Darren Homrighausen. https://darrenho.github.io

Professional Positions

Texas A&M University, **Department of Statistics** College Station, TX

2020 - present: Instructional Associate Professor
2019 - 2020: Visiting Assistant Professor of Statistics

Southern Methodist University, **Masters in Data Science** Dallas, TX

2019: Faculty of the Masters in Data Science Program (MSDS)

Southern Methodist University, **Department of Statistics & Data Science** Dallas, TX

2016 - 2018: Visiting Assistant Professor of Statistics

Colorado State University, **Statistics Department** Fort Collins, CO

2012 - 2016: Assistant Professor of Statistics

Education

Carnegie Mellon University, Pittsburgh, Pennsylvania USA

Ph.D in Statistics, May 2012

Dissertation: "Sequential estimation and detection in statistical inverse problems"
Advisor: Christopher R. Genovese

M.S. in Statistics, December 2008

University of Colorado, Boulder, Colorado USA

Graduate work in Applied Mathematics, 2006-2007

University of Colorado, Denver, Colorado USA

B.A. in Economics, B.A. in Mathematics, May 2006

Teaching at TAMU

- Statistical Computing (graduate, 2023 to Present)
(Complete Course Redesign)
- Statistical Principles I (undergraduate, 2020 to Present)
(Substantial Course Redesign)
- Applied Analytics (Masters, 2019 to Present)
(Complete Course Redesign)
- Applied Multivariate & Statistical Learning (Masters, Falls 2019, 2020, 2021)
(Complete Course Redesign)

Teaching (Older)

• Foundations of Statistics I	(Masters, Spring 2019, Summer 2019)
• Introduction to Data Science	(Masters, Spring 2017, Fall 2017, Spring 2018)
• Quantifying the World	(Masters, Fall 2016, Fall 2017)
• Undergraduate Statistics II	(undergraduate, Spring 2018)
• Undergraduate Statistics I	(undergraduate, Fall 2017)
• Categorical Data Analysis, GLMM	(PhD, Spring 2016)
• Statistical Learning and Data Mining	(Masters, Spring 2015, Spring 2016)
• Statistical Machine Learning	(PhD, Fall 2014, Fall 2015, Springs 2017, 2018)
• Generalized Regression Methods	(Masters, Falls 2012, 2013, 2018)
• Applied Multivariate Analysis	(undergraduate, Springs 2013, 2014, 2015)
• Statistics for Engineers	(undergraduate, Summer 2008, Fall 2008)

Advising (completed)

Will Boyles	Committee	(PhD. Statistics, 2023)	*Topics in Statistical Education.*
Himanshu Jha	Committee	(PhD. Petroleum Engin., 2022)	*Differential Equations for flow rates.*
Han Xiu	Advisor	(STAT 685, 2020 & 2021)	Data Science with Python
Justin Raimondi	Advisor	(M.S. Statistics, 2017)	Discharge pulses in stream networks
Rafe McBeth	Committee	(PhD. Radiation Phys., 2017)	Developing radiation sensors for manned space exploration.
Xiyue Liao	Committee	(PhD. Statistics, 2016)	Shape constrained covariance function estimation.
Ben Goldman	Advisor	(M.S. Statistics, 2015)	Classifying supernovae with functional data analysis
Andrea Schumacher	Committee	(PhD. Atmosph. Sci.)	Estimating the maximum wind velocity of hurricanes.
Paul Harmon	Advisor	(B.S. Statistics, 2015)	Predicting front range housing prices (Honors project)
Greg Ellison	Advisor	(M.S. Statistics, 2014)	Using text mining to predict Ebay sales
Yi Hu	Advisor	(B.S. Statistics, 2014)	Investigating the tuning parameter selection of lasso
Gavan Tredoux	Committee	(M.S. Statistics, 2013)	Predicting student loan default using penalized regression
Letters of Recommendation		(Students)	21 unique students
External Review for Promotion		(Faculty)	2 (UIUC, CU)

Advising (in progress)

Chris McCullagh	Committee	(PhD. PETE)	TBD
Gabriel Peterson	Committee	(M.S. Engineering)	Ball Bearing in Piezo Chambers
Aaron D. Heinrich	Committee	(PhD in Business Admin)	Advanced Training Metrics in Nuclear Power
Niranjana Kulkarni	Committee	(MS in Math)	Perturbations of Dirac Function
Devon Maywald	Committee	(MS in Math)	VC Dimension and PAC Learnability

Data Science Competitions

TAMU Datathon (held annually since 2019 and biannually starting 2024)

TAMIDS Data Science Competition (held annually since 2019)

Publications

Dabney, **Homrighausen, D.**, and Crawford (2024) "Open Educational Resource (OER) Introduction to Statistics" *Online*

Homrighausen, D. and McDonald, D.J. (2020) "Compressed and Penalized Linear Regression" *Journal of Computational & Graphical Statistics)* Vol. 29:2, pp. 309-322

Linginer, K.; Raimondi, J.; Kramer, N.; **Homrighausen, D.**; Covich, A. (2019) "Discharge pulses in temperate and tropical rain forest headwater stream networks," *Journal of Hydrology* Vol. 579

Homrighausen, D. and McDonald, D.J. (2018) "A study on tuning parameter selection for the high-dimensional lasso," *Journal of Statistical Computation and Simulation* Vol. 88, pp. 2865-2892.

Homrighausen, D. and McDonald, D.J. (2017) "Risk consistency of cross-validation and lasso-type procedures," *Statistica Sinica* Vol. 27, pp. 1017-1036

Homrighausen, D. and McDonald, D.J. (2016) "Approximate principal components analysis of large data sets via the Nyström and column-sampling methods," *Journal of Computational and Graphical Statistics* Vol. 25, No. 2, pp. 344-362

Homrighausen, D. and McDonald, D.J., (2014) "Leave-one-out cross-validation is risk consistent for lasso," *Machine Learning* 97, pp 65-78

Homrighausen, D. and McDonald, D.J. (2013) "The lasso, persistence, and cross-validation," Proceedings of the 30th International Conference on Machine Learning, eds. S. Dasgupta, and D. McAllester, JMLR W&CP 28(3), 1031–1039.

Homrighausen, D. and Genovese, C.R. (2013) "Efficient estimators for sequential and resolution-limited inverse problems," *Electronic Journal of Statistics* 7, pp 2098-2130.

Becker, A.C.; **Homrighausen, D.**; Connolly, A.J.; Genovese, C.R.; Owen, R.; Bickerton, S.J.; and Lupton R. (2012)"Regularization techniques for PSF-matching kernels. I. Choice of kernel basis," *Monthly Notices of the Royal Astronomical Society.* Vol. 425, No. 2, pp. 1341-1349.

Stephen, K.E.; **Homrighausen, D.**, DePalma, G., Nakatsu, C., and Irudayaraj, J. (2012) "Using RAMAN spectroscopy to classify highly related bacteria." *Analyst.* Vol. 137, pp. 4280 - 4286.

Homrighausen, D.; Genovese, C.R.; Connolly, A.J.; Becker, A.C.; and Owen, R. (2011) "Image coaddition with temporally varying kernels," in *Publications of the Astronomical Society of the Pacific*, Vol. 123, No. 907, pp. 1117-1126.

Richards, J.W.; **Homrighausen, D.**; Freeman, P.E; Schafer, C.M.; and Poznanski, D. (2011) "Semi-supervised learning for photometric supernova classification," *Monthly Notices of the Royal Astronomical Society.* Vol. 419, No. 2, pp. 1121-1135.

Technical Reports

McDonald, D.J., Shalizi, C.R., and **Homrighausen, D.**, "Macroeconometrics and em-

pirical fantasy,"

Homrighausen, D. and McDonald, D.J., "Laplace Gaussian Filtering for nonlinear, non-Gaussian state space models,"

Homrighausen, D. and McDonald, D.J., "Spectral approximations in machine learning," arXiv:1107.4340 [stat.ML].

External Grants

"Statistical and computational efficiency for massive datasets via approximation-regularization" Homrighausen, D. (PI) (NSF-DMS 1407543). (Awarded: $70,000**; 2014 - 2016)

"High dimensional statistics for macroeconomic forecasting" Shalizi, C.R., McDonald, D.J., and Homrighausen, D. (CO-PI) Institute for New Economic Thinking (INET). (Awarded: $50,000**; 2014 - 2016)

"High dimensional statistics for time-series forecasting." Shalizi, C.R., McDonald, D.J., and Homrighausen, D. (NSF). (unfunded)

"New approaches to computationally intensive inverse problems in nonlinear electromagnetic scattering." Homrighausen, D., et al. National Science Foundation. (Unfunded)

Internal Grants

"Streamlining STAT 211" Homrighausen, D. (PI). Dr. Longnecker's Mitchell Chair Grant (Awarded: $5,000; 2020 - 2021)

Invited Short Courses

Institute for New Economic Thinking (INET) Conference. Hong Kong, April 2013
"Machine Learning Methods in Economics"

Invited Presentations

- Texas A&M University, Statistics Department (Spring, 2018)
  "Compressed and Penalized Linear Regression"
  https://darrenho.github.io/compressedLStalk.pdf
- Baylor, Statistics Department (Fall, 2017)
  "A General Framework for Addressing "Any" Machine Learning Problem"
  https://darrenho.github.io/seminar20170921.pdf
- Southern Methodist University, Operations Research and Statistics Towards Integrated Analytics (Spring, 2017)
  "A General Framework for Addressing "Any" Machine Learning Problem"
- Southern Methodist University, Statistical Sciences department (Spring, 2016)
  "Improved Computational and Statistical Efficiency via Compressed Least Squares"
- University of Colorado, Denver, Math/Stat department (Spring, 2016)
  "Improved Computational and Statistical Efficiency via Compressed Least Squares"
- NBER/NSF Time Series Conference [Vienna, Austria] (Fall, 2015)
  "Greedy Function Approximation for Macroeconomic Forecasting"
- University of Colorado, Boulder, Applied Math department (Fall, 2015)
  "Photometric Supernovae Classification"
- European Conference on Machine Learning [Nancy, France] (Fall, 2014)
  "Leave-one-out cross-validation is risk consistent for lasso"
- Institute for New Economic Thinking Conference [Toronto, Canada] (Spring, 2014)
  "High dimensional statistics for macroeconomic forecasting"
- University of Indiana, Bloomington, Statistics department (Fall, 2013)
  "The lasso, persistence, and cross-validation"

**my share of grant.

- Argonne National Labs (Fall, 2013)
  "Approximate Bayesian Computation: From Electromagnetics to Astrostatistics"
- Colorado State University, Statistics department (Fall, 2012)
  "Detecting transients in mixed resolution image data"
- University of Indiana, Bloomington, Statistics department (Spring 2012)
  "Efficient estimators for sequential and resolution limited inverse problems"
- Colorado State University, Statistics department (Spring 2012)
  "Efficient estimators for sequential and resolution limited inverse problems"
- Conference on Data Analysis (CODA 2012)
  "Detecting transients in mixed resolution image data"

  Won best poster contest
- Statistical Challenges in Modern Astronomy (SCMA 2011)
  "FASTDetect: A stochastic process approach to detecting transients"
- SIAM conference on Data Mining (SDM 2011)
  "Efficient estimators for sequential and resolution limited inverse problems"

Contributed Presentations

- ASA conference, Denver, (2012)
- ASA conference, Pittsburgh, (2011,2012)
- Statistical Machine Learning Group, CMU (2010, 2011)
- Joint Statistical Meetings, Washington D.C. (2009)
- Astrostatistics Group, CMU (2010)

Professional Service

Memberships:	*American Statistical Association*, *Institute of Mathematical Statistics*
Referee:	Journal of the American Statistical Association, Statistica Sinica (2), Statistics and Computing, ICML, IEEE Information Theory, Journal of Statistical Planning and Inference (2), Computational Statistics and Data Analysis, Journal of Optimization Theory, Journal of Nonparametric Statistics
Substantive Textbook Review:	"Machine Learning: a Concise Introduction" by Stephen Knox "Time Series for Data Science " by Sadler et al.
Intra-department:	MS program (2019 to 2021), Community Outreach (2023 to Present), APT committee (2021 to Present), Graduate Committee (2019 - 2021), Stat Club (2017-2018), DataFest (2017-2019), Graduate student admissions (2012-2016), Department seminar (Spring, 2013, Spring 2015), Tenure Track Faculty Hiring Committee (2013-2014, 2015-2016), Graduate Committee (2014-2016)
Inter-department:	Datathon (2020 to Present), TAMIDS Data Science Comp. (2021, 2022, 2024), Faculty Advisory Council (2022)