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Jonathan P Williams

PROFESSIONAL POSITIONS

Assistant Professor (tenure-track) , Department of Statistics, NC State University	2019 -
Research Collaborator , Mayo Clinic, Rochester, MN	2017 -
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 Department of Statistics and Operations Research PhD Statistics Advisors: Dr. Jan Hannig (UNC) and Dr. Curtis Storlie (Mayo Clinic)	2014 - 2019
New York University, New York, NY Courant Institute of Mathematical Sciences MS Mathematics Advisor: Dr. Ying Lu	2012 - 2014
Eastern Michigan University, Ypsilanti, MI Honors College BS double major in Economics and Mathematics, minor in Finance <i>Summa Cum Laude</i>	2008 - 2012

PEER-REVIEWED PAPERS

1. **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*.
2. A Murph, J Hannig, and **J P Williams** (2020+). Introduction to Generalized Fiducial Inference. *In review*.
3. **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*.
4. S Nghiem, **J P Williams**, C Afoakwah, S K Ng, Q Huynh, and J Byrnes (2020+). The progression of a heart attack: A population-based longitudinal cohort study. *In review*.
5. **J P Williams**, Y Xie, and J Hannig (2019+). The EAS approach for graphical selection consistency in vector autoregression models. *In review*.
6. **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.
7. **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.
8. E Sechi, E Shosha, **J P Williams**, S J Pittock, B G Weinshenker, B M Keegan, N L Zalewski, A S Lopez-Chiriboga, J Jitrapaikulsan, and E P Flanagan (2019). Aquaporin-4 and MOG autoantibody discovery in idiopathic transverse myelitis epidemiology. *Neurology* 93 (4), pp.e414–e420.

9. I Carmichael and **J P Williams** (2018). An exposition of the false confidence theorem. *Stat* 7 (1), pp.e201.
10. **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. Generalized fiducial factor: an alternative to a Bayes factor for forensic identification of source problems. *Joint Statistical Meeting*, Seattle, WA, August 2021.
2. A Bayesian hidden Markov model framework for monitoring and diagnosing critically ill hospital patients. *28th Nordic Conference in Mathematical Statistics*, Tromsø, Norway, June 2021.
3. 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.
4. 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.
5. 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.
6. Non-penalized variable selection in high-dimensional settings via generalized fiducial inference. *Seminar*, Department of Statistics, University of Florida Gainesville, January 2019.
7. Non-penalized variable selection in high-dimensional settings via generalized fiducial inference. *Seminar*, Department of Statistics, Iowa State University, January 2019.
8. Non-penalized variable selection in high-dimensional settings via generalized fiducial inference. *Seminar*, Department of Statistics, University of Illinois Urbana–Champaign, December 2018.
9. Non-penalized variable selection in high-dimensional settings via generalized fiducial inference. *Seminar*, Department of Statistics, North Carolina State University, December 2018.
10. Non-penalized variable selection via generalized fiducial inference. *Graduate Seminar*, Department of Statistics and Operations Research, UNC Chapel Hill, November 2018.
11. Non-penalized variable selection via generalized fiducial inference. *AISC 2018 International Conference on Advances in Interdisciplinary Statistics and Combinatorics*, UNC Greensboro, October 2018.
12. Non-penalized variable selection in high-dimensional settings via generalized fiducial inference. *27th Nordic Conference in Mathematical Statistics*, Tartu, Estonia, June 2018.
13. 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.
14. 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.
15. 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. 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.
2. Non-penalized variable selection via generalized fiducial inference. *Fifth Bayesian, Fiducial, and Frequentist Conference*, University of Michigan Ann Arbor, May 2018.
3. Generalized fiducial inference for high dimensional problems. *Invited Poster Session, Joint Statistical Meeting*, Baltimore, MD, July 2017.
4. Non-penalized variable selection in high-dimensional linear model settings via generalized fiducial inference. *Fourth Bayesian, Fiducial, and Frequentist Conference*, Harvard University, May 2017.
5. 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 *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

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 (NCSU; expected graduation Summer 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)

Undergraduate students mentored:

- Pragma 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