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North Carolina State University
Raleigh, NC

Jonathan P Williams

PROFESSIONAL POSITIONS

Assistant Professor (tenure-track), Department of Statistics, NC State University — 2019 -
Research Collaborator, Mayo Clinic, Rochester, MN — 2017 - 2020
Biostatistics Intern, Mayo Clinic, Rochester, MN — Summer 2016
Statistical Consultant, Caster Concepts, Inc, Albion, MI — 2011 - 2014

EDUCATION

University of North Carolina, Chapel Hill, NC — 2014 - 2019
Department of Statistics and Operations Research
PhD Statistics
Advisors: Dr. Jan Hannig (UNC) and Dr. Curtis Storlie (Mayo Clinic)

New York University, New York, NY — 2012 - 2014
Courant Institute of Mathematical Sciences
MS Mathematics
Advisor: Dr. Ying Lu

Eastern Michigan University, Ypsilanti, MI — 2008 - 2012
Honors College
BS double major in Economics and Mathematics, minor in Finance
Summa Cum Laude

PEER-REVIEWED PAPERS

* Student working under my supervision

1. S Koner* and **J P Williams** (2021+). The EAS approach to variable selection for multivariate response data in high-dimensional settings. *In Review.*
2. **J P Williams** (2021). Discussion of "A Gibbs sampler for a class of random convex polytopes". *To appear in Journal of the American Statistical Association.*
3. A Murph*, J Hannig, and **J P Williams** (2020+). Introduction to Generalized Fiducial Inference. *In review.*
4. **J P Williams**, D M Ommen, and J Hannig (2020+). Generalized fiducial factor: an alternative to the Bayes factor for forensic identification of source problems. *In review.*
5. S Nghiem, **J P Williams**, C Afoakwah, Q Huynh, S K Ng, and J Byrnes (2021). Can Administrative Health Data Improve the Gold Standard? Evidence from a Model of the Progression of Myocardial Infarction. *International Journal of Environmental Research and Public Health* 18 (14) pp.7385.
6. **J P Williams**, Y Xie, and J Hannig (2019+). The EAS approach for graphical selection consistency in vector autoregression models. *In review.*
7. **J P Williams**, C B Storlie, T M Therneau, C R Jack Jr, and J Hannig (2020). A Bayesian approach to multi-state hidden Markov models: application to dementia progression. *Journal of the American Statistical Association* 115 (529) pp.16–31.

8. **J P Williams** and J Hannig (2019). Non-penalized variable selection in high-dimensional linear model settings via generalized fiducial inference. *Annals of Statistics* 47 (3), pp.1723–1753.
9. E Sechi, E Shosha, **J P Williams**, S J Pittock, B G Weinshenker, B M Keegan, N L Zalewski, A S Lopez-Chiriboga, J Jitprapaikulsan, and E P Flanagan (2019). Aquaporin-4 and MOG autoantibody discovery in idiopathic transverse myelitis epidemiology. *Neurology* 93 (4), pp.e414–e420.
10. I Carmichael and **J P Williams** (2018). An exposition of the false confidence theorem. *Stat* 7 (1), pp.e201.
11. **J P Williams** and Y Lu (2015). Covariance Selection in the Linear Mixed Effect Model, *Journal of Machine Learning Research: Workshop and Conference Proceedings* 44, pp.277–291. (NIPS conference session)

PRESENTATIONS

1. Discussion of "A Gibbs sampler for a class of random convex polytopes". *JASA T&M Invited Session, Joint Statistical Meeting*, Seattle, WA, August 2021.
2. Generalized fiducial factor: an alternative to a Bayes factor for forensic identification of source problems. *Joint Statistical Meeting*, Seattle, WA, August 2021.
3. A Bayesian hidden Markov model framework for monitoring and diagnosing critically ill hospital patients. *28th Nordic Conference in Mathematical Statistics*, Tromsø, Norway, June 2021.
4. Generalized fiducial factor: an alternative to a Bayes factor for forensic identification of source problems. *BFF 6.5 – Virtual Workshop on Bayesian, Fiducial, and Frequentist Statistical Inference*, virtual conference hosted on https://researchers.one/, February 2021.
5. The EAS approach for graphical selection consistency in vector autoregression models. *12th International Conference of the European Research Consortium for Informatics and Mathematics Working Group on Computational and Methodological Statistics (CMStatistics 2019)*, University of London, UK, December 2019.
6. The EAS approach for graphical selection consistency in vector autoregression models. *Sixth Bayesian, Fiducial, and Frequentist Conference on Model Uncertainty*, Duke University and SAMSI, May 2019.
7. Non-penalized variable selection in high-dimensional settings via generalized fiducial inference. *Seminar*, Department of Statistics, University of Florida Gainesville, January 2019.
8. Non-penalized variable selection in high-dimensional settings via generalized fiducial inference. *Seminar*, Department of Statistics, Iowa State University, January 2019.
9. Non-penalized variable selection in high-dimensional settings via generalized fiducial inference. *Seminar*, Department of Statistics, University of Illinois Urbana–Champaign, December 2018.
10. Non-penalized variable selection in high-dimensional settings via generalized fiducial inference. *Seminar*, Department of Statistics, North Carolina State University, December 2018.
11. Non-penalized variable selection via generalized fiducial inference. *Graduate Seminar*, Department of Statistics and Operations Research, UNC Chapel Hill, November 2018.
12. Non-penalized variable selection via generalized fiducial inference. *AISC 2018 International Conference on Advances in Interdisciplinary Statistics and Combinatorics*, UNC Greensboro, October 2018.
13. Non-penalized variable selection in high-dimensional settings via generalized fiducial inference. *27th Nordic Conference in Mathematical Statistics*, Tartu, Estonia, June 2018.
14. A Bayesian approach to multi-state hidden Markov models: application to dementia progression. *Graduate Seminar*, Department of Statistics and Operations Research, UNC Chapel Hill, September 2017.

15. Non-penalized variable selection in high-dimensional linear model settings via generalized fiducial inference. *Graduate Seminar*, Department of Statistics and Operations Research, UNC Chapel Hill, February 2017.
16. A Bayesian approach to multi-state hidden Markov models: application to dementia progression. *Tea Time for Science*, Biomedical Statistics and Informatics, Health Sciences Research, Mayo Clinic, Rochester, MN, August 2016.

POSTER PRESENTATIONS

1. A statistical primer on classical methods for exoplanet detection. *Statistical Challenges in Modern Astronomy VII conference*, virtual conference, June 2021.
2. Non-penalized variable selection via generalized fiducial inference. *Recycled Poster Session of the North Carolina Chapter of the American Statistical Association*, SAS Campus, NC, September 2019.
3. Non-penalized variable selection via generalized fiducial inference. *Fifth Bayesian, Fiducial, and Frequentist Conference*, University of Michigan Ann Arbor, May 2018.
4. Generalized fiducial inference for high dimensional problems. *Invited Poster Session, Joint Statistical Meeting*, Baltimore, MD, July 2017.
5. Non-penalized variable selection in high-dimensional linear model settings via generalized fiducial inference. *Fourth Bayesian, Fiducial, and Frequentist Conference*, Harvard University, May 2017.
6. Covariance Selection in the Linear Mixed Effect Model. *Feature Extraction: Modern Questions and Challenges, NIPS*, Montreal, Canada, December 2015.

FUNDING

- Directed Research for Undergraduates in Math and Statistics (DRUMS) (2021). NSF/NSA, Faculty Associate, 125,000 USD.

AWARDS

- Best poster award, *Recycled Poster Session of the NC ASA* — September 2019
- Graduate Student Travel Grant – 1,000 USD — Summer 2018
- Carl M. Erikson Mathematics Department Scholarship — 2011 - 2012
- Regents Scholarship — 2009 - 2012
- National Scholars Program Scholarship — 2008 - 2012
- Leader Award Scholarship — 2009 - 2011

PROFESSIONAL ACTIVITIES

- Session Chair; Statistics for complex inference problems in data science. *12th International Conference of the European Research Consortium for Informatics and Mathematics Working Group on Computational and Methodological Statistics (CMStatistics 2019)*, University of London, UK, December 2019.
- Session Chair; Statistical Controversies in Forensic Evidence Interpretation. *International Chinese Statistical Association Conference*, Raleigh, NC, June 2019.
- Referee for *Statistical Methods in Medical Research* — 1 time
- Referee for *Journal of the American Statistical Association – Theory and Methods* — 1 time
- Referee for *Biometrics* — 1 time
- Referee for *Communications in Statistics – Theory and Methods* — 1 time
- Referee for *Journal of Computational and Graphical Statistics* — 1 time

- Referee for *Computers* 1 time
- Referee for *PLOS ONE* 1 time
- Referee for *Stat* 5 times
- Referee for *Journal of Statistical Planning and Inference* 1 time
- Referee for *Statistical Modelling* 1 time
- Referee for *Negotiation Journal* 1 time
- Referee for *CRC Press* 1 time
- Referee for *Stats* 1 time

TEACHING AND ADVISING

Courses taught:

- Introduction to probability and distribution theory (undergraduate; ST 371 NCSU) Fall '20
- Linear models (graduate; ST 705 NCSU) Spring '20, '21
- Fundamentals of statistical inference II (graduate; ST 502 NCSU) Fall '19
- STOR-BIOS grad student boot camp (real analysis section; UNC) Summer '17
- Introduction to statistics (first year undergraduate; STOR 155 UNC) Spring '16, Fall '16
- Tutor (economics and mathematics undergraduate; EMU) '09 - '12

PhD students advised/co-advised:

- Alexander Murph (UNC; expected graduation Spring 2023)
- Naomi Giertych (NCSU; expected graduation Spring 2023)
- Jimmy Hickey (NCSU; expected graduation Spring 2024)
- Salil Koner, PhD, NCSU 2021

PhD committees served on:

- Xinyu Zhang (NCSU; expected graduation Summer 2023)
- Yin-Jen Chen (NCSU; expected graduation Summer 2022)
- Annie Tang (NCSU; expected graduation Summer 2022)
- Kang Wang (NCSU; expected graduation Summer 2022)
- Pei-Shien Wu (NCSU; expected graduation Summer 2022)
- Mohamed Abba (NCSU; expected graduation Summer 2023)

Undergraduate students mentored:

- Pragya Haravu (NCSU; expected graduation 2023)

DEPARTMENT SERVICE

- Seminar committee NCSU Spring 2021
- Qualifying exam committee NCSU January 2021
- Qualifying exam committee NCSU August 2020

COMPUTING SKILLS

R, Python, Julia, Linux, HPC environments
Examples of my written code/programs are available on my website