

CONTACT INFORMATION	Department of Statistics University of Washington Box 354322 Seattle, WA 98195	Tel: (+1) 206-685-7431 Email: yenchic@uw.edu Webpage: http://faculty.washington.edu/yenchic/
RESEARCH INTERESTS	<ul style="list-style-type: none"> • Statistics: nonparametric statistics, topological data analysis, non-ignorable missing data • Machine Learning: cluster analysis, manifold learning, gradient descent • Cosmology: large-scale structure, astrostatistics 	
EDUCATION	<p>Carnegie Mellon University, Pittsburgh, PA</p> <p>Ph.D., Statistics, 08/2012 - 05/2016</p> <ul style="list-style-type: none"> • Advisors: <ul style="list-style-type: none"> * Larry Wasserman * Christopher R. Genovese <p>M.S., Statistics, 08/2012 - 05/2013</p> <p>National Taiwan University, Taipei, Taiwan</p> <p>B.S., Physics (Minor in Mathematics), 08/2007 - 05/2011</p>	
POSITIONS	<ul style="list-style-type: none"> • Assistant Professor – Department of Statistics, University of Washington 	08/2016 – Present
AFFILIATE POSITIONS	<ul style="list-style-type: none"> • Data Science Fellow – eScience Institute, University of Washington • Affiliate Faculty (at the University of Washington) <ul style="list-style-type: none"> – Center for Statistics and Social Sciences – Computational Molecular Biology Program • Co-investigator and Statistician – National Alzheimer’s Coordinating Center, University of Washington 	01/2017 – Present 05/2017 – Present 08/2019 – Present 09/2017 – Present
REFEREED PUBLICATIONS	<p>★: statistics/machine learning publications; ♠: scientific publications.</p> <ol style="list-style-type: none"> 1. ♠ The Eleventh and Twelfth Data Releases of the Sloan Digital Sky Survey: Final Data from SDSS-III. Shadab Alam et al. <i>The Astrophysical Journal Supplement Series</i> 219, no. 1 (2015): 12. 2. ★ Asymptotic Theory for Density Ridges. <u>Yen-Chi Chen</u>, Christopher R. Genovese, Larry Wasserman. <i>The Annals of Statistics</i> 43, no. 5 (2015): 1896–1928. 3. ♠ Cosmic Web Reconstruction through Density Ridges: Method and Algorithm. <u>Yen-Chi Chen</u>, Shirley Ho, Peter E. Freeman, Christopher R. Genovese, Larry Wasserman. <i>Monthly Notices of the Royal Astronomical Society</i> 454, no. 1 (2015): 1140–1156 4. ♠ Investigating Galaxy-Filament Alignments in Hydrodynamic Simulations using Density Ridges. <u>Yen-Chi Chen</u>, Shirley Ho, Ananth Tenneti, Rachel Mandelbaum, Rupert Croft, Tiziana DiMatteo, Peter Freeman, Christopher R. Genovese, Larry Wasserman. <i>Monthly Notices of the Royal Astronomical Society</i> 454, no. 3 (2015): 3341–3350 	

5. ★ **Optimal Ridge Detection using Coverage Risk.**
Yen-Chi Chen, Christopher R. Genovese, Shirley Ho, Larry Wasserman.
In Advances in Neural Information Processing Systems, pp. 316-324. 2015.
6. ★ **A Comprehensive Approach to Mode Clustering.**
Yen-Chi Chen, Christopher R. Genovese, Larry Wasserman.
Electronic Journal of Statistics 10, no. 1 (2016): 210-241.
7. ★ **Nonparametric Modal Regression.**
Yen-Chi Chen, Christopher R. Genovese, Ryan J. Tibshirani, Larry Wasserman.
The Annals of Statistics 44, no. 2 (2016): 489-514.
8. ♠ **Cosmic Web Reconstruction through Density Ridges: Catalogue.**
Yen-Chi Chen, Shirley Ho, Jon Brinkmann, Peter E. Freeman, Christopher R. Genovese,
 Donald P. Schneider, Larry Wasserman.
Monthly Notices of the Royal Astronomical Society 461, no. 4 (2016): 3896–3909
9. ♠ **Intrinsic Alignment in redMaPPer clusters I. Central Galaxy Alignment.**
 Hung-Jin Huang, Rachel Mandelbaum, Peter E. Freeman, Yen-Chi Chen, Eduardo Rozo,
 Eli Rykoff, Eric J. Baxter.
Monthly Notices of the Royal Astronomical Society 463, no. 1 (2016): 222–244
10. ★ **Confidence Sets for Density Trees.**
 Jisu Kim, Yen-Chi Chen, Sivaraman Balakrishnan, Alessandro Rinaldo, Larry Wasserman.
In Advances in Neural Information Processing Systems, pp. 1831-1839. 2016.
11. ♠ **Detecting Effects of Filaments on Galaxy Properties in Sloan Digital Sky Survey III.**
Yen-Chi Chen, Shirley Ho, Rachel Mandelbaum, Neta A. Bahcall, Joel R. Brownstein,
 Peter E. Freeman, Christopher R. Genovese, Donald P. Schneider, Larry Wasserman.
Monthly Notices of the Royal Astronomical Society 466, no. 2 (2017): 1880-1893.
12. ★ **Statistical Inference using the Morse-Smale Complex.**
Yen-Chi Chen, Christopher R. Genovese, Larry Wasserman.
Electronic Journal of Statistics 11, no. 1 (2017): 1390-1433.
13. ♠ **GraphCom: A multi-dimensional measure of grapheme complexity applied to 131 written languages.**
 Li-Yun Chang, Yen-Chi Chen, Charles A. Perfetti.
Behavior Research Methods 50, no. 1 (2017): 427-449.
14. ♠ **Intrinsic Alignment in redMaPPer clusters – II. Radial alignment of satellites toward cluster centers.**
 Hung-Jin Huang, Rachel Mandelbaum, Peter E. Freeman, Yen-Chi Chen, Eduardo Rozo,
 Eli Rykoff.
Monthly Notices of the Royal Astronomical Society 474, no. 4 (2017): 4772-4794.
15. ★ **A Tutorial on the Kernel Density Estimator and Its Recent Advances.**
Yen-Chi Chen.
Biostatistics & Epidemiology 1, no. 1 (2017): 161-187.
16. ★ **Density Level Sets: Asymptotics, Inference, and Visualization.**
Yen-Chi Chen, Christopher R. Genovese, Larry Wasserman.
Journal of the American Statistical Association 112, (2017): 1684-1696.
17. ♠ **Size uniformity of animal cells is actively maintained by a p38 MAPK-dependent regulation of G1-length.**
 Shixuan Liu et al.
eLife 7, (2018): p.e26947.

18. ★ **Modal Regression using Kernel Density Estimation: a Review.**
Yen-Chi Chen.
Wiley Interdisciplinary Reviews: Computational Statistics 10, no. 4 (2018): e1431.
19. ♠ **On the Origin of Nuclear Activity in Low-Power Radio Galaxies.**
 Yen-Ting Lin, Hung-Jin Huang, Yen-Chi Chen.
The Astronomical Journal 155, no. 5 (2018): 188
20. ♠ **The detection of the imprint of filaments on cosmic microwave background lensing.**
 Siyu He, Shadab Alam, Simone Ferraro, Yen-Chi Chen, Shirley Ho
Nature Astronomy 2, no. 5 (2018): 401.
21. ★ **On the Use of Bootstrap with Variational Inference: Theory, Interpretation, and a Two-sample Test Example.**
Yen-Chi Chen, Y. Samuel Wang, Elena Erosheva.
The Annals of Applied Statistics 12, no. 2 (2018): 846-876.
22. ★ **Generalized Cluster Trees and Singular Measures.**
Yen-Chi Chen.
The Annals of Statistics 47, no. 4 (2019): 2174-2203.
23. ♠ **Clinical diagnoses among individuals with primary age-related tauopathy versus Alzheimers neuropathology.**
 Merilee Teylan, Lilah M. Besser, John F. Crary, Charles Mock, Kathryn Gauthreaux, Nicole Thomas, Yen-Chi Chen, Walter Kukull.
Laboratory Investigation (2019): 1.
24. ♠ **Detecting Galaxy-Filament Alignments in the Sloan Digital Sky Survey III.**
Yen-Chi Chen, Shirley Ho, Jonathan Blazek, Siyu He, Rachel Mandelbaum, Peter Melchior, Sukhdeep Singh.
Monthly Notices of the Royal Astronomical Society 485, no 2 (2019): 2492-2504.
25. ♠ **Alignment between filaments and galaxy spins from the MaNGA integral-field survey.**
 Alex Krolewski, Shirley Ho, Yen-Chi Chen, P.F. Chan, Ananth Tenneti, Dmitry Bizyaev, Katarina Kraljic
The Astrophysical Journal 876, no 1 (2019): 52
26. ★ **Nonparametric Inference via Bootstrapping the Debiased Estimator.**
 Gang Cheng, Yen-Chi Chen.
Electronic Journal of Statistics 13, no. 1 (2019): 2194-2256.
27. ★ **Oracle Importance Sampling for Stochastic Simulation Models.**
Yen-Chi Chen, Youngjun Choe
Electronic Journal of Statistics 13, no. 2 (2019): 3386-3423.
28. ★ **Functional Summaries of Persistence Diagrams.**
 Eric Berry, Yen-Chi Chen, Jessi Cisewski, Brittany Terese Fasy.
Journal of Applied and Computational Topology 4, no. 2 (2020): 211-262.
29. ♠ **Cognitive trajectory in mild cognitive impairment due to primary age-related tauopathy.**
 Merilee Teylan , Charles Mock , Kathryn Gauthreaux , Yen-Chi Chen, Kwun C. G. Chan, Jason Hassenstab, Lilah M. Besser, Walter A. Kukull, John F. Crary
Brain 143, no. 2, (2020): 611-621
30. ★ **Measuring human activity spaces from GPS data with density ranking and summary curves.**

- Yen-Chi Chen, Adrian Dobra.
Annals of Applied Statistics 14, no. 1 (2020): 409-432.
31. ♠ **Estimating associations between antidepressant use and incident mild cognitive impairment in older adults with depression**
Fang Han, Tyler Bonnett, Willa Brenowitz, Merilee Teylan, Lilah Besser, Yen-Chi Chen, Gary Chan, Ke-Gang Cao, Ying Gao, Xiao-Hua Zhou
PLoS one 15, no. 1 (2020): e0227924.
 32. ♠ **Concordance of Clinical Alzheimer Diagnosis and Neuropathological Features at Autopsy**
Kathryn Gauthreaux, Tyler A. Bonnett, Lilah M. Besser, Willa D. Brenowitz, Merilee Teylan, Charles Mock, Yen-Chi Chen, Kwun C. G. Chan, C. Dirk Keene, Xiao-Hua Zhou, Walter A. Kukull
Journal of Neuropathology & Experimental Neurology 79, no. 5 (2020): 465-473.
 33. ♠ **Factor Consistency of Neuropsychological Test Battery Versions in the NACC Uniform Data Set**
Jessica E. Culhane, Kwun C. G. Chan, Merilee A. Teylan, Yen-Chi Chen, Charles Mock, Kathryn Gauthreaux, Walter A. Kukull
Alzheimer Disease & Associated Disorders 34, no. 2 (2020): 175-177.
 34. ★ **A statistical framework for measuring the temporal stability of human mobility patterns.**
Zhihang Dong, Yen-Chi Chen, Adrian Dobra
Journal of Applied Statistics 48, no. 1 (2021): 105-123.
 35. ★ **Refined Mode-Clustering via the Gradient of Slope.**
Kunhui Zhang, Yen-Chi Chen
Stats 4, no. 2 (2021): 486-508.
 36. ♠ **Differences in Symptomatic Presentation and Cognitive Performance Among Participants With LATE-NC Compared to FTL-DTP.**
Teylan, Merilee A., Charles Mock, Kathryn Gauthreaux, Jessica E. Culhane, Gregory Jicha, Yen-Chi Chen, Kwun CG Chan, Walter A. Kukull, Peter T. Nelson, and Yuriko Katsumata.
Journal of Neuropathology & Experimental Neurology 80, no. 11 (2021): 1024-1032.
 37. ★ **Kernel Smoothing, Mean Shift, and Their Learning Theory with Directional Data.**
Yikun Zhang, Yen-Chi Chen
Journal of Machine Learning Research 22, no. 154 (2021): 1-92.
 38. ★ **Solution manifold and Its Statistical Applications.**
Yen-Chi Chen
Electronic Journal of Statistics 16, no. 1 (2022): 408-450.
 39. ★ **Pattern graphs: a graphical approach to nonmonotone missing data.**
Yen-Chi Chen
Annals of Statistics 50, no. 1 (2022): 129-146
 40. ♠ **Limbic-predominant age-related TDP-43 encephalopathy (LATE): medical and pathological factors associated with comorbid hippocampal sclerosis.**
Kathryn M. Gauthreaux, Merilee A. Teylan, Yuriko Katsumata, Charles Mock, Jessica E. Culhane, Yen-Chi Chen, Kwun C.G. Chan, David W. Fardo, Adam J. Dugan, Matthew D Cykowski, Gregory A. Jicha, Walter A. Kukull, and Peter T. Nelson.
To appear in *NEUROLOGY*.

41. **★Statistical Inference with Local Optima.**
Yen-Chi Chen.
 To appear in *the Journal of American Statistical Association*. arXiv: 1807.04431
42. **★Linear Convergence of the Subspace Constrained Mean Shift Algorithm: From Euclidean to Directional Data**
 Yikun Zhang, Yen-Chi Chen
 To appear in *Information and Inference: a Journal of the IMA*. arXiv: 2104.14977

REFEREED
 ABSTRACT

1. **Analyzing cosmic webs using geometric approaches.**
Yen-Chi Chen
12th International Vilnius Conference on Probability Theory and Mathematical Statistics and 2018 IMS Annual Meeting on Probability and Statistics (2018): p. 47
2. **Clinical diagnoses among individuals with primary age-related tauopathy versus alzheimer's neuropathology.**
 Lilah M. Besser, Merilee Teylan, John Crary, Charles Mock, Kathryn Gauthreaux, Nicole Barlow, Yen-Chi Chen, and Walter A. Kukull.
Alzheimer's & Dementia: 14, no. 7 (2018).
3. **Neuropathological features in participants with sleep disorders.**
 Kathryn Gauthreaux, Merilee Teylan, Yen-Chi Chen, Kwun Chuen Gary Chan, Charles Mock, and Walter A. Kukull.
Alzheimer's & Dementia 15, no. 7 (2019).
4. **Trajectory of neuropsychological test scores in mild cognitive impairment comparing primary age-related tauopathy versus alzheimer disease.**
 Merilee Teylan, Charles Mock, Kathryn Gauthreaux, Yen-Chi Chen, Kwun Chuen Gary Chan, Jason Hassenstab, Lilah M. Besser, Walter A. Kukull, and John F. Crary
Alzheimer's & Dementia 15, no. 7 (2019).
5. **Longitudinal cognitive performance in participants with mild cognitive impairment and impaired awareness of decline.**
 Merilee Teylan, Kathryn Gauthreaux, Nicole M. Thomas, Yen-Chi Chen, Kwun Chuen Gary Chan, Charles Mock, and Walter A. Kukull.
Alzheimer's & Dementia 15, no. 7 (2019).
6. **Disparities in the cognitive trajectory of latino MCI participants: an analysis of the NACC database.**
 Katya Rascovsky, Merilee Teylan, Corey T. McMillan, Kathryn Gauthreaux, Yen-Chi Chen, Walter A. Kukull, and Murray Grossman.
Alzheimer's & Dementia 15, no. 7 (2019).
7. **Multiple factor analysis of neuropsychological test battery change in the national alzheimers coordinating center uniform data set.**
 Jessica E. Culhane, Kwun Chuen Gary Chan, Merilee Teylan, Yen-Chi Chen, Kathryn Gauthreaux, Charles Mock, and Walter A. Kukull.
Alzheimer's & Dementia 15, no. 7 (2019).
8. **The trajectory of cognitive decline and neuropathological features among APOEε2 carriers.**
 Kathryn Gauthreaux, Merilee Teylan, Jessica E. Culhane, Zachary Miller, Kristen Schwabe-Fry, Yen-Chi Chen, Kwun Chuen Gary Chan, Charles Mock, Walter A. Kukull
Alzheimer's & Dementia 16, no. 2 (2020).

9. **Cognitive performance among participants with Alzheimers disease and cerebral amyloid angiopathy.**
Merilee Teylan, Kristen Schwabe-Fry, Timothy M. Hughes, Lilah M Besser, Willa D. Brenowitz, C. Dirk Keene, Kathryn Gauthreaux, Jessica E. Culhane, Zachary Miller, Yen-Chi Chen, Kwun Chuen Gary Chan, Charles Mock, Walter A. Kukull
Alzheimer's & Dementia 16, no. 6 (2020).
10. **Longitudinal changes in FAQ scores by informant relationship.**
Jessica E. Culhane, Merilee Teylan, Kathryn Gauthreaux, Yen-Chi Chen, Kwun Chuen Gary Chan, Charles Mock, Walter A. Kukull
Alzheimer's & Dementia 16, no. 6 (2020).
11. **Cross-sectional differences in symptomatic presentation and cognitive performance among participants with LATE-NC compared to FTLT-TDP.**
Merilee Teylan, Charles Mock, Kathryn Gauthreaux, Jessica E. Culhane, Yen-Chi Chen, Kwun Chuen Gary Chan, Walter A. Kukull, Peter T Nelson, Yuriko Katsumata
Alzheimer's & Dementia 16, no. 6 (2020).
12. **Symptomatic presentation and cognitive performance in autopsy-confirmed, limbic-predominant, age-related TDP-43 encephalopathy with comorbid Alzheimers disease.**
Merilee A. Teylan, Charles Mock, Kathryn Gauthreaux, Jessica E. Culhane, Yen-Chi Chen, Kwun Chuen Gary Chan, Yuriko Katsumata, Peter T Nelson, Walter A. Kukull
Alzheimer's & Dementia 17, no. 3 (2021).
13. **Cluster analysis of neuropathologic features in the National Alzheimers Coordinating Center data set.**
Jessica E. Culhane, Merilee A. Teylan, Yen-Chi Chen, Kwun Chuen Gary Chan, Charles Mock, Walter A. Kukull
Alzheimer's & Dementia 17, no. 3 (2021).
14. **Statistical data harmonization for neuropsychological test battery conversion.**
Steven Wilkins-Reeves, Yen-Chi Chen, Kwun Chuen Gary Chan
Alzheimer's & Dementia 17, no. 6 (2021).

BOOK REVIEW

1. **Statistical Modelling by Exponential Families**
by Rolf Sundberg. New York, NY: Cambridge University Press. (2020)
Yen-Chi Chen
2. **Handbook of Mixture Analysis.**
by Sylvia Fruhwirth-Schnatter, Gilles Celeux, and Christian P. Robert, eds. CRC press. (2020)
Yen-Chi Chen
3. **Applied Directional Statistics.**
by Christophe Ley and Thomas Verdebout, eds. CRC press. (2021)
Yen-Chi Chen

PREPRINT
PUBLICATIONS

1. **Information Criterion for Boltzmann Approximation Problems.**
Youngjun Choe, Yen-Chi Chen, Nick Terry.
arXiv: 1704.04315
2. **The EM Perspective of Directional Mean Shift Algorithm.**
Yikun Zhang, Yen-Chi Chen
arXiv: 2101.10058

3. **Skeleton Clustering: Dimension-Free Density-based Clustering.**
Zeyu Wei, [Yen-Chi Chen](#)
arXiv: 2104.10770
4. **Mode and Ridge Estimation in Euclidean and Directional Product Spaces: A Mean Shift Approach**
Yikun Zhang, [Yen-Chi Chen](#)
arXiv: 2110.08505
5. **Data Harmonization Via Regularized Nonparametric Mixing Distribution Estimation**
Steven Wilkins-Reeves, [Yen-Chi Chen](#), Kwun Chuen Gary Chan.
arXiv: 2110.06077
6. **Multistage Estimators for Missing Covariates and Incomplete Outcomes**
Daniel Suen, [Yen-Chi Chen](#)
arXiv: 2111.02367
7. **The emptiness inside: Finding gaps, valleys, and lacunae with geometric data analysis**
Gabiella Contardo, David W. Hogg, Jason A.S. Hunt, Joshua E.G. Peek, [Yen-Chi Chen](#)
arXiv: 2201.10674
8. **Long-term effect estimation when combining clinical trial and observational follow-up datasets**
Gang Cheng, [Yen-Chi Chen](#), Joseph M. Unger, Cathee Till, Ying-Qi Zhao
arXiv: 2204.04309

TECHNICAL
REPORTS

1. **Uncertainty Measures and Limiting Distributions for Filaments.**
[Yen-Chi Chen](#), Christopher R. Genovese, Larry Wasserman.
Technical Report at Carnegie Mellon University. arXiv: 1312.2098.
2. **Generalized Mode and Ridge Estimation.**
[Yen-Chi Chen](#), Christopher R. Genovese, Larry Wasserman.
Technical Report at Carnegie Mellon University. arXiv: 1406.1803.
3. **Risk Bounds for Mode Clustering.**
Martin Azizyan, [Yen-Chi Chen](#), Aarti Singh and Larry Wasserman.
Technical Report at Carnegie Mellon University. arXiv: 1505.00482
4. **Statistical Analysis of Persistence Intensity Functions.**
[Yen-Chi Chen](#), Daren Wang, Alexandro Rinaldo, Larry Wasserman.
Technical Report at Carnegie Mellon University. arXiv: 1510.02502
5. **Statistical Inference using Mean Shift Denoising.**
Yunhua Xiang, [Yen-Chi Chen](#).
Technical Report at the University of Washington. arXiv: 1610.03927
6. **A Note on Community Trees in Networks.**
Ruqian Chen, [Yen-Chi Chen](#), Wei Guo, Ashis G. Banerjee.
NIPS 2017 workshop *Synergies in Geometric Data Analysis*. arXiv: 1710.03924
7. **Nonparametric Pattern-Mixture Models for Inference with Missing Data.**
[Yen-Chi Chen](#), Mauricio Sadinle
Technical Report at the University of Washington. arXiv: 1904.11085

AWARDS AND HONORS	<ul style="list-style-type: none"> • NSF CAREER award 2022 • Nominee of UW distinguished teaching award 2021 • Nominee of UW distinguished teaching award 2020 • Umesh K. Gavasakar Thesis Award 2017 • Student of the Year Award 2016 • NIPS Travel Award 2015 • William S. Dietrich II Presidential Ph.D. Fellowship Award 2015 • Departmental Scholarship 2012
GRANTS	<ul style="list-style-type: none"> • NSF DMS 1810960 <ul style="list-style-type: none"> – Title: Statistical Analysis Using Density Surrogates – Period: 07/01/2018 – 06/30/2021 – Role: PI – Award amount: \$100,826 • NSF DMS 1952781 <ul style="list-style-type: none"> – Title: Data-Enabled Acceleration of Stochastic Computational Experiments – Period: 08/01/2020 – 07/31/2023 – Role: Co-PI – Award amount: \$54,745 • NSF DMS 2112907 <ul style="list-style-type: none"> – Title: Novel missing data approaches for corrupted longitudinal data – Period: 07/01/2021 – 06/30/2024 – Role: PI – Award amount: \$147,253 • NSF DMS 2141808 <ul style="list-style-type: none"> – Title: CAREER: Inference with graphs: density skeleton and Markov missing graph – Period: 07/01/2022 – 06/30/2027 – Role: PI – Award amount: \$400,008 • NIH U01 AG016976 <ul style="list-style-type: none"> – Title: National Alzheimers Coordinating Center – Period: 07/01/1999 – 06/30/2021 – Role: Co-Investigator – Award amount: \$4,073,816 • NIH U24 AG072122 <ul style="list-style-type: none"> – Title: National Alzheimers Coordinating Center – Period: 06/15/2021 – 05/31/2026 – Role: Co-Investigator – Award amount: \$7,804,981

SELECTED TALKS

- **Invited**, National Taiwan University, Taipei, Taiwan. *Filament Estimation and Uncertainty Measures*. May 2013
- **Invited**, National Taiwan University, Taipei, Taiwan. *Enhanced Mode Clustering*. May 2014
- **Topic-Contributed**, Joint Statistical Meeting 2014, Boston, MA. *Filament Estimation and Uncertainty Measures*. Aug. 2014
- **Seminar Talk**, Carnegie Mellon University, Pittsburgh, PA. *Nonparametric Modal Regression*. Jan. 2015
- **Seminar Talk**, Carnegie Mellon University, Pittsburgh, PA. *Cosmic Web Reconstruction through Density Ridges*. Feb. 2015
- **Invited**, National Taiwan University, Taipei, Taiwan. *Statistical Inference for Shards*. May 2015
- **Invited**, Academia Sinica, Taipei, Taiwan. *Cosmic Web Reconstruction through Density Ridges*. Jun. 2015
- **Contributed**, Joint Statistical Meeting 2015, Seattle, WA. *Nonparametric Modal Regression*. Aug. 2015
- **Seminar Talk**, University of Pittsburgh, Pittsburgh, PA. *Cosmic Web Reconstruction through Density Ridges*. Sep. 2015
- **Invited**, American Mathematical Society Fall Eastern Sectional Meeting 2015, Rutgers University, New Brunswick, NJ. *Asymptotic Theory for Density Ridges*. Nov. 2015
- **Invited**, 8th International Conference of the ERCIM WG on Computational and Methodological Statistics, Senate House, University of London, London, UK. *Asymptotic Theory for Density Ridges*. Dec. 2015
- **Invited**, Pierre and Marie Curie University (UPMC Paris 6), Paris, France. *Statistical Inference using Geometric Features*. Dec. 2015
- **Invited**, The French Institute for Research in Computer Science and Automation (INRIA)–Saclay, Palaiseau, France. *Statistical Inference using Geometric Features*. Dec. 2015
- **Invited**, University of California–Davis, Davis, CA. *Statistical Inference using Geometric Features*. Jan. 2016
- **Invited**, University of Illinois Urbana-Champaign, Champaign, IL. *Statistical Inference using Geometric Features*. Jan. 2016
- **Invited**, University of Pennsylvania, Philadelphia, PA. *Statistical Inference using Geometric Features*. Jan. 2016
- **Invited**, Cornell University, Ithaca, NY. *Statistical Inference using Geometric Features*. Jan. 2016
- **Invited**, University of Washington, Seattle, WA. *Statistical Inference using Geometric Features*. Feb. 2016
- **Invited**, University of Chicago, Chicago, IL. *Statistical Inference using Geometric Features*. Feb. 2016
- **Invited**, Stanford University, Stanford, CA. *Statistical Inference using Geometric Features*. Feb. 2016
- **Invited**, University of Texas–Austin, Austin, TX. *Statistical Inference using Geometric Features*. Feb. 2016
- **Invited**, Columbia University, New York, NY. *Statistical Inference using Geometric Features*. Feb. 2016
- **Invited**, University of Michigan, Ann Arbor, MI. *Statistical Inference using Geometric Features*. Feb. 2016
- **Invited**, Rice University, Houston, TX. *Statistical Inference using Geometric Features*. Feb. 2016
- **Invited**, Ohio State University, Columbus, OH. *Statistical Inference using Geometric Features*. Feb. 2016
- **Invited**, University of Southern California, Los Angeles, CA. *Statistical Inference using Geometric Features*. Mar. 2016
- **Contributed**, Statistical Challenges in 21st Century Cosmology, Chania, Greece. *Cosmic*

- Web Reconstruction through Density Ridges*. May 2016
- **Contributed**, Statistical Challenges in Modern Astronomy VI, Carnegie Mellon University, Pittsburgh. *Cosmic Web Reconstruction through Density Ridges*. Jun. 2016
 - **Invited**, Joint Statistical Meeting 2016, Chicago, IL. *Nonparametric Methods for Detecting Large-Scale Structures*. Aug. 2016
 - **Invited**, 2016 International Indian Statistical Association Conference, Oregon State University, Corvallis, OR. *Asymptotic Theory for Density Ridges*. Aug. 2016
 - **Invited**, Academia Sinica, Taipei, Taiwan. *Statistical Inference using Geometric Features*. Dec. 2016
 - **Invited**, National Taiwan University, Taipei, Taiwan. *Statistical Inference using Geometric Features*. Dec. 2016
 - **Contributed**, Joint Statistical Meeting 2017, Baltimore, MD. *Nonparametric Inference via Bootstrapping the Debiased Estimator*. Aug. 2017
 - **Invited**, ICSA Canada Chapter Symposium, Vancouver, BC, Canada. *Nonparametric Inference via Bootstrapping the Debiased Estimator*. Aug. 2017
 - **Invited**, University of Tennessee, Knoxville, TN. *Density Tree and Density Ranking in Singular Measures*. Oct. 2017
 - **Workshop Talk**, NIPS 2017 Workshop Synergies in Geometric Data Analysis, Long Beach, CA. *Community Trees in Networks*. Dec. 2017
 - **Invited**, 42nd SIAM Southeastern Atlantic Sectional Conference, UNC Chapel Hill, Chapel Hill, NC. *Density Tree and Density Ranking in Singular Measures*. Mar. 2018
 - **Invited**, 2018 Statistical Learning and Data Science conference, Columbia University, New York City, NY. *Density Tree and Density Ranking in Singular Measures*. June. 2018
 - **Invited**, 2018 IMS Asia Pacific Rim Meeting, Singapore. *Density Tree and Density Ranking in Singular Measures*. June. 2018
 - **Invited**, 2018 IMS Annual Meeting on Probability and Statistics, Vilnius, Lithuania. *Analyzing cosmic webs using geometric approaches*. July. 2018
 - **Topic-contributed**, Joint Statistical Meeting 2018, Vancouver, BC. *Analyzing cosmic webs using geometric approaches*. Aug. 2018
 - **Invited**, Statistics & Data Science Symposium: Beyond Big, Missing or Corrupted Data, La Jolla, CA. *Density Ranking in Singular Measures*. Jan. 2019
 - **Invited**, Biostatistics Seminar, Fred Hutchinson Cancer Research Center, Seattle, WA. *Analyzing GPS data using density ranking*. Feb. 2019
 - **Invited**, AMS Spring Southeastern Sectional Meeting at Auburn University in Auburn, AL. *Statistical Inference with Local Optima*. Mar. 2019
 - **Invited**, Workshop on Functional Inference and Machine Intelligence (FIMI), the Institute of Statistical Mathematics, Tokyo, Japan. *Analyzing GPS data using density ranking*. Mar. 2019
 - **Invited**, The 3rd International Conference on Econometrics and Statistics (EcoSta 2019), National Chung Hsing University, Taichung, Taiwan. *Statistical Inference with Local Optima*. June 2019
 - **Invited**, University of Rome-Tor Vergata, Rome, Italy. *Analyzing Cosmic Webs using Geometric Approaches*. July 2019
 - **Invited**, George Mason University, Fairfax, VA. *Analyzing GPS data using density ranking*. Sep. 2019
 - **Invited**, AMS sectional meeting special session on Data Science, Riverside, CA. *Nonparametric Pattern-Mixture Models for Inference with Missing Data*. Nov. 2019
 - **Invited**, Workshop on Statistical Methods in Astronomy, College Station, TX. *Two Insights from Nonparametric Statistics on Cosmology Research*. Feb. 2020
 - **Invited**, Texas A&M University, College Station, TX. *Analyzing GPS data using density ranking*. Feb. 2020
 - **Topic-Contributed**, Joint Statistical Meeting 2020, Philadelphia, PA. *Solution manifold and its statistical applications*. Aug. 2020.
 - **Invited**, INRIA-Saclay, Palaiseau, France. *Pattern graphs: a graphical approach to nonmonotone*

missing data. Oct. 2020

- **Invited**, University of California, Santa Cruz, CA. *Pattern graphs: a graphical approach to nonmonotone missing data.* Nov. 2020
- **Invited**, CSSS seminar, University of Washington, Seattle, WA. *Pattern graphs: a graphical approach to nonmonotone missing data.* Nov. 2020
- **Invited**, ICSA 2020, Houston, TX. *Pattern graphs: a graphical approach to nonmonotone missing data.* Dec. 2020
- **Invited**, Ecostat 2021, Hong Kong. *Pattern graphs: a graphical approach to nonmonotone missing data.* Jun. 2021
- **Invited**, JSM 2021, Seattle, WA. *Finding cosmic filament by directional ridge finding algorithm.* Aug. 2021
- **Invited**, CANSSI-Ontario Data Science Applied Research & Education Seminar, University of Toronto, Toronto, CA. *Finding cosmic filament by directional ridge finding algorithm.* Dec. 2021

TEACHING
EXPERIENCE

• **Instructor**

- UW STAT 302: Statistical Softwares and Applications Autumn 2016
 - * 3 credits undergraduate course with 31 students.
 - * Median course evaluation: 4.6/5.0.
- UW STAT 220: Principles of Statistical Reasoning Winter 2016
 - * 5 credits undergraduate course with 179 students.
 - * Median course evaluation: 3.7/5.0.
- UW STAT 302: Statistical Softwares and Applications Spring 2017
 - * 3 credits undergraduate course with 44 students.
 - * Median course evaluation: 4.7/5.0.
- UW STAT/Q SCI 403: Introduction to Resampling Method Spring 2017
 - * 4 credits undergraduate course with 24 students.
 - * Median course evaluation: 4.8/5.0.
- UW STAT 425: Introduction to Nonparametric Statistics Winter 2018
 - * 3 credits undergraduate course with 27 students.
 - * Median course evaluation: 4.8/5.0.
- UW STAT 302: Statistical Softwares and Applications Spring 2018
 - * 3 credits undergraduate course with 39 students.
 - * Median course evaluation: 4.3/5.0.
- UW STAT/Q SCI 403: Introduction to Resampling Method Spring 2018
 - * 4 credits undergraduate course with 32 students.
 - * Median course evaluation: 4.7/5.0.
- UW STAT 516: Stochastic Modeling for Scientific Data Autumn 2018
 - * 4 credits graduate course with 24 students.
 - * Median course evaluation: 4.4/5.0.
- UW STAT 425: Introduction to Nonparametric Statistics Winter 2019
 - * 3 credits undergraduate course with 26 students.
 - * Median course evaluation: 4.2/5.0.
- UW STAT/Q SCI 403: Introduction to Resampling Method Spring 2019
 - * 4 credits undergraduate course with 36 students.
 - * Median course evaluation: 4.9/5.0.

- UW STAT 516: Stochastic Modeling for Scientific Data Autumn 2019
 - * 4 credits graduate course with 37 students.
 - * Median course evaluation: 3.9/5.0.
- UW STAT 535: Statistical Machine Learning Autumn 2019
 - * 4 credits undergraduate course with 39 students.
 - * Median course evaluation: 4.9/5.0.
- UW STAT 512: Statistical Inference Autumn 2020
 - * 3 credits graduate course with 53 students.
 - * Median course evaluation: 4.7/5.0.
- UW STAT 425: Introduction to Nonparametric Statistics Winter 2021
 - * 3 credits undergraduate course with 17 students.
 - * Median course evaluation: 4.0/5.0.
- UW STAT 542: Multivariate Analysis Spring 2021
 - * 3 credits graduate course with 6 students.
 - * Median course evaluation: 4.5/5.0.
- UW STAT 512: Statistical Inference Autumn 2021
 - * 3 credits graduate course with 63 students.
 - * Median course evaluation: 4.9/5.0.
- **Summer School Invited Lecturer**
 - TIARA summer school on Astrostatistics and Big Data (Taiwan) Summer 2017
 - 2019 NCTS & Sinica Summer Course (Taiwan) Summer 2019

OUTREACH

- **Outreach Talk.**
 - UW statistics undergraduate orientation. *Statistics: Current and Future*. Oct. 2017.
 - UW student association “Probability Research Organization”. *Statistics and Data Science*. Nov. 2017
 - UW student association “Statistics and Probability Association”. *Research Night: Analyzing GPS datasets using density ranking*. Feb. 2018
 - UW statistics undergraduate orientation. *Anatomy of a Statistical Collaboration*. Oct. 2018

PROFESSIONAL SERVICE

- Associate Editor
 - Electronic Journal of Statistics (2019-2021)
 - Journal of American Statistical Association-Review (2019-Present)
- Area Chair
 - AISTAT 2020
- Executive Committee
 - UW Center for Statistics and Social Sciences (2019-Present)
- Organizing Committee
 - TIARA summer school on Astrostatistics and Big Data 2017, Taiwan
 - Connecting The Dots 2018 workshop (Particle Physics), University of Washington, Seattle.

- Conference Session Organizer
 - Invited Session in Joint Statistical Meeting 2018, Vancouver, BC. *Hierarchical Bayes in a Hierarchical Universe*.
 - Minisymposium in 42nd SIAM Southeastern Atlantic Sectional Conference, UNC-Chapel Hill, NC. *Statistical Topological Data Analysis*
- Conference Session Chair
 - Contributed Session in Joint Statistical Meeting 2017, Baltimore, MD.
 - Invited Session in Joint Statistical Meeting 2018, Vancouver, BC.
- Reviewer
 - Statistics: the Annals of Statistics, JASA (Journal of American Statistical Association), the Annals of Applied Statistics, Biometrika, Electronic Journal of Statistics, JCGS (Journal of Computational and Graphical Statistics), Statistica Sinica, ADAC (Advances in Data Analysis and Classification), JSCS (Journal of Statistical Computation and Simulation), Computational Statistics, Stat, the R journal, Bernoulli
 - Machine Learning: NIPS (Neural Information Processing Systems), ICML (International Conference on Machine Learning), AISTATS (Artificial Intelligence and Statistics), JMLR (Journal of Machine Learning Research), UAI (Uncertainty in Artificial Intelligence), IEEE Transactions on Information Theory, IEEE Transactions on Pattern Analysis and Machine Intelligence.
 - Astronomy: MNRAS (Monthly Notices of Royal Astronomical Society).
 - Economics: Journal of Econometrics.