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Yao Xie

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Education

Ph.D. in Electrical Engineering, *Stanford University*, January 2012.
Minor: Mathematics.
Advisors: David Siegmund and Andrea Goldsmith.

M.Sc. in Electrical and Computer Engineering, *University of Florida*, August 2006.
Advisor: Jian Li.

B.Sc. in Electrical Engineering and Information Science, *University of Science and Technology of China (USTC)*, July 2004. Advisors for Honor Thesis: Jingsheng Li and Peilin Hong.

Work Experience

Georgia Institute of Technology, Atlanta, GA.
Associate Director, Machine Learning Center. January 2020 – present.
Associate Professor, H. Milton School of Industrial and Systems Engineering (ISyE). August 2019 – present.
Harold R. and Mary Anne Nash Early Career Professorship, ISyE, September 2017 – present.
Assistant Professor, ISyE, August 2013 – August 2019.
Adjunct Professor, School of Electrical and Computer Engineering (ECE). Oct. 2018 – present.

Duke University, Durham, NC.
Postdoctoral Research Scientist, Department of Electrical and Computer Engineering. December 2011 – August 2013. Mentors: Robert Calderbank and Rebecca Willett.

General Electric Global Research Center, Niskayuna, NY.
Research Intern, Medical Imaging Lab. June 2007 – August 2007.

Editorial Board Memberships

Associate Editor, *IEEE Transactions on Signal Processing*, September 2018 – present.
Associate Editor, *INFORMS Journal on Data Science*, November 2020 – present.
Associate Editor, *Sequential Analysis*, January 2020 – present.
Editorial Board Reviewer, *Journal of Machine Learning Research*, 2020 – present.
Lead Guest Editor, *IEEE Journal on Selected Areas in Information Theory (JSAIT)*, Special Issue on "Sequential, active, and reinforcement learning," 2020.
Guest Editor, *IEEE Intelligent Systems Trends & Controversies (T&C)*, Special Issue on "Systems informatics," 2015.

Honors and Awards

INFORMS Wagner Prize (Finalist), 2021.
Georgia Tech Emerging Leaders Program, 2020.
Smart 50 Award at the Smart Cities Connect Conference and Expo, 2018.
National Science Foundation (NSF) CAREER Award, 2017.
Thank-a-Teacher Recipient, Georgia Tech, 2018, 2019, 2020, 2021.
Georgia Tech Serve-Learn-Sustain Research Fellow, 2017.
Class of 1969 Teaching Fellow, Georgia Tech, 2015.
General Yao-Wu Wang Stanford Graduate Fellowship, 2007-2010.

Pan Wen-Yuan Scholarship, Stanford University, 2007.

Research Awards

Best Paper Award (Honorable Mention), *ICML Time Series Workshop*, 2021.
Best Paper for 16th *INFORMS Workshop on Data Mining and Decision Analytics*, Finalist, 2021.
Best Paper for 15th *INFORMS Workshop on Data Mining and Decision Analytics*, 2nd Place, 2020.
INFORMS Doing Good OR for Social Good Paper Competition, 2nd Place, 2019.
INFORMS QSR Best Student Paper Competition, Finalist, 2019.
INFORMS ICS Best Student Paper Competition, Runner-Up, 2019.
Best Student Paper Award, *IEEE ICASSP Conference*, 2019.
INFORMS Social Media Analytics Best Student Paper Competition, Finalist, 2018.
INFORMS QSR Best Student Paper Competition, Finalist, 2018.
Best Poster Award at IMA Workshop, Forecasting from Complexity, 2018.
INFORMS QSR Best Student Paper Competition, Finalist, 2017.
Best Student Paper Award, *IEEE ICASSP Conference*, Finalist, 2007.
Best Student Paper Award, *IEEE Asilomar Conference*, 1st place, 2005.

Full Publication List

Journal Publications

[J46] Shixiang Zhu, He Wang, and Yao Xie. Data-driven optimization for police zone design. *INFORMS Journal on Applied Analytics*. Invited paper, under review. (Wagner Prize Finalist 2021.)

[J45] Shixiang Zhu, Alex Bukharin, Liyan Xie, Shihao Yang, Pinar Keskinocak, and Yao Xie. Early detection of COVID-19 hotspots using spatio-temporal data. *IEEE Journal Selected Topics in Signal Processing (JSTSP)*. Accepted, Nov. 2021.

[J44] Josh Kacher, Yao Xie, Shixiang Zhu, Sven Voigt, Henry Yuchi, Jordan Key, and Surya R. Kalidindi. Signal processing challenges and examples for in-situ transmission electron microscopy. *IEEE Signal Processing Magazine*. Accepted, Oct. 2021.

[J43] Shixiang Zhu, and Yao Xie. Crime linkage detection by spatial-temporal-textual point processes. *Annals of Applied Statistics*. Accepted, August 2021.

[J42] Yiwei Chen, Zheng Wen, and Yao Xie. Dynamic pricing in an evolving and unknown marketplace. *Management Science*, Minor Revision, September 2021.

[J41] Liyan Xie and Yao Xie. Sequential change detection by optimal weighted l_2 divergence. *IEEE Selected Areas in Information Theory (JSAIT)*. Vol. 2, No. 2, pp. 747-761, 2021.

[J40] Liyan Xie, Shaofeng Zou, Yao Xie, and Venugopal Veeravalli. Sequential change detection: Classical results and new directions. (Invited Survey.) *IEEE Selected Areas in Information Theory (JSAIT)*. Vol. 2, No. 2, pp. 494-514, 2021.

[J39] Renee T. Rios, Francesca Lolli, Liyan Xie, Yao Xie, and Kimberley Kurtis. Time-series surface resistivity data with change-point detection: Evaluating pozzolanicity under standard and accelerated curing. *Cement and Concrete Research*. Accepted, July 2021.

[J38] Rui Zhang, Junting Chen, Yao Xie, Alexander Shapiro, Urbashi Mitra. Testing rank of incomplete unimodal matrices. *IEEE Signal Processing Letter*. Vol. 28, pp. 877-881, 2021.

[J37] Shixiang Zhu, Alexander Bukharin, Liyan Xie, Mauricio Santillana, Shihao Yang, and Yao Xie. High-resolution spatio-temporal model for county-level COVID-19 activity in the U.S. *ACM Transactions on Management Information Systems (TMIS)*. Vol. 12, No. 4, pp. 1-20, December 2021.

[J36] Rui Zhang, Junting Chen, Yao Xie, Alexander Shapiro, Urbashi Mitra. Testing rank of incomplete unimodal matrices. *IEEE Signal Processing Letter*. Vol. 28, pp. 877-881, 2021.

[J35] Alexander Shapiro, Yao Xie, and Rui Zhang. (Authors listed alphabetically.) Goodness-of-fit tests on manifolds. *IEEE Transactions on Information Theory*. Vol. 67, No. 4, pp. 2539-2553, 2021.

[J34] Shixiang Zhu, Shuang Li, Zhigang Peng, and Yao Xie. Imitation learning of neural spatio-temporal point processes. *IEEE Transactions on Knowledge and Data Engineering*. Accepted, September 2020.

[J33] Shixiang Zhu, Ruyi Ding, Pascal Van Hentenryck, and Yao Xie. Spatio-temporal point processes with attention for traffic congestion event modeling. *IEEE Transactions on Intelligent Transportation Systems*. Accepted, September 2020.

[J32] Alexander Shapiro, Yao Xie, and Rui Zhang. On characteristic rank for matrix and tensor completion. *IEEE Signal Processing Magazine*. Vol. 38, no. 2, pp. 125-129, March 2021. (Authors listed alphabetically.)

[J31] Anatoli Juditsky, Alexander Nemirovski, Liyan Xie, and Yao Xie. (Authors listed alphabetically.) Convex parameter recovery for interacting marked processes. *IEEE Journal on Selected Areas in Information Theory*. Vol. 1, no. 3, pp. 799-813, Nov. 2020.

[J30] Santanu Dey, Guanyi Wang, Yao Xie. An Approximation Algorithm for training One-Node ReLU Neural Network. *IEEE Transactions on Signal Processing*. Vol. 68, pp. 6696-6706, 2020. (Authors listed alphabetically.)

[J29] Liyan Xie, Yao Xie, and George Moustakides. Sequential subspace change-point detection. *Sequential Analysis*. 39:3, pp. 307-335, 2020.

[J28] Junzhuo Chen, Seong-Hee Kim and Yao Xie. S^3T: An efficient score statistic for spatial-temporal surveillance. *Sequential Analysis*. 39:4, pp. 563-592, 2020.

[J27] Jordan W. Key, Shixiang Zhu, Christopher M. Rouleauc, Raymond R. Unocic, Yao Xie, and Josh Kacher. Investigating local oxidation processes in Fe thin films in a water vapor environment by in situ liquid cell TEM. *Ultramicroscopy*. Vol. 209, February 2020.

[J26] Shuang Li, Yao Xie, Hanjun Dai, and Le Song. Scan B-statistics for kernel change-point detection. *Sequential Analysis*. Vol. 38, No. 4, pp. 503-544. October 2019.

[J25] Junzhuo Chen, Chuljin Park, Seong-Hee Kim, and Yao Xie. To reduce or not to reduce: A Study on spatio-temporal surveillance. *Environmental and Ecological Statistics (EEST).* Vol. 26, No. 3, pp. 217-238. September 2019.

[J24] Alexander Shapiro, Yao Xie, and Rui Zhang. Matrix completion with deterministic pattern. *IEEE Transactions on Signal Processing.* Vol. 67, Issue 4, pp. 1088-1103. February 2019. (Authors listed alphabetically).

[J23] Yang Cao, Andrew Thompson, Meng Wang, and Yao Xie. (Authors listed alphabetically.) Sketching for sequential change-point detection. *EURASIP Journal on Advances in Signal Processing.* No.1, 2019: pp. 1-22.

[J22] Simon Mak, and Yao Xie. Maximum entropy low-rank matrix recovery. *IEEE Journal of Selected Topics in Signal Processing.* Vol. 12, No. 5, pp. 886-901. October 2018.

[J21] Ruiyang Song, Yao Xie, and Sebastian Pokutta. On the effect of model mismatch for sequential Info-Greedy Sensing. *EURASIP Journal on Advances in Signal Processing*. 2018:32, June 2018.

[J20] Yang Cao, Liyan Xie, Yao Xie, and Huan Xu. Sequential change-point detection via online convex optimization. *Entropy, Special Issue on Information Theory in Machine Learning and Data Science*. Vol. 20, No. 108. February 2018.

[J19] Yang Cao, Arkadi Nemirovski, Yao Xie, Vincent Guigues, and Anatoli Juditsky. Change detection via affine and quadratic detectors. *Electronic Journal of Statistics*. Vol. 12, no. 1, pp. 1-57, January 2018. (Authors listed alphabetically).

[J18] Shuang Li, Yao Xie, Mehrdad Farajtabar, and Le Song. Detecting changes in dynamic events over networks. *IEEE Transactions on Signal and Information Processing over Networks (TSIPN).* Vol. 3, no. 2, pp. 346-359, March 2017.

[J17] Yang Cao, Yao Xie, and Nagi Gebraeel. Multi-sensor slope change detection. *Annals of Operations Research.* Vol. 263, no. 1-2, pp. 163-189, April 2016.

[J16] Yang Cao, and Yao Xie. Poisson matrix completion. *IEEE Transactions on Signal Processing*. Vol. 64, no. 6, pp. 1609-1620, March 2016.

[J15] Gabor Braun, Sebastian Pokutta, and Yao Xie. Info-Greedy sequential adaptive compressed sensing. *IEEE Journal on Selected Topics in Signal Processing*. Vol. 9, no. 4, pp. 601-611, June 2015. (Authors listed alphabetically.)

[J14] Tirza Routtenberg, Yao Xie, Rebecca M. Willett, and Lang Tong. PMU based detection of imbalance in three-phase power systems. *IEEE Transactions on Power Systems*. Vol. 30, no. 4, pp. 1966-1976, July 2015.

[J13] Robert Calderbank, Andrew Thompson, and Yao Xie. On group coherence of frames. *Applied and Computational Harmonic Analysis*. Vol. 38, no. 1, pp. 50-71, January 2015.

[J12] David Maragoni-Simonsen, and Yao Xie. Sequential change-point approach for community detection. *IEEE Signal Processing Letter*. Vol. 22, no. 8, pp. 1035-1039, July 2014.

[J11] Yao Xie, and David Siegmund. Sequential multi-sensor change-point detection. *Annals of Statistics*. Vol. 41, no. 2, pp. 670-692, June 2013.

[J10] Yao Xie, Yonina Eldar, and Andrea Goldsmith. Reduced-dimension multiuser detection. *IEEE Transactions on Information Theory*. Vol. 59, no. 6, pp. 3858-3864, June 2013.

[J9] Yao Xie, Jiaji Huang, and Rebecca Willett. Change-point detection for high-dimensional time series with missing data. *IEEE Transactions on Selected Topics of Signal Processing*. Vol. 7, no. 1, pp. 12-27, February 2013.

[J8] Yao Xie, Benjamin Armbruster, and Yinyu Ye. Dynamic spectrum management with the competitive market model. *IEEE Transactions on Signal Processing*. Vol. 58, no. 4, pp. 2442-2446, April 2010.

[J7] Yao Xie, Bin Guo, Jian Li, Ku Geng, and Lihong V. Wang. Adaptive and robust methods of reconstruction (ARMOR) for thermoacoustic tomography. *IEEE Transactions on Biomedical Engineering*, vol. 55, no. 12, pp. 2741-2752, December 2008.

[J6] Xiayu Zheng, Yao Xie, Jian Li, and Peter Stoica. MIMO transmit beamforming under uniform elemental power constraint. *IEEE Transactions on Signal Processing*. Vol. 55, no. 11, pp. 5395-5406, November 2007.

[J5] Jian Li, Yao Xie, Xiayu Zheng, and James Ward. Beampattern synthesis via a matrix approach for signal power estimation. *IEEE Transactions on Signal Processing*. Vol. 55, no. 12, pp. 5643-5657, December 2007.

[J4] Peter Stoica, Jian Li, and Yao Xie. On probing signal design for MIMO radar. *IEEE Transactions on Signal Processing*. Vol. 5, no. 8, pp. 4151-4161, August 2007.

[J3] Yao Xie, Bin Guo, Luzhou Xu, Jian Li and Peter Stoica. Multi-static adaptive microwave imaging (MAMI) for early breast cancer detection. *IEEE Transactions on Biomedical Engineering*. Vol. 53, no. 8, pp. 1647-1657, August 2006.

[J2] Yao Xie, Bin Guo, Jian Li, and Peter Stoica. Novel multi-static microwave imaging (MAMI) for early breast cancer detection. *EURASIP Journal on Applied Signal Processing, Special Issue on Multi-Sensor Processing*, vol. 2006.

[J1] Peter Stoica, Luzhou Xu, Jian Li, and Yao Xie. Optimal correction of an indefinite estimated MA spectral density matrix. *Statistics and Probability Letter*. Vol. 77, no. 10, pp. 973-980, January 2006.

Referred Conference Papers

Abbreviations below:

Allerton: Annual Allerton Conference on Communication, Control, and computing.
Asilomar: Annual Asilomar Conference on Signals, Systems, and Computers.
AISTATS: International Conference on Artificial Intelligence and Statistics
CAMSAP: International Workshop on Computational Advances in Multi-Sensor Adaptive Processing
GlobalSIP: IEEE Global Conference on Signal and Information Processing
ICASSP: IEEE International Conference on Acoustics, Speech and Signal Processing.
ICML: International Conference on Machine Learning.
ISIT: International Symposium on Information Theory.
NeurIPS: Advances on Neural Information Processing Systems.
SSP: IEEE Statistical Signal Processing Workshop.

[C60] Xiuyuan Cheng, and Yao Xie. Neural tangent kernel maximum mean discrepancy. *NeurIPS* 2021.

[C59] Song Wei, Yao Xie, Dobromir Rahnev. Inferring serial correlation with dynamic backgrounds. *ICML* 2021. (Long presentation, top 3%).

[C58] Chen Xu and Yao Xie. Conformal prediction interval for dynamic time-series. *ICML* 2021. (Long Presentation, Top 3%).

[C57] Song Wei, Shixiang Zhu, Minghe Zhang, and Yao Xie. Goodness-of-fit test for mismatched self-exciting process models. *AISTATS*, 2021.

[C56] Shixiang Zhu, Minghe Zhang, Ruyi Ding, and Yao Xie. Deep attention point processes with neural spectrum Fourier kernel. *AISTATS*, 2021. (Oral, Top 3%.)

[C55] Haoyun Wang, Liyan Xie, Alexander Cuozzo, Simon Mak, and Yao Xie. Uncertainty quantification for inferring Hawkes networks. *NeurIPS*, 2020.

[C54] Shuang Li, Lu Wang, Ruizhi Zhang, Xiaofu Chang, Xuqin Liu, Yao Xie, Yuan Qi, and Le Song. Temporal logic point processes. *ICML*, 2020.

[C53] Shixiang Zhu, Henry Yuchi Shaowu, and Yao Xie. Adversarial anomaly detection for marked spatio-temporal streaming data. (Invited.) *ICASSP*, 2020.

[C52] Minghe Zhang, Liyan Xie, and Yao Xie. Online community detection by spectral CUSUM. *ICASSP* 2020.

[C51] Zheng Dong, Yifei Yang, and Yao Xie. Sequential vessel trajectory identification using truncated Viterbi algorithm. *ICASSP*, 2020.

[C50] Xiangru Huang, Zhenxiao Liang, Xiaowei Zhou, Yao Xie, Leonidas J. Guibas, Qixing Huang. Learning transformation synchronization. *CVPR* 2019.

[C49] Yang Cao, Zheng Wen, Branislav Kveton, and Yao Xie. Nearly optimal adaptive procedure for piecewise-stationary bandit: A change-point detection approach. *AISTATS* 2019.

[C48] Liyan Xie, Yao Xie, and George V. Moustakides. Asynchronous multi-sensor change-point detection for seismic tremors. *ISIT* 2019.

[C47] Rui Zhang, Alexander Shapiro, and Yao Xie. Statistical rank selection for incomplete low-rank matrices. *ICASSP* 2019. (Best Paper Award.)

[C46] Shixiang Zhu, and Yao Xie. Crime event embedding with unsupervised feature selection. *ICASSP* 2019.

[C45] Danye Xu, Bingqing Song, Yao Xie, Sin-Mei Wu, Fan-Chi Lin, and WenZhan Song. Low-rank matrix completion for distributed ambient noise imaging systems. *Asilomar* 2019.

[C44] Qinghua Liu, Rui Zhang, and Yao Xie. Distributed change detection based on average consensus. Chapter in *Springer Proceedings in Mathematics and Statistics*. October. 2019.

[C43] Rui Gao, Liyan Xie, Yao Xie, and Huan Xu. Robust hypothesis testing using Wasserstein uncertainty sets. *NeurIPS*, 2018. (Spotlight, top 3%.)

[C42] Shuang Li, Shuai Xiao, Shixiang Zhu, Nan Du, Yao Xie, and Le Song. Learning temporal point processes via reinforcement learning. *NeurIPS*, 2018. (Spotlight, top 3%.)

[C41] Yang Cao, Liyan Xie, Yao Xie, and Huan Xu. On near optimality of one-sample update for joint detection and estimation. *AISTATS*, 2018.

[C40] Simon Mak, and Yao Xie. Maximum entropy low-rank matrix recovery. *ISIT*, 2018.

[C39] Liyan Xie, George Moustakides, and Yao Xie. First-order optimal sequential subspace change-point detection. *GlobalSIP*, 2018.

[C38] Liyan Xie, Yao Xie, Sin-Mei Wu, Fan-Chi Lin, WenZhan Song. Communication efficient signal detection for distributed ambient noise imaging. *Asilomar*, 2018.

[C37] Xi He, Yao Xie, Sin-Mei Wu, Fan-Chi Lin. Sequential graph scanning statistic for change-point detection. *Asilomar*, 2018.

[C36] Shixiang Zhu, and Yao Xie. Crime incidence embedding via restricted Boltzmann machine. *ICASSP*, 2018.

[C35] Yang Cao, Shixiang Zhu, Yao Xie, Jordan Key, and Josh Kacher. Sequential adaptive detection for in-situ transmission emission microscopy (TEM). *ICASSP*, 2018.

[C34] Yang Cao, and Yao Xie. Robust sequential change-point detection by convex optimization. *ISIT*, 2017.

[C33] Liyan Xie, and Yao Xie. Sequential detection of low-rank changes using extreme eigenvalues. *CAMSAP*, 2017.

[C32] Maria Valero, Goutham Kamath, Jose Clemente, Fan-Chi Lin, Yao Xie, and WenZhan Song. Real-time ambient noise subsurface imaging in distributed sensor networks. The *3rd IEEE International Conference on Smart Computing (SMARTCOMP)*, 2017.

[C31] Tirza Routtenberg and Yao Xie. PMU-based online change-point detection of imbalance in three-phase power systems. *IEEE Innovative Smart Grid Technologies Conference (ISGT),* 2017.

[C30] Yao Xie and Lee Seversky. Sequential rank change detection. *Allerton*, 2016.

[C29] Shuang Li, Yang Cao, Christina Leamon, Yao Xie, Lei Shi, and WenZhan Song. Online seismic event picking via sequential change-point detection. *Allerton*, 2016.

[C28] Shanshan Cao, Yao Xie, and Yuxin Chen. Dynamic change-point detection using correlation networks. *Asilomar*, 2016.

[C27] Shuang Li, Yao Xie, Hanjun Dai, and Le song. M-statistics for kernel change-point detection. *NeuIPS*, 2015.

[C26] Ruiyang Song, Yao Xie, and Sebastian Pokutta. Sequential sensing with model mismatch. *ISIT*, 2015.

[C25] Yang Cao, and Yao Xie. Poisson matrix completion. *ISIT*, 2015.

[C24] Chengwei Zhou, Yujie Gu, WenZhan Song, Yao Xie, and Zhiguo Shi. Robust adaptive beamforming based on DOA support using decomposed coprime subarrays. *ICASSP*, 2015.

[C23] Yang Cao, and Yao Xie. Categorical matrix completion. *CAMSAP*, Cancun, Mexico, 2015.

[C22] Yao Xie, Meng Wang, and Andrew Thompson. Sketching for sequential change-point detection. *GlobalSIP*, 2015.

[C21] Yang Cao, and Yao Xie. Multi-sensor gradual change detection. *Allerton*, 2015.

[C20] Yang Cao, and Yao Xie. Fast algorithm for low-rank matrix recovery in Poisson noise. *GlobalSIP*, 2014.

[C19] Gabor Braun, Sebastian Pokutta, and Yao Xie. Info-Greedy sequential adaptive compressed sensing. *Allerton*, 2014. (Authors listed alphabetically).

[C18] Yao Xie, Yuejie Chi, and Robert Calderbank. Low-rank matrix recovery with Poisson noise. *GlobalSIP* 2013.

[C17] Yao Xie, and Rebecca Willett. Online logistic regression on manifolds. *ICASSP*, 2013.

[C16] Yao Xie, and David Siegmund. Spectrum opportunity detection with weak and correlated signals. *Asilomar*, 2012.

[C15] Yao Xie, Yonina Eldar, and Andrea Goldsmith. Reduced-dimension multiuser detection: detectors and performance guarantees. *IEEE International Conference on Communications (ICC),* 2012.

[C14] Yao Xie, Jiaji Huang, and Rebecca Willett. Multi-scale online tracking of manifolds. *SSP* 2012.

[C13] Yao Xie, Yuejie Chi, Lorne Applebaum, and Robert Calderbank. Compressive demodulation of mutually interfering signals. *SSP*, 2012.

[C12] Yao Xie, Yonina Eldar, and Andrea Goldsmith. Reduced-dimension multiuser detection. *Allerton*, 2010.

[C11] Yao Xie, and Andrea Goldsmith. Diversity-multiplexing-delay tradeoffs in MIMO multi-hop networks with ARQ. *ISIT*, 2010.

[C10] Yao Xie, Deniz Gunduz, and Andrea Goldsmith. Multihop MIMO relay networks with ARQ. *IEEE Globecom Telecommunications Conference, Communication Theory Symposium*, 2009.

[C9] Adam S. Wang, Yao Xie, and Norbert Pelc. Effects of the frequency content and spatial location of raw data errors on CT images. *Proceedings of SPIE*, 2008.

[C8] Yao Xie, Adam S. Wang, and Norbert Pelc. Lossy raw data compression in computed tomography with noise shaping to control image effects. *Proceedings of SPIE*, 2008.

[C7] Yao Xie, Jian Li, and James Ward. Adaptive weighting of signals via one matrix entity (AWESOME). *IEEE International Radar Conference*, 2007.

[C6] Yao Xie, Jian Li, Xiayu Zheng, and James Ward. Optimal array pattern synthesis via weight matrix. *ICASSP*, 2007. (Finalist, Best Student Paper Award.)

[C5] Yao Xie, Bin Guo, Jian Li, Geng Ku, and Lihong V. Wang. Adaptive and Robust Techniques (ART) for thermoacoustic and photoacoustic tomography. *Proceedings of SPIE*, 2007.

[C4] Yao Xie, Bin Guo, Jian Li, Geng Ku, and Lihong V. Wang. Adaptive and Robust Techniques (ART) in breast cancer detection. *Asilomar*, 2006.

[C3] Peter Stoica, Jian Li, and Yao Xie. On probing signal design for MIMO radar. *Asilomar*, 2006.

[C2] Yao Xie, Bin Guo, Jian Li, and Peter Stoica. On multi-static adaptive microwave imaging methods for early breast cancer detection. *ICASSP*, 2007.

[C1] Yao Xie, Bin Guo, Luzhou Xu, Jian Li, and Peter Stoica. Multi-static adaptive microwave imaging (MAMI) for early breast cancer detection. *Asilomar*, 2005. (First Place in Best Student Paper Competition.)

Preprints

1. Zheng Dong, Shixiang Zhu, Yao Xie, Jorge Mateu, Francisco J. Rodriguez-Cortes. Non-stationary spatio-temporal point process modeling for high-resolution COVID-19 data.
2. Shixiang Zhu, Rui Yao, Yao Xie, Feng Qiu, and Xuan Wu. A spatio-temporal analysis for power grid resilience to extreme weather.
3. Xi He, Liyan Xie, Yao Xie, Pinar Keskinocak. Survival analysis with graph-based regularization for predictors.
4. Jie Wang, Rui Gao, Yao Xie. Sinkhorn distributionally robust optimization.
5. Xiuyuan Cheng, Yao Xie. Kernel two-sample tests for manifold data.
6. Minghe Zhang, Chen Xu, Andy Sun, Feng Qiu, and Yao Xie. Solar radiation anomaly events modeling using spatio-temporal mutually interactive processes.
7. Shixiang Zhu, Liyan Xie, Minghe Zhang, Rui Gao, and Yao Xie. Distributionally robust k-nearest neighbors.
8. Heejune Sheen, Xiaonan Zhu, and Yao Xie. Tensor kernel recovery for spatio-temporal Hawkes processes.
9. Liyan Xie, Rui Gao, and Yao Xie. Robust hypothesis testing with Wasserstein uncertainty sets.
10. Shixiang Zhu, Henry Shaowu Yuchi, Minghe Zhang, and Yao Xie. INFORMS Journal on Data Science. (First Round, Major Revision.) Sequential adversarial anomaly detection for dependent events.
11. Haoyun Wang, Liyan Xie, Alex Cuozzo, and Yao Xie. Technometrics. (Major Revision) February 2021. Sequential change-point detection for mutually exciting point processes.

Other Publications

"System Informatics: From Methodology to Applications." Guest Editor's Introduction, *IEEE Intelligent Systems*, Vol. 30, No. 6, October 2015.

"Sequential, active, and reinforcement learning." Editorial, *IEEE Journal on Selected Areas in Information Theory (JSAIT)*, Vol. 2, No. 2, June 2021, pp. 492-493.

Patent

U.S. Patent Application No. 16/383,563. "Methods and Systems for Data Analysis by Text Embeddings."

Presentations

Invited Conference and Workshop Presentations

1. Monie A. Ferst Award Symposium, in honor of Professor Jeff Wu, November 2021.
2. INFORMS Session on "Optimization and Machine Learning", Oct. 2021.
3. International Chinese Statistical Association (ICSA) Applied Statistics Symposium, September 2021.
4. IFDS-MADLab Workshop, sponsored by NSF Tripod Phase-II Institute, August 2021.
5. Bernoulli-IMS 10th World Congress in Probability and Statistics, July 2021.
6. Mathematical criminology and crime science, International Center for Mathematical Sciences (ICMS), July 2021.
7. International Symposium on Nonparametric Statistics (ISNS), Paphos, Cyrus, June 2021.
8. International Workshop on Applied Probability (IWAP), Thessaloniki, Greece, June 2021.
9. Presentation (virtual panel) at Innovative Smart Grid Technologies Conference NA (ISGT NA), Artificial Intelligence/Machine Learning (AI/ML), January 2021.
10. Tsinghua-Berkeley Research Institute, Workshop on Data Science, Shen Zhen, China, December 2019.
11. SAMSI Deep Learning Workshop, Duke University, August 2019.
12. European Meeting of Statisticians (EMS), Palermo, Italy, July 2019.
13. 3rd International Conference on Econometrics and Statistics (EcoStat) Conference, Taichung, Taiwan, June 2019.
14. 2nd Symposium on Machine Learning in Science and Engineering (MLSE), Georgia Tech, June 2019.
15. BIRS Workshop on Mathematical Criminology and Security, in Banff, Alberta, Canada, March 2019.
16. 14th Workshop on Stochastic Models, Statistics, and their Application (SMSA), at TU Dresden, Germany, March 2019.
17. ITA Workshop, February 2019.
18. INFORMS Session on "Machine Learning in Manufacturing Informatics", November 2018.
19. The Most OM Workshop, Tsinghua University, China, June 2018.
20. The 9th International Workshop on Applied Probability (IWAP), Budapest, Hungary, June 2018.
21. The 40th Conference on Stochastic Processes and their Applications (SPA), Gothenburg, Sweden, June 2018.
22. The Workshop on "Forecasting from Complexity" at the Institute for Mathematics and its Applications (IMA), the University of Minnesota, April 2018.
23. The 52th Annual Conference on Information Sciences and Systems (CISS) March 2018.
24. The Information Theory and Applications Workshop (ITA), San Diego, CA, February 2018.
25. The 7th International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP), Curacao, December 2017.
26. The NSF Algorithm for Threat Detection (ATD) workshop, Arlington, VA, September 2017.
27. Statistical Learning Summer School, organized by the Chinese University of Hong Kong (CUHK), Shen Zhen, China, August 2017.

28. AFOSR Dynamic Data Driven Applications and Systems (DDDAS) Workshop, Cambridge, MA, June 2017.
29. The 6th International Workshop in Sequential Methodologies (IWSM), Rouen, France, June 2017.
30. Information Theory and Application (ITA) Workshop, San Diego, CA, February 2017.
31. IEEE COMPSAC 2016 Human Computing and Social Computing (HCSC) Symposium, Atlanta, GA, June 2016.
32. Symposium of International Chinese Statistical Association (ICSA), Atlanta, GA, June 2016.
33. The 50th Annual Conference on Information Sciences and Systems (CISS), Princeton University, March 2016.
34. Information Theory and Application Workshop (ITA), La Jolla, CA, February 2016.
35. The 5th International Workshop in Sequential Methodologies (IWSM), Columbia University, NYC, NY, June 2015.
36. Information Theory and Application Workshop (ITA), La Jolla, CA, February 2015.
37. Information Theory and Application Workshop (ITA), San Diego, SD, February 2013.
38. The 4th International Workshop in Sequential Methodologies (IWSM), Athens, GA, August 2013.
39. The 3rd International Workshop in Sequential Methodologies (IWSM), Stanford, CA, June 2011.

Invited Seminar Presentations

1. Cornell University, ORIE Colloquium, November 2021.
2. Auburn University, Data Science Seminar, August 2021.
3. Online Seminar on Mathematical Foundations of Data Science, July 2021.
4. Wireless Systems Lab Seminar, Stanford University, February 2021.
5. University of Wisconsin Madison, SILO Seminar, February 2021.
6. University of California, Davis, ECE Seminar, February 2021.
7. University of Pennsylvania, Wharton School of Business, Statistics Seminar, November 2020.
8. Carnegie Mellon University (CMU), Tepper School of Business, November 2020.
9. University of South Florida, Student Seminar, November 2020.
10. Duke University, Statistics Seminar, October 2020.
11. Center for Disease Control (CDC), Statistics Seminar, July 2020.
12. Rutgers University, Statistics Seminar, April 2020.
13. Rensselaer Polytechnic Institute, Mathematical Colloquium, November 2019.
14. Washington University in St. Louis, Department of Mathematics and Statistics, October 2019.
15. Carnegie Mellon University (CMU), Statistics Seminar, September 2019.
16. Princeton University, Electrical Engineering, May 2019.
17. Duke University, Statistics Seminar Series, April 2019.
18. University of Texas, Austin, WNCG Seminar Series, February 2019.
19. Kyoto University, Kyoto, Japan, July 2018.
20. University of Washington, Statistics Department, April 2018.
21. Stanford University, Department of Electrical Engineering, ISL Seminar, March 2018.
22. University of Michigan, Michigan Institute for Data Science (MIDAS), February 2017.
23. University of Illinois, Urbana-Champaign, Department of Electrical and Computer Engineering, SINE Seminar, February 2016.
24. University of Georgia, Statistics Department, Athens, GA, September 2015.
25. Chinese University of Hong Kong (CUHK), Computer Science Department, June 2015.
26. Chinese Academy of Sciences (CAS), June 2015.
27. Tsinghua University, Department of Electronic Engineering, Beijing, China, June 2015.
28. Clemson University, Statistics Department, SC, October 2013.
29. University of Georgia, Statistics Department, Athens, GA, September 2013.

30. Georgia State University, Atlanta, GA, September 2013.
31. Cornell University, Department of Electrical and Computer Engineering, May 2013.
32. Massachusetts Institute of Technology, CASIL Lab, July 2012.

Societal Impacts

Our Police Beat Redesign for the City of South Fulton, Georgia, was approved by the city council and started the implementation in January 2020. I gave a presentation in front of the city council on January 14, 2020, to explain the redesign. More details including media coverage (including Fox 5) can be found here https://www2.isye.gatech.edu/~yxie77/Police.html

Our Atlanta Police Department Beat Redesign was approved by the city council and implemented by the City of Atlanta on March 17, 2019. The project was covered by multiple news media, including WSB-TV, Atlanta Journal Constitution (AJC), and appeared as a cover story of Georgia Tech Whistle.

My research on crime correlation detection for Atlanta Police Department received the "Smart 50" Award at the Smart Cities Connect and Expo, 2018. The Atlanta Police Department implemented our crime analysis algorithm on its AWARE system. APD plans to use our tool to adjust their future police zones. We showcase our crime analysis system at the City of Atlanta's "Experience the Smart City" event, Sept. 2017.

My research on ambient noise geophysical imaging systems is featured in a special report, "Signal processing opens new views on imaging," by John Edwards, in IEEE Signal Processing Magazine, Vol. 32, No. 5, pp. 8-18, 2015.

Grants and Contracts

1. Title of Project: Bridging statistical hypothesis tests and deep learning for reliability and computational efficiency.
   Agency: National Science Foundation (NSF), Division of Mathematical Sciences
   Total Dollar Amount: $1,100,000.
   Role: PI
   Collaborators: Xiuyuan Cheng (Co-PI), Mark Davenport (Co-PI), Guanghui Lan (Co-PI), Tuo Zhao (Co-PI).
   Period of Contract: 1/1/2022-12/31/2024

2. Title of Project: Data-driven optimal police patrol zone districting and staffing.
   Agency/Company: NSF Division of Civil, Mechanical, and Manufacturing Innovation (CMMI)
   Total Dollar Amount: $540,877
   Role: Co-PI
   Period of Contract: 10/1/2020-9/30/2022

3. Title: AMPS: Sequential detection and prediction for solar situation awareness in power networks.
   Agency: National Science Foundation (NSF), Division of Mathematical Sciences
   Total Dollar Amount: $241,843
   Role: PI.
   Period of Contract: 8/1/2019-7/30/2022

4. Title: Predictive coating condition model for advanced asset management.
   Agency: SERDP (Strategic Environmental Research and Development Program)
   Total Dollar Amount: $2,500,000
   Role: PI at Georgia Tech.
   Period of Contract: 1/1/2020-12/30/2022

5. Title: Data-driven resiliency model and prediction for large-scale power grids in extreme conditions.
   Agency: Argonne National Lab
   Total Dollar Amount: 50,000
   Role: PI
   Period of Contract: 7/1/2021-6/30/2022

6. Title: Techniques to analyze and predict anomalous or erroneous situations in the supply chain and automatic adaption resulting from the analysis.
   Agency: Cisco Research
   Total Dollar Amount: 150,000
   Role: Co-PI
   Period of Contract: 9/1/2021-8/30/2022

7. Title: Demand planning optimization (including machine learning).
   Agency: Cisco Research
   Total Dollar Amount: 150,000
   Role: Co-PI
   Period of Contract: 9/1/2021-8/30/2022

8. Title: Real-time detection of fraudulent transactions.
   Agency: Macy's Technology
   Total Dollar Amount: $100,000
   Role: PI
   Period of Contract: 1/1/2019-12/30/2020

9. Title: Optimal police zone resign for the city of South Fulton using big-data analytics.
   Agency: City of South Fulton
   Total Dollar Amount: $50,000
   Role: PI
   Period of Contract: 4/15/2019-12/30/2019

10. Title: Scanning dynamic spatial-temporal discrete events for threat detection.
    Agency: National Science Foundation (NSF), Division of Mathematical Sciences
    Total Dollar Amount: $275,000
    Role: PI
    Period of Contract: 10/1/2018-9/30/2021

11. Title: Optimal police zone redistribution using statistical predictions with city growth factors.
    Agency: Atlanta Police Foundation (APF)
    Total Dollar Amount: $49,867
    Role: PI
    Period of Contract: 7/1/2018-2/30/2018

12. Title: CAREER: Quick detection for streaming data over dynamic networks.
    Agency: National Science Foundation (NSF), Division of Computing and Communication Foundations (CCF).
    Total Dollar Amount: $500,000
    Role: PI
    Period of Contract: 7/1/2017-6/30/2022

13. Title: CyberSEES: Type 2: Collaborative Research: Real-time ambient noise. seismic imaging for subsurface sustainability.
    Agency: National Science Foundation (NSF), CCF, Division of Computing and Communication Foundations.
    Total Dollar Amount: $1,200,000
    Role: PI at Georgia Tech.
    Period of Contract: 1/15/2015 – 12/31/2019

14. Title: Crime correlation detection from large-scale APD police report data.
    Agency/Company: Atlanta Police Foundation
    Total Dollar Amount: $150,000
    Role: PI
    Period of Contract: 7/1/2017-6/30/2018

15. Title: Multi-arm bandit in non-stationary setting.
    Agency/Company: Adobe Research.
    Total Dollar Amount: $10,000 (Gift Donation)
    Role: PI
    Period of Contract: 10/1/2017-9/1/2018

16. Title: Sensing complex networks for streaming inference.
    Agency/Company: Visiting Faculty Research Program (VFRP), Air Force Research Lab (AFRL)
    Total Dollar Amount: ~$9,000
    Role: PI
    Period of Contract: 5/9/2016 – 6/3/2016.

17. Title: NSF Student Travel Grant for the 10th ACM International Conference. on Underwater Networks and System (WUWNet'15)
    Agency/Company: National Science Foundation, CNS, Division of Computer and Network Systems.
    Total Dollar Amount: $10,000
    Period of Contract: 10/1/2015 – 3/31/2016

18. Title: Workshop on decision analytics for dynamic policing.
    Agency/Company: National Science Foundation, Operations Engineering.
    Total Dollar Amount: $50,000
    Collaborators: Victoria Chen (PI), Yuan Zhou, Burcu Keskin, James Brooks.
    Period of Contract: 5/1/2019 – 6/31/2019

19. Title: Collaborative Research: IUCRC Preliminary Proposal Planning Grant Georgia Tech: Center for Digital Factory Innovations (CDFI).
    Agency: National Science Foundation.
    Total Dollar Amount: $20,000

Role: Co-PI.
Period of Contract: 06/01/2021-05/30/2022.

20. Title of Project: Smart vehicle distribution logistics
    Agency/Company: Nissan
    Total Dollar Amount: $357,055
    Role: Co-PI
    Period of Contract: 9/4/2020-9/30/2020

21. Title of the Project: Robust Process Monitoring for Critical-to-quality Sensor Data
    Agency/Company: LG Electronics-PRI
    Amount: $105,513.
    Role: Co-PI
    Period of Contract: 10/1/2019-9/31/2020
    Collaborators: Seong-Hee Kim (PI)

22. Title of Project: Data-driven courier scheduling and management for express services
    Agency/Company: SF Express
    Total Dollar Amount: $529,889.93
    Role: Co-PI
    Period of Contract: 10/1/2017-9/30/2018
    Collaborator: Guanghui Lan (PI), Enlu Zhou (Co-PI), Alex Shapiro (Co-PI)

23. Title of Project: Combining statistical process control and optimization via simulation for robust sensor network design in the presence of sensor measurement error.
    Agency: National Science Foundation, Division of Civil, Mechanical, and Manufacturing Innovation (CMMI).
    Total Dollar Amount: $300,000
    Role: Co-PI
    Collaborators: Seong-Hee Kim (PI), Aral Mustafa (Co-PI)
    Period of Contract: 8/1/2015 – 7/31/2019

24. Title of Project: Dynamically responsive scanning diffraction for high-throughput analysis of phase assemblage in functional complex oxides.
    Agency/Company: Georgia Tech IMAT See Grant Award
    Total Dollar Amount: $20,000
    Role: Co-PI
    Collaborators: Josh Kacher, School of Material Science, Georgia Tech, and Mark Losego, School of Material Science, Georgia Tech.
    Period of Contract: 11/1/2016 – 6/30/2017

25. Title of Project: Sequential blood pressure change-point detection
    Agency/Company: George Family Foundation.
    Total Dollar Amount: $5,000
    Role: Co-PI
    Collaborators: Turgay Ayer (PI)
    Period of Contract: 8/1/2014 – 7/31/2015

Educational Activities

Students Mentoring

Graduated Ph.D. Students

1. Mr. Yang Cao, Ph.D. in Industrial Engineering (Statistics), Fall 2013-Summer 2018.
   Placement post-graduation: Data Scientist at Uber Technologies Inc., May 2018.
   Thesis: Poisson matrix completion and change-point detection.
   Dissertation Defense date: April 9, 2018.
   Robert Goodwell Brown Fellowship, 2015.

2. Ms. Shuang Li, Ph.D. in Industrial Engineering (Statistics). Fall 2014-Summer 2019.
   Co-advised with Le Song (CSE) (I serve the main adviser).
   Placement post-graduation: Postdoctoral Researcher at Harvard University, Statistics Department. September 2019. Tenure-Track Assistant Professor, Chinese University of Hong Kong (ShenZhen), since Fall 2021.
   Thesis: Statistical inference, modeling, and learning of point processes.
   Dissertation Defense date: June 20, 2019.

3. Mr. Junzhuo Chen, Ph.D. in IE (Systems, Informatics and Control). Fall 2015-April 2019.
   Co-advised with Seong-Hee Kim.
   Placement post-graduation: Data Scientist at Uber Technologies Inc., May 2019.
   Thesis: Spatial-temporal surveillance for environmental sensor networks.
   Dissertation Defense date: March 15, 2019.

4. Ms. Xi He, Ph.D. in Industrial Engineering (Statistics), Fall 2016-Summer 2020.
   Co-advised with Pinar Keskinocak.
   Placement post-graduation: Amazon, 2020.
   Thesis: Statistical detection and survival analysis with applications in sensor networks and healthcare.

5. Mr. Rui Zhang, Ph.D. in Industrial Engineering (Statistics), Fall 2017-Spring 2021.
   Co-advising with Alexander Shapiro.
   Placement post-graduation: Morgan Stanley, 2021.
   Dissertation: Hypothesis test for manifold and networks.

6. Ms. Liyan Xie, Ph.D. in Industrial Engineering (Statistics), Fall 2016- Summer 2021
   Placement post-graduation: Tenure-Track Assistant Professor, Chinese University of Hong Kong (ShenZhen), Fall 2021.
   Thesis: Robust statistical inference through the lens of optimization.

In Process Ph.D. Students

7. Mr. Shixiang Zhu, Ph.D. in Machine Learning (ISyE), Fall 2017-present. (Expected graduation: Spring 2022.)
   Thesis: Statistical learning and decision making for spatio-temporal data.

8. Mr. Shaowu (Henry) Yuchi, Ph.D. in Machine Learning (ISyE), Fall 2018-present.
   Co-advising with C. F. Jeff Wu.
   Research: Uncertainty quantification and physics-based machine learning.

9. Mr. Minghe Zhang, Ph.D. in Machine Learning (ISyE), Fall 2019-present.
   Research: Sequential change detection and prediction over dynamic networks.

10. Mr. Haoyun Wang, Ph.D. in Industrial Engineering (Statistics), Fall 2019-present.
    Research: Statistical estimation and inference for dynamic networks.

11. Mr. Song Wei, Ph.D. in Machine Learning (ML), Fall 2019-present.
    Research: Dynamic time series modeling, inference, and optimization.

12. Mr. Chen Xu, Ph.D. in Operations Research (OR), Fall 2020-present.
    Research: Conformal statistical inference and spatio-temporal modeling.

13. Mr. Jie Wang, Ph.D. in Industrial Engineering (IE), Fall 2020-present.
    Research: Distributional robust optimization and statistics.

14. Mr. Jefferey Smith, Ph.D. in Machine Learning, Fall 2021-present.
    Research: ICU data modeling and prediction.

15. Mr. Matt Repasky, Ph.D. in Machine Learning, Fall 2021-present.
    Research: Machine learning models and prediction for sequential data with applications to national critical assets.

Master Students

1. Mr. Qingbin Li, Master in Computer Science and Engineering.
   Graduated in Spring 2015.
   Thesis: Online sufficient dimension reduction for high-dimensional time series.

2. Mr. David Marangoni-Simonsen
   Non-thesis Master in Statistics. Graduated Spring 2015.
   Project: sequential changepoint approach for online community detection.

3. Mr. Ruyi Ding, Master in Electrical and Computer Engineering.
   Graduate in Summer 2020. Currently a Ph.D. student at Northeastern University.
   Thesis: Statistical modeling for highway traffic sensor data.

4. Ms. Le Lu, Master in Operations Research.
   Graduate in Summer 2020. Currently a Ph.D. student at University of Texas, Austin.
   Thesis: Data-driven police zone design for City of South Fulton.

5. Ms. Heejune Sheen. Non-Thesis Master in Statistics. Graduate in Fall 2021.
   Worked on a paper "Tensor kernel recovery for spatio-temporal Hawkes processes."

Undergraduate Students

1. Alexander Bukharin, ISyE. (2019-2021).
   President's Undergraduate Research Salary Award (PURA), 2020.
   College of Engineering Outstanding Undergraduate Research Award, 2020.
   Currently Ph.D. in Machine Learning student at Georgia Tech.

2. Matthew Repasky, Physics. (2019-2021).
   President's Undergraduate Research Salary Award (PURA), 2021.
   Currently Ph.D. in Machine Learning student at Georgia Tech.
3. Kiran Gite, ISyE. (2019)
4. Yuvaneshwar Murugesan, ISyE and CS, Georgia Tech. (2018)
5. Joshua Gundugollu, ISyE and CS, Georgia Tech. (2018)
6. Swapnil Lad, ISyE, Georgia Tech. (2018)
7. Anunoy S. Dussa, CS, Georgia Tech. (2018)
8. Yijun (Emma) Wan, ISyE, Georgia Tech. (2018)
9. Ge Gao, AE. (2016-2017)
10. Shannon Gerhard, ISyE. (2017)
11. Christina Leamon, ISyE. (2016)

Courses Taught

Semester	Course No.	Course Title	# of Students
Fall 2021	ISyE 8803	Topics in Statistical Machine Learning	19
Fall 2021	OMSA 6740	Computational Data Analysis	389
Spring 2021	ISyE 6416	Computational Statistics	350
Spring 2021	OMSA 6740	Computational Data Analysis	80
Fall 2020	OMSA 6740	Computational Data Analysis	283
Fall 2020	ISyE 6740	Computational Data Analysis	67
Summer 2020	OMSA 6740	Computational Data Analysis	418
Spring 2020	ISyE 6416	Computational Statistics	77
Spring 2020	OMSA 6740	Computational Data Analysis	339
Fall 2019	OMSA 6740	Computational Data Analysis	321
Fall 2019	ISyE2028	Basic Statistical Methods	60
Spring 2018	ISyE 6740	Computational Data Analysis	80
Fall 2017	ISyE 8803	Special Topic	12
Spring 2017	ISyE 6416	Computational Statistics	59
Spring 2017	ISyE 2028	Basic Statistical Methods	57
Spring 2016	ISyE 6416	Computational Statistics	53
Fall 2015	ISyE 2028	Basic Statistical Methods	63
Spring 2015	ISyE 6416	Computational Statistics	34
Spring 2014	ISyE 6416	Computational Statistics	29
Fall 2013	ISyE 2028	Basic Statistical Methods	44

Educational Outreach Activities

1. Gave a short course on "Introduction to Machine Learning and Statistical Modeling" to Center for Disease Control (CDC), Statistical Advisory Group, in July 2021.

2. Serve as a founding Faculty Advisor for Women in Technology (WIT) program at Georgia Tech, since Fall 2020.

3. Participate in Women in Technology (WIT) mentor program https://mywit.org/wit-girls-mentoring-program/ which is a program to mentor high school girls interested in STEM. Through

the program I mentored a high-school girl (Ms. Tamilore Dairo at Gwinnett School of Mathematics, Science and Technology) from August to December 2020.

4. Developed and taught a new course for Online Masters in Analytics Program OMSA-6740, "Computational Data Analysis." Since launched in Fall 2019, the course has been successful, and it has been taken by 700 plus students in two semesters. I received over 20 Thank-a-Teacher Notes from students in this class.

5. Co-organizing Foundation of Data Science (FDS) Summer School, sponsored by NSF TRIPODS Institutes at the Georgia Institute of Technology, August 2019. The audience include about 30 graduate students participants from different universities in the U.S.

6. Gave a short course on "Introduction to Bayesian statistics" to participating graduate students at the 2nd Symposium on Machine Learning in Science and Engineering (MLSE), held at Georgia Tech, 2019.

7. Develop and offer a special topic course on statistical and probabilistic methods for data science in Fall 2017. The course covers state-of-the-art probabilistic modeling and statistical inference techniques, which are very important in machine learning and big-data analysis. The course filled the gap and satisfied the teaching need at Georgia Tech, for a more in-depth course focusing on the more theoretical aspect of machine learning. The course was taken by 12 students from multiple departments, including ISyE, Civil Engineering, and Biomedical Engineering. The course was well-received, and I am Thank-a-Teacher Recipient from CTL that year.

8. Supervise SURE undergraduate research program (including one African American student), Summer 2016, 2018.

9. Strengthened and improved ISyE 2028 Basic Statistical Methods to include a new course component, a project on "big data analytics." The project component requires students to collect their data from their daily life and perform analysis using statistical inference techniques they learned in class. This enhances students' understanding of statistics and helps them to connect statistics to their everyday life. The new component was highly rated by students.

10. Strengthened and improved ISyE 6416 Computational Statistics to include new topics that are related to cutting edge research.

11. Offered a session "How computers detect human faces" for Georgia Tech, ISyE Mission Possible program, a summer outreach program for high school students, June 2017 and June 2019. This component was well-received by students, which connects machine learning algorithms to what the students understand in their daily life.

12. Offered a guest lecture about machine learning for middle schoolers at the Atlanta International School, during the Atlanta Science Festival, March 2017.

Service

Society Offices, Activities, and Membership

1. Elected Member of the IEEE SAM (Sensor Array and Multichannel) Technical Committee, 2019-2022.
2. Elected Member of the IEEE Machine Learning and Signal Processing (MLSP) Technical Committee (TPC), 2015-2018, and also served on the MLSP Award Committee, 2018.
3. Member of IEEE, INFORMS, IISE, IEEE Signal Processing Society, IEEE Information Theory Society, AMS Member.

Synergistic Activities

1. Area Chair, NeurIPS 2021.
2. Co-organizing Machine Learning /AI Cluster at INFORMS, 2020.
3. Leading Organizing Committee. Georgia Statistics Day, 2019.
4. Co-organizing Workshop on Decision Analytics for Dynamic Policing, in Arlington, Virginia, May, 2019.
5. Organizing Committee. Georgia Statistics Day, 2018.
6. Technical Program Committee (TPC). The 26th European Signal Processing Conference (EUSIPCO), Rome, Italy, 2018.
7. Technical Program Committee (TPC). SSP, 2018.
8. Program Committee Member. Association for the Advancement of Artificial Intelligence (AAAI), the 32nd Conference on Artificial Intelligence, 2018.
9. Program Committee Member. IEEE International Workshop on Machine Learning for Signal Processing (MLSP), Tokyo, Japan, 2017.
10. Program Committee (PC) member. AISTATS, 2017.
11. Technical Program Committee. CAMSAP, 2017.
12. Organized a special session on "Sequential methods for high-dimensional structured signals" at ICASSP, New Orleans, USA, 2017.
13. Technical Program Committee (TPC). IEEE GlobalSIP, Washington, D.C., 2016.
14. Technical Program Committee (TPC). Workshop for Signal Processing for Big Data in Wireless Networks in IEEE Globecom Washington, D.C., 2016.
15. Session Chair. ICSA Applied Statistics Symposium, Atlanta, GA, 2016.
16. Technical Program Committee (TPC). IEEE Global Communications Conference: Workshops: Signal Processing for Big Data in Wireless Networks, 2015.
17. Technical Program Committee (TPC). The 22nd IEEE International Conference on Image Processing (ICIP), 2015.
18. Technical Program Committee (TPC). The 6th IEEE CAMSAP Conference, December 2015.
19. Session Chair. Asilomar, October 2015.
20. Finance Chair. The 10th ACM International Conference on Underwater Networks and Systems, 2015, Washington DC.
21. Social Media and SigView Chair. GlobalSIP, 2015, Orlando, FL.
22. Session Organizer. Modeling and Optimization: Theory and Application (MOPTA), Lehigh University, Special Session on "Information and Optimization", 2014.
23. Organized the "Information Processing for Big Data Symposium" at GlobalSIP, December 2014, Atlanta, GA.
24. Session Chair. Asilomar, 2013.
25. Session Chair. Asilomar, 2012.
26. Session Chair. IEEE Statistical Signal Processing Workshop (SSP), August 2012.

27. Session Chair. The 3rd International Workshop in Sequential Methodologies (IWSM), June 2011.

Technical Journal or Conference Referee Activities

ICASSP, IEEE Proceedings, Neural Information Processing Systems (NeuIPS), International Conference on Machine Learning (ICML), International Conference on Learning Theory (ICLR), International Conference on Artificial Intelligence and Statistics (AISTATS), IEEE International Conference on Image Processing (ICIP), IEEE Statistical Signal Processing Workshop (SSP), 2016, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), IEEE Global Conference on Signal and Information Processing (GlobalSIP), International Symposium on Information Theory (ISIT).

IIE Transactions, Journal of the Royal Statistical Society (JRSS), Annals of Statistics, Statistic Sinica, Technometrics, Computational Statistics and Data Analysis, IEEE Journal on Selected Topics in Signal Processing, IEEE Transactions on Pattern Recognition and Machine Intelligence, IEEE Transactions on Information Theory, IEEE Transactions on Signal Processing, IEEE Transactions on Knowledge and Data Engineering, IEEE Transactions on Communications, IEEE Transactions on Wireless Communications, IEEE Transactions on Biomedical Engineering, IEEE Transactions on Aerospace and Electronic Systems, IEEE Signal Processing Letter, ACM Transactions on Intelligent Systems and Technology.