for the multivariate normal-inverse Gaussian model", 2017 Joint Statistical Meetings, Baltimore, MD (Aug 2017).

SOFTWARE AND PROGRAMMING SKILLS

Excellent in R. Proficient in Python programming and in Linux/Unix command line and batch computing. Familiar with Matlab and Mathematica.

R Package

LNMVGA: Mixture of logistic-normal multinomial models for clustering microbiome data
Github link: https://github.com/yuanfang90/LNMVGA

PROFESSIONAL EXPERIENCE

Binghamton University, Binghamton, NY January – May 2017
Statistical Consultant

- Provide statistical consultations on study designs, analysis methods, and results interpretations to faculty, research staff, and graduate students in all departments of Binghamton University.

Binghamton University, Teaching Online Certification Program, January – May 2019
Binghamton, NY
Online Course Developer

- Reorganize an existing course and extend it to fit online instructing structure.

- Record lecture videos, include engaging course content and activities, and design assessments for the course that are suitable online.

TEACHING EXPERIENCE

Teaching Assistant — Jan – May 2019, Jan 2020 – May 2020
PHRM 511: Biostatistics
Institute: School of Pharmacy and Pharmaceutical Sciences, Binghamton University.
Outlines: descriptive statistics, inferential statistics, hypothesis testing, non-parametric methods, simple and multivariable regression methods, and survival analyses.

Teaching Assistant — Jan – May 2019, Jan 2020 – May 2020
PHRM 515: Pharmaceutics II: Dosage Forms and Drug Delivery
Institute: School of Pharmacy and Pharmaceutical Sciences, Binghamton University.
Outlines: properties of dosage forms, drug delivery systems, technical and scientific considerations and methodologies required to produce dosage forms on a large scale, relationship of basic drug development and approval processe.

Instructor (Online) — July 2019, Dec 2019 – Jan 2020
MATH 329: Introduction to Scientific Computing
Institute: Department of Mathematical Sciences, Binghamton University.
Outlines: basics of programming in R: loops, reproducibility, graphics, data management, storage and retrieval, random number generation, matrix calculations, data simulation and numerical optimizations.

Teaching Assistant — Aug – Dec 2019
PHRM 501: Foundations I: Pharmaceutical Sciences
Institute: School of Pharmacy and Pharmaceutical Sciences, Binghamton University.
Outlines: foundations in Pharmacology, Medicinal Chemistry and Pharmacokinetics.

Teaching Assistant — Aug – Dec 2019
PHRM 514: Pharmaceutical Calculations I
Institute: School of Pharmacy and Pharmaceutical Sciences, Binghamton University.
Outlines: interpretation of prescription and medication administration orders; pharmaceutical measurements; mathematical manipulations.

Instructor — Oct – Dec 2018
MATH 227: Infinite Series
Institute: Department of Mathematical Sciences, Binghamton University.
Outlines: sequence; series; power series; Taylor series representation.

Instructor — Mar – May 2017, Aug – Oct 2018
MATH 226: Integration Techniques
Institute: Department of Mathematical Sciences, Binghamton University.
Outlines: trigonometric functions; applications of integration; techniques of integration; indeterminate forms.

Instructor — Oct – Dec 2016, Jan – Mar 2017, Mar – May 2018
MATH 225: Integral Calculus
Institute: Department of Mathematical Sciences, Binghamton University.
Outlines: antiderivatives; the fundamental theorem of calculus; integral and applications.

Instructor Aug – Oct 2016, Jan – Mar 2018
MATH 224: Differential Calculus
Institute: Department of Mathematical Sciences, Binghamton University.
Outlines: limits; continuity; derivatives and applications.

Instructor Aug – Dec 2017
MATH 220: Calculus for Business and Management
Institute: Department of Mathematical Sciences, Binghamton University.
Outlines: fundamental elements of calculus; emphasis on maximum and minimum problems.

Teaching Assistant Aug 2015 – May 2016
MATH 327: Probability with Statistical Methods
Institute: Department of Mathematical Sciences, Binghamton University.
Outlines: probabilistic concepts in discrete and absolutely continuous cases; classical combinatorial methods, independence, random variables, distributions, moments, transformations, conditioning, confidence intervals, estimation.

Teaching Assistant Jan – May 2015
MATH 130: Mathematics in Action
Institute: Department of Mathematical Sciences, Binghamton University.
Outlines: voting methods; counting; probability; normal distribution; statistical inference.

ACADEMIC SERVICE OUTSIDE UNIVERSITY

- Article Reviewer: Journal of Computational Biology

UNIVERSITY LEVEL SERVICE

Graduate Student Ambassador for the Department of Mathematical Sciences, Binghamton University