Irina Gaynanova

Assistant Professor, Department of Statistics, Texas A&M University irinag@stat.tamu.edu irinagain.github.io

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Research interests

Statistical learning, high-dimensional data, multivariate analysis, classification, data integration, computational statistics, machine learning.

Education

• Ph.D, Statistics Cornell University, Ithaca, NY	05/2015
Advisors: James Booth and Martin Wells	
M.S., Statistics Cornell University, Ithaca, NY	05/2013
 Diploma with honors (M.S.), Applied Mathematics and Computer Science 	06/2009
Lomonosov Moscow State University, Moscow, Russia	55, 2007

Professional Positions

 Assistant Professor Department of Statistics, Texas A&M University 	since 07/2015
• Senior Specialist Balancing Market Division, OJSC Trading System Administrator, Moscow, Russia	06/2009 - 07/2010
 Junior Statistician Census Division, AC Nielsen, Moscow, Russia 	06/2008 - 05/2009

Awards and Honors

David P. Byar Young Investigator Award, ASA Biometrics Section	2018
Cornelia Ye Outstanding Teaching Assistant Award, Cornell University	2014
EducationUSA Opportunity Award	2009
 Study Abroad Scholarship, Technical University of Munich, Germany 	2007

Competitive Travel Awards

• IMS New Researchers Conference	2017
 NISS Writing Workshop for Junior Researchers 	2016
SAMSI LDHD Summer School Program	2013
Building Future Faculty Program, NC State University	2013
Diversity and Mentoring Program at JSM	2012

Publications and Submitted Manuscripts

Note on authorship: the sign * at the beginning of a paper indicates alphabetical order of authorships; the sign + indicates co-first authorships; $\underline{\text{underline}}$ denotes mentored student or post-doctoral associate; the sign \boxtimes denotes corresponding author.

Submitted Manuscripts:

- 23. <u>Yoon G.</u>, Müller C. and **Gaynanova**, **I.**[⊠](2020+) "Fast computation of latent correlations." Preprint available on arXiv:2006.13875 [stat.CO]
- 22. Broll, S., Urbanek J., Buchanan D., Muschelli J., Punjabi N. and Gaynanova, $I^{\boxtimes}(2020+)$ "Interpreting glucose data with iglu."
- 21. Risk, B.+[™] and **Gaynanova**, **I.**+ (2020+) "Simultaneous non-Gaussian component analysis (SING) for data integration in neuroimaging." Preprint available on arXiv:2005.00597 [stat.ML]
- 20. Zhang Y. and **Gaynanova**, **I.** (2020+) "Joint association and classification analysis of multi-view data." Preprint available on arXiv:1811.08511 [stat.ML]
- 19. <u>Lapanowski A.</u> and **Gaynanova, I.** (2020+) "Compressing large-sample data for discriminant analysis." Preprint available on arXiv:2005.03858 [stat.ML]
- 18. **Gaynanova, I.**, Aurora N., Urbanek J., Crainiceanu, C., Selvin L., Bergenstal R. and Punjabi N. [™](2020+) "Association between metrics from Continuous Glucose Monitoring and hemoglobin A1c in Type 2 diabetes mellitus"
- 17. Taylor, N. , Gaynanova I., Welsh E., Garrett T., Beecher C., Koomen J., Sharma; R., Smalley K., Eschrich S., Messina J., Kanetsky P. (2020+) "Metabolomics of primary cutaneous melanoma and matched adjacent extratumoral microenvironment"

Peer-reviewed Publications:

- 16. **Gaynanova**, **I.**[⊠], Punjabi, N. and Crainiceanu, C. (2020+) "Modeling continuous glucose monitoring (CGM) data during sleep." *Biostatistics*, accepted. Link: https://doi.org/10.1093/biostatistics/kxaa023
- 15. <u>Yoon, G.</u>, Carroll, R. and **Gaynanova**, **I.** (2020+) "Sparse semiparametric canonical correlation analysis for data of mixed types." *Biometrika*, accepted. Link: https://doi.org/10.1093/biomet/asaa007
- 14. **Gaynanova**, **I.**[⊠] (2020) "Prediction and estimation consistency of sparse multi-class penalized optimal scoring." *Bernoulli*, Vol. 26, No. 1, 286-322. Link: https://projecteuclid.org/euclid.bj/1574758829
- 13. **Gaynanova, I.** and Li, G. (2019). "Structural learning and integrative decomposition of multi-view data." *Biometrics,* Vol. 75, No. 4, 1121-1132. Link: https://doi.org/10.1111/biom.13108
- 12. * Bien, J., **Gaynanova, I.**, Müller, C. and Lederer, J. (2019). "Prediction error bounds for linear regression with the TREX." *TEST*, Vol. 28, No. 2, 451-474. Link: https://doi.org/10.1007/s11749-018-0584-4

11. <u>Yoon G.</u>, **Gaynanova**, **I.** and Müller, C.[⊠](2019) "Microbial networks in SPRING - Semi-parametric rank-based correlation and partial correlation estimation for quantitative microbiome data." *Frontiers in Genetics*, Vol. 10, 516.

Link: https://doi.org/10.3389/fgene.2019.00516

10. <u>Lapanowski A. and Gaynanova, I.</u> (2019) "Sparse feature selection in kernel discriminant analysis via optimal scoring." *Proceedings of the 22nd International Conference on Artificial Intelligence and Statistics (AISTATS)*, PMLR 89, 1704-1713.

Link: http://proceedings.mlr.press/v89/lapanowski19a.html

9. Lederer, J. Lu Y. and **Gaynanova**, **I.** (2019). "Oracle inequalities for high-dimensional prediction." *Bernoulli*, Vol. 25, No. 2, 1225-1255.

Link: https://projecteuclid.org/euclid.bj/1551862849

8. **Gaynanova**, **I.** and <u>Wang</u>, <u>T.</u> (2019) "Sparse quadratic classification rules via linear dimension reduction." *Journal of Multivariate Analysis*, Vol. 169, 278-299.

Link: https://doi.org/10.1016/j.jmva.2018.09.011

7. **Gaynanova**, **I.**[⊠], Urbanek J. and Punjabi N. (2018). "Letter to the Editor: Corrections of equations on glycemic variability and quality of glycemic control." *Diabetes Technology & Therapeutics*, Vol. 20, No. 4, 317.

Link: https://doi.org/10.1089/dia.2018.0057

Li, G. and Gaynanova, I. (2018). "A general framework for association analysis of heterogeneous data."
 Annals of Applied Statistics, Vol. 12, No. 3, 1700-1726.

Link: http://doi.org/10.1214/17-AOAS1127

5. * Bien, J., **Gaynanova, I.**[⊠], Müller, C. and Lederer, J. (2018). "Non-convex global minimization and false discovery rate control for the TREX." *Journal of Computational and Graphical Statistics*, Vol. 27, No. 1, 23-33.

Link: https://doi.org/10.1080/10618600.2017.1341414

4. Hokamp J.[™], Leidy S., **Gaynanova, I.**, Cianciolo R. and Nabity M. (2018) "Correlation of electrophoretic urine protein banding patterns with severity of renal damage in dogs with proteinuric chronic kidney disease." *Veterinary Clinical Pathology*, Vol. 47, No. 3, 424-434.

Link: https://doi.org/10.1111/vcp.12648

3. **Gaynanova, I.**[⊠], Booth, J. and Wells, M. (2017). "Penalized versus constrained generalized eigenvalue problems." *Journal of Computational and Graphical Statistics*, Vol. 26, No. 2, 379-387. Link: https://doi.org/10.1080/10618600.2016.1172017

2. **Gaynanova**, I. $^{\bowtie}$, Booth, J. and Wells, M. (2016). "Simultaneous sparse estimation of canonical vectors in the $p \gg n$ setting." *Journal of the American Statistical Association*, Vol. 111, No. 514, 696-706. Link: http://doi.org/10.1080/01621459.2015.1034318

1. **Gaynanova**, **I.**[⊠] and Kolar, M. (2015). "Optimal variable selection in multi-group sparse discriminant analysis." *Electronic Journal of Statistics*, Vol. 9, No. 2, 2007-2034.Link: http://doi.org/10.1214/15-EJS1064

Unrefereed Manuscripts:

2. **Gaynanova**, **I.** (2015). "Estimation of sparse low-dimensional linear projections." Ph.D. Thesis, Cornell University.

1. **Gaynanova**, **I.**, Booth, J. and Wells, M. (2013). "Supervised classification using sparse Fisher's LDA." Technical report, arXiv:1301.4976 [stat.ML].

Software Developed

Mentored student and post-doctoral associate co-authors are underlined.

- 8. iglu: an R package for interpreting data from continuous glucose monitors (CGMs), available from Github. Authors: Broll S., Urbanek J., Buchanan D., Muschelli J., **Gaynanova I.**
- 7. SPRING: an R package for estimation of sparse microbial association networks using rank-based correlation, available from Github.

Authors: Yoon G., Gaynanova I., Müller, C.

6. sparseKOS: an R package for nonlinear binary classification using sparse kernel optimal scoring, available from Github.

Authors: Lapanowski A., Gaynanova I.

5. JACA: an R package for joint association and classification analysis of multi-view data, available from Github.

Authors: Zhang Y., Gaynanova I.

4. mixedCCA: an R package for semiparametric sparse canonical correlation analysis for data of mixed types (continuous/ binary/ zero-inflated), available from Github.

Authors: Yoon G., Gaynanova I.

- 3. DAP: an R package to perform discriminant analysis via projections, available from Github and CRAN. Authors: Wang T., **Gaynanova I.**
- 2. TREX: a Matlab package to perform sparse linear regression using TREX, available from Github. Authors: Müller C., Bien J., Gaynanova I., Combettes P.
- 1. MGSDA: an R package to perform sparse multi-group discriminant analysis, available from CRAN. Authors: **Gaynanova I.**

Funding

As PI or Co-PI:

• NSF DMS-1712943 Gaynanova I. (PI) 07/2017 - 06/2020

Scalable methods for classification of high-dimensional heterogeneous data Total awarded amount: \$162,539.00

Johns Hopkins University, Subcontract
 Statistical Analysis of CGM Data
 Gaynanova I. (PI)
 07/2019 - 06/2020

Total awarded amount: \$30,063.00

• TAMU Institute of Data Science Postdoctoral Project Program Ni Y. (PI) 07/2020 - 06/2022 Studying Microbial Interactions and Host Heterogeneity via Data Integration

Role: Co-PI

Total awarded amount: \$59,100.00 (50% of postdoctoral researcher support for 2 years)

As Co-I:

• NSF CCF-1934904 Mallick B. (PI) 10/2019 - 09/2022

HDR Tripods: Texas A&M Research Institute for Interdisciplinary Foundations of Data Science

Total awarded amount: \$1,416,522.00

Role: Co-Investigator, 0% effort

Delta Omega REDI, Texas A&M School of Public Health Taylor N. (PI) 06/2017 - 05/2018
 Integrative gene expression profiling of primary colorectal cancer and adjacent extratumoral environment
 Total awarded amount: \$25,000

Role: Co-Investigator, 0% effort

Presentations

Invited Presentations:

- 43. 4th International Conference on Econometrics and Statistics (EcoSta 2020), Seoul, South Korea, July 2020 (rescheduled to 2021 due to COVID-19)
- 42. Department of Biostatistics, University of Washington, May 2020 (rescheduled to 2021 due to COVID-19)
- 41. Department of Statistics, University of Washington, May 2020 (rescheduled to 2021 due to COVID-19)
- 40. Department of Biostatistics, Emory University, April 2020 (rescheduled to 2021 due to COVID-19)
- 39. Banff International Research Station, workshop on the "Use of Wearable and Implantable Devices in Health Research", Banff, Canada, February 2020
- 38. Department of Statistics, Oregon State University, February 2020
- 37. The Gatsby Computational Neuroscience Unit, University College London, UK, December 2019
- 36. The Fourth Workshop on Higher-Order Asymptotics and Post-Selection Inference (WHOA-PSI), St. Louis, MO, August 2019
- 35. Topic-Contributed session, Joint Statistical Meetings, Denver, CO, July 2019
- 34. ICSA Applied Statistics Symposium, Raleigh, NC, June 2019
- 33. Econometrics and Statistics Colloquium, Booth School of Business, University of Chicago, May 2019
- 32. Department of Biostatistics, University of Michigan, April 2019
- 31. Big Data Working group, College of Veterinary Medicine, Texas A&M University, March 2019
- 30. Friday Science Seminar, College of Science, Texas A&M University, February 2019
- 29. Department of Biostatistics, University of Minnesota, February 2019
- 28. 11th International Conference of the ERCIM WG on Computational and Methodological Statistics (CM Statistics 2018), Pisa, Italy, December 2018
- 27. Bioinformatics and Cancer Symposium, Texas A&M University, September 2018
- 26. Topic-Contributed session, Joint Statistical Meetings, Vancouver, Canada, August 2018

- 25. IMS Asia Pacific Rim Meeting 2018, Singapore, June 2018
- 24. ICSA Applied Statistics Symposium, New Brunswick, NJ, June 2018
- 23. Statistical Learning and Data Science Conference, New York, NY, June 2018
- 22. Department of Statistics, Indiana University, April 2018
- 21. SAMSI Operator Splitting Workshop, Research Triangle Park, NC, March 2018
- 20. Department of Biostatistics, UT MD Anderson Cancer Center, March 2018
- 19. 10th International Conference of the ERCIM WG on Computational and Methodological Statistics (CM Statistics 2017), London, UK, December 2017
- 18. Department of Statistical Science, Baylor University, November 2017
- 17. Department of Biostatistics, Johns Hopkins Bloomberg School of Public Health, September 2017
- 16. Data-Driven Model Reduction Workshop, Texas A&M University, April 2017
- 15. Conference of Texas Statisticians (COTS), Dallas, TX, March 2017
- 14. ENAR, Washington DC, March 2017
- 13. 9th International Conference of the ERCIM WG on Computational and Methodological Statistics (CM Statistics 2016), Seville, Spain, December 2016
- 12. Bio-seminar, Department of Electrical and Computer Engineering, Texas A&M University, October 2016
- 11. Topic-Contributed session, Joint Statistical Meetings, Chicago, IL, August 2016
- 10. Southern Regional Council on Statistics Summer Research Conference, Bentonville, AR, June 2016
- 9. Structured Multivariate Data Workshop, Texas A&M University, January 2016
- 8. Department of Statistics, Rice University, February 2015
- 7. Department of Statistical Science, Cornell University, February 2015
- 6. Department of Statistics, Indiana University, January 2015
- 5. Department of Statistics, Texas A&M University, January 2015
- 4. Department of Mathematical and Statistical Sciences, University of Colorado, Denver, January 2015
- 3. Department of Statistics and Actuarial Science, University of Iowa, January 2015
- 2. Department of Statistics, University of California, Davis, January 2015
- 1. Department of Biostatistics, University of Iowa, December 2014

Contributed Presentations:

- 12. Poster, ENAR, Philadelphia, PA, March 2019
- 11. IMS New Researchers Conference, Baltimore, MD, August 2017
- 10. Poster, International Conference on Machine Learning in New York City, NY, June 2016
- 9. Contributed session, Joint Statistical Meetings in Boston, MA, August 2014
- 8. Statistics Student Seminar, Cornell University, April 2014
- 7. Poster, SAMSI LDHD Workshop, February 2014

- 6. Contributed session, Joint Statistical Meetings in Montreal, Canada, August 2013
- 5. Poster, SAMSI LDHD Summer School, August 2013
- 4. Statistics Student Seminar, Cornell University, March 2013
- 3. Contributed session, Joint Statistical Meetings in San Diego, CA, August 2012
- 2. Cross-Campus Collaborative Colloquium, Cornell University, December 2011
- 1. Statistics Student Seminar, Cornell University, September 2011

Teaching Experience

Primary instructor (at Texas A&M University):

STAT 211: Principles of Statistics I

Fall 2015/2016/2017, Spring 2016

Calculus-based introduction to probability and probability distributions; sampling and descriptive measures; inference and hypothesis testing; analysis of variance; linear regression.

STAT 610: Distribution Theory

Fall 2017/2018/2019

Graduate-level introduction to probability theory; distributions and expectations of random variables, transformations of random variables and order statistics; generating functions and basic limit concepts.

STAT 689/STAT 695: Statistical Learning with Sparsity

Spring 2017/2020

Graduate-level class covering penalized empirical loss minimization methods with sparsity-inducing penalties. The course also includes brief introduction to convex optimization and duality.

STAT 600: Computational Statistics

Spring 2018/Fall 2019

Graduate-level course on computational statistics and optimization. Topics include version control with Git and Github, code vectorization and profiling, writing R packages, introduction to convex optimization and optimization algorithms.

Table 1: Summary of teaching evaluations at Texas A&M University, Q: On the whole, this was a good instructor. Scale 1(Strongly Disagree) to 5(Strongly Agree).

Course	Semester	Total class size	Mean (median) response
STAT 211	Fall 2015	77	4.68 (5.00)
STAT 211	Spring 2016	77	4.21 (4.00)
STAT 211	Fall 2016	97	4.57 (5.00)
STAT 211	Fall 2017	97	4.44 (5.00)
STAT 610	Fall 2017	35	4.82 (5.00)
STAT 610	Fall 2018	34	5.00 (5.00)
STAT 610	Fall 2019	39	4.54 (5.00)
STAT 600	Spring 2019	7	4.84 (5.00)
STAT 600	Fall 2019	31	4.73 (5.00)
STAT 689	Spring 2017	12	5.00 (5.00)
STAT 695	Spring 2020	15	5.00 (5.00)

Primary instructor (at Cornell University):

ILRST 2100: Introductory Statistics

Winter 2013, 2014, 2015

Non-calculus-based introduction to statistics; sampling and descriptive measures; inference and hypothesis testing; analysis of variance; linear regression.

Teaching Assistant (at Cornell University):

ILRST 2100: Introductory Statistics

Summer 2013, 2014

Non-calculus-based introduction to statistics; sampling and descriptive measures; inference and hypothesis testing; analysis of variance; linear regression.

ENGRD 2700: Basic Engineering Probability and Statistics (recitation leader)

Fall 2013

Calculus-based introduction to probability and probability distributions; sampling and descriptive measures; inference and hypothesis testing; analysis of variance; linear regression.

MATH 4720: Statistics **Spring 2015**

Introduction to mathematical statistics based in calculus, linear algebra, and probability theory; inference for proportions, inference for means, contingency tables and linear regression.

BTRY 6010: Statistical Methods I (TA/Lab instructor)

Fall 2009, 2010, 2014

Graduate level introduction to statistical methods for analyzing data; descriptive statistics and data visualization; analysis of variance; linear regression.

BTRY 6020: Statistical Methods II (TA/Lab instructor)

Spring 2010, 2011, 2012

Continuation of BTRY 6010. Emphasizes the use of multiple regression analysis, experimental design and generalized linear models.

Mentoring

Postdoctoral Researchers

1. Grace Yoon since 08/2017

Postdoctoral Trainee of DHHS-NIH National Cancer Institute T32CA090301 (PI: R. Carroll), Gaynanova is the Statistics Mentor

PhD Committee Chair (Statistics)

1. Dongbang Yuan 2022 (expected)

2. Alex Lapanowski 2020 (expected)

3. Yunfeng Zhang 2020 (expected)

4. Tianying Wang (co-chair with Raymond Carroll) 2018

Position upon graduation: Postdoctoral Research Scientist in the Department of Biostatistics of the Mailman School of Public Health at Columbia University.

PhD Committee Member (Statistics)

1. Krystin Pantoja (chair David Jones)	2022 (expected)
2. Jiayi Wang (chair Raymond Wong)	2022 (expected)
3. Allyson Souris (chair Anirban Bhattacharya)	2020 (expected)
4. Sangyoon Yi (chair Xianyang Zhang)	2020 (expected)

PhD Committee Member (Other majors)

1. Nida Obatake (chair Anne Shiu, Major: Mathematics)	2022 (expected)
2. Jianling Wang (chair James Caverlee, Major: Computer Science and Engineering)	2022 (expected)

MS Committee Member (Statistics)

1. Yiwen Zhou	2020 (expected)
2. Eric Riley	2019

MS Committee Member (Other majors)

1. Terin Thomas (Major: Industrial and Systems Engineering)	2020 (expected)
2. Yinsong Wang (Major: Industrial and Systems Engineering)	2020 (expected)
3. Aaron Knodell (Major: Computer Science)	2019
4. Haley Pichler (Major: Mathematics)	2019
5. Jung Sim Hyun (Major: Mathematics)	2019

Undergraduate Student Research

1. Steven Broll, STAT major	06/2019 - present
2. David Buchanan, STAT major	01/2020 - present
3. Mary Martin, STAT major	01/2020 - present
4. Elizabeth Chun, BMCB major	01/2020 - present
5. Sangaman Senthil, INEN major	01/2020 - present
6. Eric Wang, ENGE major	01/2020 - present

Other formal mentoring

1. Brittany Segundo
Dr. Gaynanova is a teaching mentor through the Academy for Future Faculty (AFF) at Texas A&M University

Departmental and University Service

At Texas A&M University:

Committees:

• Faculty Evaluation and Promotion Guidelines Committee, Department of Statistics	since 02/2020
Graduate Committee, Department of Statistics	since 08/2019
Colloquium Chair, Department of Statistics	05/2018 - 12/2019

Hiring Committee, Department of Statistics	07/2018 - 02/2019
 Undergraduate Committee, Department of Statistics 	09/2017 - 08/2018

Panelist:

3rd Annual TX-LA Undergraduate Mathematics conference	10/2019
TAMU College of Science, Lunch and Learn series	09/2019
• TAMU Symposium for Faculty, Staff, Graduate Students and PostDocs in the Sciences	02/2017
• TAMU AWM Chapter Panel "Career in Mathematics"	03/2016

Other:

 Co-founder and faculty advisor for Statistical Learning Journal Club, Department of Statistics 	since
02/2019	

• Friday Science Seminar, College of Science, Texas A&M University 02/2019

At Cornell University:

President, STATS graduate student organization	11/2013 - 05/2015
Organiser, Statistics Student Seminars	08/2011 - 12/2013

Professional Activities

Editorial service:

• Associate Editor, Journal of Computational and Graphical Statistics

since 2018

Journal refereeing:

- Bioinformatics
- Biometrics
- Biometrika
- Computational Statistics
- Journal of the American Statistical Association
- Journal of Computational and Graphical Statistics
- Journal of Machine Learning Research
- Journal of Multivariate Analysis
- IEEE Transactions on Network Science and Engineering
- PLOS One
- Statistical Analysis and Data Mining
- Statistical Modeling: an International Journal
- Stat
- Statistics in Biosciences
- Statistics in Medicine
- Statistics & Probability Letters
- Statistica Sinica
- Technometrics

Book proposals refereeing:

 Springer 	2018
CRC/Chapman & Hall	2017, 2018
• Wiley	2017
MacMillan Education	2015

Grant review panels:

• Joint NSF/NIH panel 2016

Elected Positions:

• President, Southeast Texas Chapter of ASA (SETCASA)	02/2019-01/2020
Main activity: led, coordinated and judged SETCASA annual poster competition	
• Vice-president, Southeast Texas Chapter of ASA (SETCASA)	10/2017-01/2019
Main activity: co-organized and judged SETCASA annual poster competition	

Professional Committees Chair:

• Co-chair (chair Genevera Allen) of ASA SLDS Student Paper Award Committee 01/2020

Professional Committees Member:

SLDS conference Student Paper Award Committee	03/2020
ASA SLDS JSM Poster Competition Committee	07/2019
ASA SLDS Student Paper Award Committee	01/2019
• COTS (Conference of Texas Statisticians) Poster Competition Committee	03/2017
 ASA SCS John M. Chambers Statistical Software Award Committee 	01/2016

Conference Program Committees:

13th International Conference of the ERCIM WG on Computational and Methodological Statistics (CM Statistics 2020) in London, UK, Scientific Program committee
 ENAR 2019 program committee, Statistical Learning and Data Mining section representative
 2019

Sessions Organized:

- Invited Session at CM Statistics in London, UK: "Statistical methods for time-varying multivariate data" 12/2019
- Topic-Contributed Session at Joint Statistical Meetings: "Integrative approaches for statistical analysis of data from multiple sources"
 08/2019
- Invited Session at Joint Statistical Meetings: "Discovering homology in multi-view data: new statistical methods for data integration"
 08/2018
- Topic-Contributed Session at Joint Statistical Meetings: "Exploiting Low-Dimensional Structures: Recent Advances of Statistical Learning Methods in Genetics and Genomics"
 08/2016

Sessions Chaired:

CM Statistics, London, UK	12/2019
• Joint Statistical Meetings, Denver, CO	07/2019
• ENAR, Philadelphia, PA	03/2019
CM Statistics, Pisa, Italy	12/2018
Joint Statistical Meetings, Vancouver, Canada	08/2018
• IMS Asian Pacific Rim Conference, Singapore	06/2018

Membership:

 American Statistical Association (ASA) 	since 2011
 Institute of Mathematical Statistics (IMS) 	since 2012
• ENAR	since 2015

Other:

• Docent at JSM in Boston 08/2014