Susan Wei

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School of Mathematics and Statistics
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Australia

Research interests: statistics, machine learning, deep learning

Education

2014 — Ph.D., Statistics
University of North Carolina at Chapel Hill
Advisors: Michael R. Kosorok and J.S. Marron

2009 — B.A., Mathematics with Honors
University of California at Berkeley
Study abroad: Film Studies, Cambridge University, Summer 2005

Professional Experience

2018 – — Lecturer
School of Mathematics and Statistics
University of Melbourne, Australia

2016 – 2018 — Assistant Professor
Division of Biostatistics
University of Minnesota, Twin Cities

2014 – 2015 — Postdoctoral Researcher
Institute of Mathematics
École Polytechnique Fédérale de Lausanne (EPFL), Switzerland
Advisor: Victor Panaretos

Preprints

Bloomfield, Nathaniel J., i, **Wei, Susan**, Woodham, Bartholomew, Wilkinson, Peter, and Robinson, Andrew (2020). *Automating the assessment of biofouling in images using expert agreement as a gold standard*. arXiv: 2008.09289 [cs.CV].

Wei, Susan and Niethammer, Marc (2020). *The Fairness-Accuracy Pareto Front*. arXiv: 2008.10797 [cs.LG].

Publications

Vialard, François-Xavier, Kwitt, Roland, Wei, Susan, and Niethammer, Marc (2020). A Shooting Formulation of Deep Learning. In: *Advances in Neural Information Processing Systems 33*. Curran Associates, Inc.

Myhre, Jonas N., Launonen, Ilkka Kalervo, **Wei, Susan**, and Godtliebsen, Fred (2018). "Controlling Blood Glucose Levels In Patients With Type 1 Diabetes Using Fitted Q-Iterations And Functional Features". In: *2018 IEEE 28th International Workshop on Machine Learning for Signal Processing (MLSP)*. Aalborg, Denmark.

Ngo, Phuong D., **Wei, Susan**, Holubova, Anna, Muzik, Jan, and Godtliebsen, Fred (2018). "Implementation Framework for the Reinforcement-Learning Based Optimal Control Algorithm on Patients with Type-1 Diabetes". In: *IEEE Biomedical and Health Informatics*. Las Vegas, USA.

Wei, Susan and Kosorok, Michael R (2018). The change-plane Cox model. *Biometrika* 105 (4), pp. 891–903.

Wei, Susan and Panaretos, Victor M. (2018). Empirical evolution equations. *Electron. J. Statist.* 12 (1), pp. 249–276. ISSN: 1935-7524. DOI: 10.1214/17-EJS1382.

Caspi, Caitlin Eicher, Wang, Qi, Shanafelt, Amy, Larson, Nicole, **Wei, Susan**, Hearst, Mary O., and Nanney, Marilyn S. (2017). School Breakfast Program Participation and Rural Adolescents' Purchasing Behaviors in Food Stores and Restaurants. *Journal of School Health* 87 (10), pp. 723–731.

Godtliebsen, Fred, Skrovseth, Stein O., and **Wei, Susan** (2017). Discussion on Statistical Scale Space Methods. *International Statistical Review* 85 (1), pp. 36–37.

Irimia, Andrei, **Wei, Susan**, Lu, Nanshu, Moore, Constance M., and Kennedy, David N. (2017). Mobile Monitoring of Traumatic Brain Injury in Older Adults: Challenges and Opportunities. *Neuroinformatics* 15 (3), pp. 227–230.

Larson, Nicole, Wang, Qi, Grannon, Katherine, **Wei, Susan**, Nanney, Marilyn S, and Caspi, Caitlin (2017). A low-cost, grab-and-go breakfast intervention for rural high school students: changes in School Breakfast Program participation among at-risk students in Minnesota. *Journal of Nutrition Education and Behavior* 50 (2), pp. 125–132.

Wei, Susan, Lee, Chihoon, Wichers, Lindsay, and Marron, J. S. (2016). Direction-Projection-Permutation for High-Dimensional Hypothesis Tests. *Journal of Computational and Graphical Statistics* 25 (2), pp. 549–569.

Wei, Susan and Kosorok, Michael R. (2013). Latent Supervised Learning. *Journal of the American Statistical Association* 108 (503), 957–970 (Featured Article; An earlier draft won a student paper award sponsored by the Statistical Learning and Data Mining Section of the American Statistical Association).

Miedema, Jayson, Marron, J.S., Niethammer, Marc, Borland, David, Woosley, John, Coposky, Jason, **Wei, Susan**, Reisner, Howard, and Thomas, Nancy E. (2012). Image and statistical analysis of melanocytic histology. *Histopathology* 61 (3), pp. 436–444.

Wei, Susan and Nobel, Andrew B. (2011). Comment on "Adaptive Confidence Intervals for the Test Error in Classification". *Journal of the American Statistical Association* 106 (495), pp. 931–936.

Honors and Awards

2019-2021 — Discovery Early Career Researcher Award (DECRA)

- Australian Research Council (ARC)

2018 — Andrew Sisson Fund

- University of Melbourne

2014 — Institute of Mathematical Statistics (IMS) Travel Award

- IMS Annual Meeting

2013 — Student Travel Grant

- 10th International Conference on Health Policy Statistics

NSF Graduate Research Opportunities Worldwide Award

- Provided funding for research visit to the University of Tromso, Norway

Student Paper Award

- American Statistical Association Section on Statistical Learning and Data Mining

2011–2014 — NSF Graduate Research Fellowship

- Highly competitive three-year grant providing stipend, tuition and travel funds

2004–2008 — Regents' and Chancellor's Scholar at University of California at Berkeley

- Top 1 percent of incoming freshmen are invited to interview

Presentations in Conferences/Workshops

- *WNAR*, "The Change-Plane Cox Model" (Invited), Santa Fe, New Mexico, June 2017
- *Workshop on Functional Data Analysis*, "Empirical Evolution Equations" (Invited), Les Diablerets, Switzerland, May 2016
- *SIAM Conference on Uncertainty Quantification*,"Empirical Evolution Equations" (Contributed), Lausanne, Switzerland, April 2016
- *8th International Conference of the ERCIM WG on Computational and Methodological Statistics*, "Empirical Evolution Equations" (Invited), London, UK, December 2015
- *Methodological advances in Statistics related to Big Data*, "Empirical Evolution Equations" (Contributed), Castro Urdiales, Spain, June 2015
- *2014 IMS Annual Meeting*, "Latent Supervised Learning for Treatment Effect Heterogeneity" (Contributed), Sydney, Australia, July 2014
- *The 3rd Institute of Mathematical Statistics Asia Pacific Rim Meeting*,"DiProPerm" (Invited), Taipei, Taiwan, June 2014
- *2014 ENAR Spring Meeting*, "Latent Supervised Learning for Treatment Effect Heterogeneity" (Contributed), Baltimore, Maryland, May 2014
- *10th International Conference on Health Policy Statistics*, "Latent Supervised Learning for Survival Data" (Poster), Chicago, Illinois, October 2013
- *Joint Statistical Meeting*, "Latent Supervised Learning" (Contributed), Montreal, Canada, August 2013

Invited Seminars and Presentations

- Reinforcement learning for functional state spaces with application to Type 1 Diabetes. Women in Data Science (WiDS) Conference, Institute for Mathematics and its Applications (IMA) (2018).
- Empirical Evolution Equations. Department of Computer Science and Engineering, University of Minnesota (2018).
- Empirical Evolution Equations. Department of Mathematics and Statistics, University of Melbourne (2017).
- Empirical Evolution Equations. Department of Statistics, University of California Riverside (2017).
- Empirical Evolution Equations. Department of Statistics, University of Minnesota (2016).
- Introduction to Machine Learning. Nestlé Institute of Health Sciences, Lausanne (2014).
- Latent Supervised Learning. Institute of Mathematics, École Polytechnique Fédérale de Lausanne, Lausanne (2014).
- Latent Supervised Learning. Department of Statistics and Applied Probability, University of California at Santa Barbara (2013).
- Latent Supervised Learning. Department of Statistics, University of Pittsburgh (2013).
- Latent Supervised Learning. Department of Biostatistics, University of Pittsburgh (2013).
- Latent Supervised Learning. Division of Biostatistics, University of Minnesota (2013).
- Latent Supervised Learning. Division of Biostatistics, Yale University (2013).
- Latent Supervised Learning. School of Mathematical Sciences, Ohio State University (2013).
- Latent Supervised Learning. Department of Statistics, University of California at Davis (2013).
- Latent Supervised Learning. Department of Statistics and Applied Probability, National University of Singapore (2013).
- Latent Supervised Learning. Department of Economics, University of Mannheim (2013).
- Latent Supervised Learning. School of Mathematical Sciences, University of Nottingham (2013).

Research Experience

Summer 2013	Visiting Researcher Tromso Telemedicine Laboratory, Norway
2009–2013	Research Assistant Melanoma Group, University of North Carolina at Chapel Hill
Summer 2010	Research Assistant School of Dentistry, University of North Carolina at Chapel Hill
Summer 2008	Research Experience for Undergraduates (REU) participant Program on geometric group theory, University of Illinois at Urbana-Champaign

Teaching Experience

2016-2018 — Instructor, University of Minnesota

- Advanced Statistical Inference (PhD course) Spring 2017 and 2018
- Advanced Regression and Design (PhD/MS course) Spring 2018

Fall 2014 — Instructor, École Polytechnique Fédérale de Lausanne (EPFL)

- Principles of Statistical Inference (PhD course), co-taught with Anthony Davison

2009–2010 — Instructional Assistant, University of North Carolina at Chapel Hill

- Statistics, Fall 2009, Professor Ross Leadbetter
- Statistics, Spring 2010, Professor Shankar Bhamidi

2007–2008 — Undergraduate Student Instructor, University of California at Berkeley

- Calculus, Spring 2007, Professor Ole Hald
- Linear Algebra, Fall 2007, Professor Ming Gu
- Statistics, Spring 2008, Professor Roger Purves
- Statistics, Fall 2008, Professor Ani Adhikari

2004–2007 — DeCal Course Instructor, University of California at Berkeley

- The DeCal program is a collection of student-created and student-run courses at the University of California at Berkeley
- Created and taught class on the mathematics of the Rubik's Cube

Professional Services

- In 2016, represented the University of Minnesota in support of an USAID-sponsored one-year Masters of Public Health degree at Hanoi Medical University, Vietnam
  - Helped pilot the statistics course
- Reviewer for Biometrika, the Journal of the Royal Statistical Society, the Journal of Machine Learning Research; the Journal of Multivariate Analysis; Computational Statistics and Data Analysis
- Contributor to HealthNewsReview.org
- Committees
  - Diversity Equity Action Leadership Team, School of Public Health, University of Minnesota (2016-2018)
  - Doctoral Dissertation Fellowship, School of Public Health, University of Minnesota (2016-2018)
  - Exam committee, Division of Biostatistics, University of Minnesota (2016-2018)
  - Recruiting committee, Division of Biostatistics, University of Minnesota (2016-2018)
  - MSc Data Science Curriculum committee, School of Mathematics and Statistics (2018-present)
  - Diversity and Inclusion committee, , School of Mathematics and Statistics (2018-present)

Student Supervision

- Master's students
  - Alexandre Mosching, École Polytechnique Fédérale de Lausanne (EPFL) (2016)
  - John Ery, École Polytechnique Fédérale de Lausanne (EPFL) (2015)
- PhD students
  - Hui Li, University of Melbourne (2018 to present)

Work Experience

2007–2008	Quantitative analyst, Weatherbill, San Francisco, CA
Summer 2007	Actuarial intern, Mercer Human Resource Consulting, San Francisco, CA
Summer 2006	Quality assurance intern, Omneon Video Networks, Sunnyvale, CA

Professional Memberships

- American Statistical Association (2012–present)
- Eastern North American Region, International Biometric Society (2012–present)
- Institute of Mathematical Sciences (2012–present)

References

Michael R. Kosorok (PhD advisor)
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