

Rui Song

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Education

Ph.D. 2006 University of Wisconsin-Madison Statistics
B.S. 2001 Peking University Probability and Statistics

Positions and Employment

2022- Senior Principal Scientist, Amazon Inc.
2020-2022 Professor, Department of Statistics, North Carolina State University
2016-2020 Associate Professor, Department of Statistics, North Carolina State University
2012-2016 Assistant Professor, Department of Statistics, North Carolina State University
2009-2012 Assistant Professor, Department of Statistics, Colorado State University
2008-2009 Postdoc, Department of Operation Research and Financial Engineering, Princeton University
2006-2008 Postdoc, Department of Biostatistics, University of North Carolina at Chapel Hill

Honors

Recipient of the NCSU Thank-a-Teacher recognition program, 2022
Fellow of Institute of Mathematical Statistics (IMS) and American Statistical Association (ASA), 2020
The Faculty Research and Professional Development Award, North Carolina State University, 2013-2014.
ENAR Distinguished Student Paper Award, The International Biometric Society, 2006.

Research Support

NSF grant DMS-2113637, 2021-2024, \$200,000. “Offline Statistical Reinforcement Learning with Applications in Precision Health,” PI.
NSF grant DMS-1555244, 2016-2021, \$400,000, “CAREER: Semiparametric and Machine Learning Approaches for Big Data Challenges in Precision Medicine,” PI.
NCSU Research and Innovation Seed Funding Program, 2014-2015, \$15,000, “Machine Learning Methods for Annual Influenza Vaccine Update,” co-PI (PI, Dr. Osman Ozaltin from ISE department).
NCI grant P01 CA142538, 2012-2021, ~\$20M, “Statistical Methods for Cancer Clinical Trials,” Co-I.
NSF grant DMS-1309465, 2013-2016, \$109,999, “High-dimensional Multi-stage Statistical Learning with Application to Dynamic Treatment Regimens,” PI.
NCSU Faculty Research and Professional Development Award Grant, 2013-2014, \$4,000, “Statistical Models, Methodologies and Related Theory For Developing Dynamic Treatment Regimens,” PI.
NSF grant DMS-1007698, 2010-2013, \$100,000, “Variable Selection Methods in High Dimensional Feature Space,” PI.

Peer-Reviewed Publications

1. Shi, C., Luo, S., Zhu, H. and **Song, R.** “Statistically Efficient Advantage Learning for Offline Reinforcement Learning in Infinite Horizons”. Accepted at Journal of American Statistical Association.
2. Shi, C., Zhu, J., Shen, Y., Luo, S., Zhu, H. and **Song, R.** “Off-Policy Confidence Interval Estimation with Confounded Markov Decision Process”. Accepted at Journal of American Statistical Association.
3. Ding, Y., Li, Y. and **Song, R.** “Statistical Learning for Individualized Asset Allocation”. Accepted at Journal of American Statistical Association.
4. Wan, R., Kveton, B. and **Song, R.** “Safe Exploration for Efficient Policy Evaluation and Comparison”. Accepted at ICML 2022.
5. Zhou, Y., Wang, L., **Song, R.** and Zhao, T. (2022) “Transformation-Invariant Learning of Optimal Individualized Decision Rules with Time-to-Event Outcomes”. Accepted at Journal of American Statistical Association.
6. Zhang, S., Wang, J., Jiang, H. and **Song, R.** “Locally Aggregated Feature Attribution on Natural Language Understanding“. Accepted at NAACL 2022.
7. Wang, J., Zhang, S., Xiao, Y. and **Song, R.** (2022) “A Review on Graph Neural Network Methods in Financial Applications“. Accepted at Journal of Data Science.
8. Chen, L., Jiang, S., Liu, J., Wang, C., Zhang, S., Xie, C., Liang, J., Xiao, Y. **Song, R.** (2022) “Rule Mining over Knowledge Graphs via Reinforcement Learning“. Accepted at Knowledge-Based Systems.
9. Shi, C., Wang, X. Luo, S., Ye, J., Zhu, H. and **Song, R.** (2022) “Dynamic Causal Effects Evaluation in A/B Testing with a Reinforcement Learning Framework“. Accepted at Journal of American Statistical Association.
10. Cai, H., Cen, Z. and **Song, R.** (2021) “MAGNET: Multi-Agent Graph Cooperative Bandits”. Accepted at NeurIPS 2021 Workshop on Causal Inference Challenges in Sequential Decision Making: Bridging Theory and Practice.
11. Shi, C., Luo, S., Zhu, H. and **Song, R.** (2021) “An Online Sequential Test for Qualitative Treatment Effects“. Accepted at Journal of Machine Learning Research.
12. Liu, Y., **Song, R.** , Lu, W. and Xiao, Y. (2021) “A Probit Tensor Factorization Model For Relational Learning“. Accepted at the Journal of Computational and Graphical Statistics.
13. Wan, R., Ge, L. and **Song, R.** “Metadata-based Multi-Task Bandits with Bayesian Hierarchical Models“. Accepted at NeurIPS 2021.
14. Cai, H., Shi, C., **Song, R.** and Lu, W. “Deep Jump Learning for Off-Policy Evaluation in Continuous Treatment Settings“. Accepted at NeurIPS 2021.

15. Yu, M., Lu, W. and **Song, R.** “Online Testing of Subgroup Treatment Effects Based on Value Difference“. Accepted at ICDM IEEE 2021.
16. Chen, X., **Song, R.** , Zhang, J., Adams, S.A., Sun, L. and Lu, W. (2021) “On Estimating Optimal Regime for Treatment Initiation Time Based on Restricted Mean Residual Lifetime“. Accepted at Biometrics.
17. Wan, R., Giannakakis, I., Gu, J. and **Song, R.** (2021) “Reinforcement Learning for Replaceability Index Estimation and Assortment Optimization”. Accepted at Amazon Consumer Science Summit (CSS) (among 12 selected presentations from over 250 submissions)
18. Cai, H., Song, R. and Lu, W. (2021) “GEAR: On Optimal Decision Making with Auxiliary Data“. Accepted at STAT.
19. Cai, H., Cen, Z., Leng, L, and **Song, R.** “Periodic-GP: Learning Periodic World with Gaussian Process Bandits“. Accepted for presentation at IJCAI-21 Reinforcement Learning for Intelligent Transportation Systems Workshop 2021. (Spotlight presentation)
20. Shi, C., Zhang, S., Lu, W. and **Song, R.** (2021) “Statistical Inference of the Value Function for Reinforcement Learning in Infinite-Horizon Settings“. Accepted at Journal of the Royal Statistical Society, Series B.
21. Wan, R., Zhang, S., Shi, C., Luo, S. and **Song, R.** “Pattern Transfer Learning for Reinforcement Learning in Order Dispatching“. Accepted for presentation at IJCAI-21 Reinforcement Learning for Intelligent Transportation Systems Workshop 2021. (Best paper, spotlight presentation)
22. Wan, R., Zhang, X. and **Song, R.** “Multi-Objective Model-based Reinforcement Learning for Infectious Disease Control“. Accepted for presentation in the research track of SIGKDD 2021.
23. Shi, C., Wan, R., Chernozhukov, V. and **Song, R.** “Deeply-debiased Off-policy Interval Estimation,“ accepted at ICML 2021.
24. Cai, H., **Song, R.** and Lu, W. “ANOCE: Analysis of Causal Effects with Multiple Mediators via Constrained Structural Learning,“ accepted at *International Conference on Learning Representations (ICLR 2021)* .
25. Liu, Y., Zhang, S., **Song, R.** , Feng, S., and Xiao, Y., “Knowledge Guided Open Attribute Value Extraction with Reinforcement Learning,“ accepted at *The 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP 2020)*.
26. Zhu, L., Lu, W., Kosorok, M.R. and **Song, R.** . “Kernel Assisted Learning for Personalized Dose Finding,“ Accepted at *SIGKDD : ACM SIGKDD International Conference on Knowledge discovery and data mining (KDD 2020)*.
27. Zhu, L., Lu, W. and **Song, R.** , “Causal Effect Estimation and Dose Suggestions in Mobile Health,“ accepted at *Thirty-seventh International Conference on Machine Learning (ICML 2020)*.

28. Shi, C., Wan, R. **Song, R.** , Lu, W. and Leng, L. “Testing Markov property in reinforcement learning,” accepted at *Thirty-seventh International Conference on Machine Learning (ICML 2020)*.
29. Cai, H., Lu, W. and **Song, R.** , (2020) “Testing the Existence of an Optimal Linear Treatment Rule and Its Sample Size Calculation,” accepted at *Thirty-seventh International Conference on Machine Learning (ICML 2020)*.
30. Shi, C., **Song, R.** , and Lu, W. (2020) “Subagging for Inference of the Mean Outcome under Optimal Treatment Regimes”, accepted at *Journal of Machine Learning Research*.
31. Dong, L., Laber, E. B., Goldberg, Y., **Song, R.** , and Yang, S. (2020) “A note on the use of weighting in the estimation of optimal treatment regimes,” accepted at *Statistics in Medicine*.
32. Shi, C., **Song, R.** , Lu, W. and Li, R. (2020) “Statistical Inference for High-Dimensional Models via Recursive Online-Score Estimation,” accepted at *Journal of American Statistical Association*.
33. Chen, H., Lu, W., and **Song, R.** (2020), “Statistical Inference for Online Decision Making via Stochastic Gradient Descent,” accepted at *Journal of American Statistical Association*.
34. Chen, H., Lu, W. and **Song, R.** (2020), “Statistical Inference for Online Decision-Making: In a Contextual Bandit Setting,” accepted at *Journal of American Statistical Association*.
35. Yang, S., Kim, J. and **Song, R.** , (2020) “Doubly Robust Inference when Combining Probability and Non-probability Samples with High-dimensional Data,” accepted at *Journal of the Royal Statistical Society, Series B*.
36. Yu, M., Lu, W. and Song, R. (2019) “A New Framework for Online Testing of Heterogeneous Treatment Effect,” accepted at the Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI-20).
37. Pan, M, Li, Y., Zhou, X., Liu, Z., **Song, R.** , Liu, H. and Luo, J. (2019) “DHPA: Dynamic Human Preference Analytics Framework— A Case Study on Taxi Drivers’ Learning Curve Analysis”. Accepted at *the ACM Transactions on Intelligent Systems and Technology*.
38. Shi, C., **Song, R.** and Lu, W. (2019) “Concordance and Value Information Criteria for Optimal Treatment Decision”. Accepted at *the Annals of Statistics*.
39. Su, L., Lu, W., **Song, R.** and Huang, D. (2019) “Testing and Estimation of Social Network Dependence with Time to Event Data”. Accepted at *Journal of American Statistical Association*.
40. Shi, C., Lu, W. and **Song, R.** (2019) “A Sparse Random Projection-based Test for Overall Qualitative Treatment Effects”. Accepted at *Journal of American Statistical Association*.
41. Su, L., Lu, W., and **Song, R.** (2019) “Modeling and Estimation for Optimal Treatment Decision with Interference”. Accepted at *STAT*.

42. Pan, M, Li, Y., Zhou, X., Liu, Z., **Song, R.** , Liu, H. and Luo, J. (2019) “Dissecting the Learning Curve of of Taxi Drivers: A Data-Driven Approach”. Accepted at *the SIAM International Conference on Data Mining (SDM19)*. (Acceptance rate 22.7%). **Won the award for Best Applied Data Science Paper.**
43. Shi, C., Lu, W. and **Song, R.** (2019) “Determining the Number of Latent Factors in Statistical Multi-Relational Learning.” *Journal of Machine Learning Research*, 20(23):1?38.
44. Jiang, B., **Song, R.** , Zeng, D. and Li, J. (2019) “Entropy Learning for Dynamic Treatment Regimes”. **With discussions.** Accepted at *Statistica Sinica*.
45. Shi, C., **Song, R.** , Chen, K. and Li, R. (2019)“Linear hypothesis testing for high dimensional generalized linear models ” To appear in *the Annals of Statistics*.
46. Shi, C., Lu, W and **Song, R.** , (2019) “On Testing Conditional Qualitative Treatment Effects.” *the Annals of Statistics*, 47(4), 2348-2377.
47. Liang, S., Lu, W. and **Song, R.** , (2018) “Deep advantage learning for optimal dynamic treatment regime.” *Statistics and its Related Fields*, 2:1, 80-88.
48. Zhu, W., Zeng, D. and **Song, R.** , (2018) “Proper Inference for Value Function in High-Dimensional Q-Learning for Dynamic Treatment Regimes.” *Journal of American Statistical Association*, DOI: 10.1080/01621459.2018.1506341.
49. Shi, C., **Song, R.** , Lu, W., (2018) “Discussion of ‘Optimal treatment allocations in space and time for on-line control of an emerging infectious disease’ .” *Journal of the Royal Statistical Society, Series C*.
50. Shi, C., **Song, R.** , Lu, W., and Fu, B., (2018) “Maximin-Projection Learning for Optimal Treatment Decision with Heterogeneous Data.” *Journal of the Royal Statistical Society, Series B*, 80(4): 681-702.
51. Liang, S., Lu, W., **Song, R.** and Wang, L. (2018). “Sparse concordance-assisted learning for optimal treatment decision.” *Journal of Machine Learning Research*, 18(202):1?26.
52. Luo, S., **Song, R.** , Styner, M., Gilmore, J. and Zhu, H., (2018) “FSEM: Functional Structural Equation Models for Twin Functional Data.” *Journal of American Statistical Association*, DOI: 10.1080/01621459.2017.1407773.
53. Shi, C., Fan, A, **Song, R.** and Lu, W. (2018) “High-dimensional A-learning for Dynamic Treatment Regimes.” *the Annals of Statistics*, 46(3), 925-957.
54. Shi, C., **Song, R.** , Lu, W., (2017) “Discussion of ‘Random Projection Ensemble Classification’.” *Journal of the Royal Statistical Society, Series B*, 79, 959-1035.

55. Kang, S., Lu, W. and **Song, R.** , (2017) “Subgroup Detection and Sample Size Calculation with Proportional Hazards Regression for Survival Data”, *Statistics in Medicine*. DOI: 10.1002/sim.7441
56. Jiang, R., Lu, W., **Song, R.** , Hudgens, M.G. and Naprvavnik, S, (2017) “Doubly Robust Estimation of Optimal Treatment Regimes for Survival Data.” *the Annals of Applied Statistics*, 11, 1763–1786.
57. Shi, C., Lu, W. and **Song, R.** , (2017) “A massive data framework for M-estimators with cubic-rate.” *Journal of American Statistical Association*, DOI: 10.1080/01621459.2017.1360779.
58. Wang, L., Zhou, Y. **Song, R.** and Sherwood, (2017) “Quantile-Optimal Treatment Regimens.” *Journal of American Statistical Association*, DOI: 10.1080/01621459.2017.1330204.
59. Lu, Z, **Song, R.** , Zeng, D and Zhang, J., (2017) “Principal Component Adjusted Screening for High-dimensional Data.” *Computational Statistics and Data Analysis*. 110:134-144.
60. **Song, R.** , Luo, S., Zeng, D., Zhang, H. H., Lu, W. and Li, Z, (2017) “Semiparametric single-index model for estimating optimal individualized treatment strategy.” *Electronic Journal of Statistics*, 11(1) 364-384.
61. Fan, C., Lu, W., **Song, R.** and Zhou, Y, (2016) “Concordance-assisted learning for estimating optimal individualized treatment regimes.” *Journal of the Royal Statistical Society, Series B*: doi:10.1111/rssb.12216
62. Bai, X, Tsiatis, Lu, W and **Song, R.** , (2016) “Optimal treatment regimes for survival endpoints using locally-efficient doubly-robust estimator from a classification perspective.” *Lifetime Data Analysis*. 1–20.
63. Shi, C. **Song, R.** and Lu, W. (2016) “Robust Learning for Optimal Treatment Regimes with NP-Dimensionality.” *Electronic Journal of Statistics*. 10(2), 2894–2921.
64. Jiang, R, Lu, W, **Song, R.** , and Davidian, M., (2016) “On estimation of optimal treatment regimes for maximizing t-year survival probability.” *Journal of the Royal Statistical Society, Series B*. DOI: 10.1111/rssb.12201
65. Chen, J., Liu Y., Zeng, D., **Song, R.** , Zhao, Y. and Kosorok, M.R., (2016) “Comment on ‘Bayesian Nonparametric Estimation for Dynamic Treatment Regimes with Sequential Transition Times.’ ” *Journal of American Statistical Association*.
66. Fan, A., **Song, R.** and Lu, W. , (2016) “Change-Plane Analysis for Subgroup Detection and Sample Size Calculation”. *Journal of American Statistical Association*. DOI:10.1080/01621459.2016.1166115
67. Laber, EB, Zhao, Y., Regh, T., Davidian, M., Tsiatis, A., Stanford, J.B., Zeng, D., **Song, R.** and Kosorok MR., (2016) “Using pilot data to size a two-arm randomized trial to find a nearly optimal personalized treatment strategy.” *Statistics in Medicine*. DOI: 10.1002/sim.6783

68. **Song, R.** , Banerjee, M and Kosorok, MR, (2016) “Asymptotics for change-point models under varying degrees of mis-specification.” *the Annals of Statistics*. 44(1), 153-182
69. Fan, A, Lu, W. **Song, R.** , (2016) “Sequential Advantage Selection for Optimal Treatment Regimens”. *the Annals of Applied Statistics*. 10(1), 32-53.
70. **Song, R.** , Zeng, D, Laber, E, Zhao, Y, Yuan M, and Kosorok, MR, (2015) “On Sparse Representation for Outcome-Weighted Learning.” *STAT* DOI: 10.1002/sta4.78.
71. Bradic, J and **Song, R.** , (2015) “Gaussian Oracle Inequalities for Structured Selection in Non-Parametric Cox Model.” *Electronic Journal of Statistics*. 9(1) 492-534.
72. **Song, R.** , Wang, W, Zeng, D and Kosorok, MR, (2014) “Penalized Q-learning for Dynamic Treatment Regimes.” *Statistical Sinica*. 25(3):901-920.
73. Zhao, Y, Zeng, D, Laber, E, **Song, R.** , Yuan M, and Kosorok, MR, (2014) “Doubly Robust Learning for Estimating Individualized Treatment with Censored Data.” *Biometrika*. doi: 10.1093/biomet/asu050
74. Goldberg, Y, **Song, R.** , Zeng, D. and Kosorok, MR (2014), “Comment on ‘Dynamic treatment regimes: technical challenges and applications’.” *Electronic Journal of Statistics*.
75. **Song, R.** , Lu, W, Ma, S and Jeng, J, (2014) “Censored Rank Independence Screening for High-dimensional Survival Data.” *Biometrika*. doi: 10.1093/biomet/asu047
76. **Song, R.** , Kosorok, M.R. and Fine, J.P. (2014) Comment on ”Multiscale change point inference” by Frick, Munk and Sieling. *Journal of the Royal Statistical Society, Series B*. 76(3), 564.
77. **Song, R.** , Yi, F and Zou, H, (2014) “On Varying-coefficient Independence Screening for High-dimensional data.” *Statistical Sinica*. 24(4), 1735-1752.
78. Goldberg, Y, **Song, R.** and Kosorok, MR (2012), “Adaptive Q-learning,” *IMS Collections: From Probability to Statistics and Back: High-Dimensional Models and Processes* 9: 150-162.
79. **Song, R.** , Huang, J and Ma, S (2012), “Integrative Prescreening in Analysis of Multiple Cancer Genomic Studies,” *BMC Bioinformatics* **13:168**.
80. Fan, J., Feng, Y. and **Song, R.** (2011), “Nonparametric Independence Screening in Sparse Ultra-High Dimensional Additive Models,” *Journal of American Statistical Association*, **106**, 544-557.
81. Zhou, H., **Song, R.** and Qin, J. (2011), “Statistical inference for a two-stage outcome-dependent sampling design with a continuous outcome,” *Biometrics*, **67**, 194-202.
82. Fan, J and **Song, R.** (2010) “Sure independence screening in generalized linear models with np-dimensionality,” *the Annals of Statistics*, **38(6)**, 3567-3604.

83. **Song, R.** and Cai, J. (2010). “Joint covariate-adjusted score test statistics for recurrent events and a terminal event,” In Special issue: Recurrent Events of *Lifetime Data Analysis*, **16**(4), 491-508.
84. Anand, I., Carson, P., Galle E., **Song, R.** , Boehmer, J., Ghali, K.J., Jaski, B., Lindenfeld, J., O’Connor, C., Steinberg, R.J., Leigh, J., Yong, P., Kosorok, M. R., Feldman, A.M., DeMets, D. and Bristow, M. R. (2009). “Cardiac Resynchronization Therapy Reduces the Risk of Hospitalizations in Patients With Advanced Heart Failure: Results From the Comparison of Medical Therapy, Pacing and Defibrillation in Heart Failure (COMPANION) Trial,” *Circulation*, **119**: 969-977.
85. **Song, R.** , Zhou, H. and Kosorok, M. R. (2009). “On Semiparametric efficient inference for Two-stage outcome-dependent-sampling with a continuous outcome,” *Biometrika*, **96**, 221-228.
86. **Song, R.** , Kosorok, M. R. and Fine, J. P. (2009). “On Asymptotically optimal tests under loss of identifiability in semiparametric models,” *Annals of Statistics*, **37**, 2409-2444.
87. **Song, R.** , Kosorok, M. R. and Cai, J. (2008). “Robust covariate-adjusted log-rank statistics and corresponding sample size formula for recurrent events data,” *Biometrics*, **64**, 741-750.
88. Meunier, J., **Song, R.** , Scott, R. L., Doherty, E. K., David O. E., Andersen, E. and Bruggink, G. J. (2008). “Proximate cues for a short distance migratory species: A new application of survival analysis,” *Journal of Wildlife Management*, **72**(2): 440–448.
89. **Song, R.** , Cook, T. D., Kosorok, M. R. (2007). “What we want Versus what we can get: A closer look at endpoints for cardiovascular studies,” *Journal of Biopharmaceutical Statistics*, **18**(2), 370-381.
90. Kosorok, M. R. and **Song, R.** (2007). “Inference under right censoring for transformation models with a change-point based on a covariate threshold,” *Annals of Statistics*, **35**, 957-989.

Presentations and Posters

- Invited talk at virtual workshop Leveraging Observational Data With Machine Learning, June 2021.
- Invited talk at virtual workshop “Statistical learning methods in modern AI”, June 2021.
- Invited talk about Statistical Reinforcement Learning at JSM 2021, August 2021.
- Invited talk at virtual causal inference workshop in Amazon Machine Learning Conference, October 2021.
- Invited talk at NeurIPS virtual workshop “Causal Inference Challenges in Sequential Decision Making Bridging Theory and Practice”, December 2021.

- Applications of Reinforcement Learning in Amazon, Thirty-fourth Conference on Neural Information Processing Systems (NeurIPS 2020). **Invited**
- Applications of Reinforcement Learning in Amazon, Thirty-seventh International Conference on Machine Learning (ICML 2020). **Invited**
- Statistical Inference of the Value Function for Reinforcement Learning in Infinite Horizon Settings, Princeton University, Nov 2019; Amazon Inc, Nov 2019. **Invited**
- High-dimensional Q-learning for Dynamic Treatment Regimes, ICSA, Jun. 2019; Renmin University, Jun. 2018; Fudan University, Dec. 2018, Peking University, Dec. 2018; University of Illinois at Chicago, Jan. 2019; Hong Kong University of Science and Technology, Feb 2019; National University of Singapore, Mar 2019; King Abdullah University of Science and Technology, Apr. 2019; Penn State University, May 2019. **Invited**
- On Statistical Reinforcement Learning for Complex Data, August 2018, DiDi AI Labs, Beijing. **Invited**
- Change-plane Analysis for Subgroup Detection and Sample Size Calculation, IMPACT Symposium, September 2017, Duke University, Durham NC; Feb 2018, Cary NC.; April 2019, Duke-Industry Statistics Symposium. **Invited**
- Concordance Assisted Learning for Dynamic Treatment Regimes, JSM, Aug 2016; IMS-APRM, August 2016; Fudan University, Dec. 2017; Peking University, Beijing, May 2017; University of Illinois at Chicago, Apr. 2018. **Invited**
- Maximin Dynamic Treatment Regimes for Heterogeneous Data, University of Southern California, Apr. 2016, University of South Carolina, Sep. 2017. **Invited**
- On Estimation of Optimal Treatment Regimes For Maximizing t-Year Survival Probability, Joint Statistics Meeting, Aug. 2015, Seattle, WA. **Topic Contributed**
- Semi-nonparametric methods for personalized medicine, Sep 2014, Department of Statistics, Virginia Tech; Dec 2014, Department of Biostatistics, Washington University at St. Louis; Dec 2014, Department of Statistics, Beijing Normal University; Dec 2014, IMA-HK-IAS Joint Program on Statistics and Computational Interface to Big Data; March 2014, Department of Statistics, University of South Carolina. **Invited**
- Sure Independence Screening for Gaussian Graphical Models. ICSA meeting, June 2014, Portland, OR; The 3rd Institute of Mathematical Statistics Asia Pacific Rim Meeting, July 2014 Taiwan; Joint Statistics Meeting, Aug. 2014, Boston, MA, Department of Mathematics, Dec 2014, Washington University at St. Louis. **Invited**
- Sequential Advantage Selection for dynamic treatment regimens. University of Pittsburgh, 2013. University of Georgia, 2014.

- Variable screening methods for high-dimensional feature space. North Carolina State University, Ohio State University, 2012.
- Penalized Q-learning for dynamic treatment regimes. Columbia University, North Carolina State University, University of North Carolina at Chapel Hill, Yale University, Impact Symposium, 2012.
- Integrative Prescreening in Analysis of Multiple Cancer Genomic Studies. Joint Statistics Meeting, Aug. 2011, Miami Beach, FL. **Invited**
- Penalized Q-learning for dynamic treatment regimes. Department of Statistics, University of Michigan. Feb. 2011.
- Penalized Q-learning for dynamic treatment regimes. Department of Statistics, the Pennsylvania State University. Sep. 2010.
- Nonparametric Independence Screening in Sparse Ultra-High Dimensional Additive Models. Joint Statistics Meeting, Aug. 2010, Vancouver, Canada. **Invited**
- Marginal Screening in Integrative Analysis of Multiple Heterogeneous Genomic Datasets. The First International Biostatistics Symposium, Jul., 2010, Beijing, China. **Invited**
- General inference under misspecification for a class of change-point models. Joint Statistics Meeting, Aug. 2009, Washington DC. **Invited**
- On Asymptotically optimal tests under loss of identifiability in semiparametric models. ICSA meeting, Jun., 2008, Piscataway, NJ. **Invited**
- Change-point Cox model with Current status data. University of Minnesota, Columbia University, Colorado State University, University of Michigan and Michigan State University, Jan.-Feb., 2008.
- Carson, J.L., Brighton, L. E., Jaspers, I., Hazucha, M., **Song, R.** , Zhou H. Persistent Upregulation of Nasal Epithelial Ciliary Beat Frequency Among Smokers and Individuals Exposed to Environmental Tobacco Smoke. (Poster presentation) Annual meeting of the American Lung Association & American Thoracic Society, May, 2008, Toronto, Canada.
- Anand, I.S., Carson, P. C., Galle, E., **Song, R.** , Boehmer, J., Ghali, J., Jaski, B., Lindenfeld, J., O'Connor, C., Steinberg, J. S., Leigh, J., Yong, P., Kosorok, M. R., Feldman, A. M., DeMets, and D. Bristow, M. R. Cardiac Resynchronization therapy reduces the risk of hospitalizations in patients with advanced heart failure – results from the companion trial. (Poster presentation) American Heart Association Scientific Sessions, Nov., 2007, Orlando, FL.
- Statistical inference for a two-stage outcome-dependent sampling design with a continuous outcome. ICSA meeting, Jun., 2007, Raleigh, NC. **Invited**

- Sample size calculations for recurrent events data. ENAR meeting, Mar., 2006, Tampa, FL. **(ENAR Distinguished Student Paper Award)**
- Inference for the proportional odds model with a change-point based on a covariate threshold. ENAR Meeting, Mar., 2005, Austin, TX.
- Chen, Y. F. , **Song, R.** , Cho, H. , Iversen, P. W. and Heuer, J. Tree-structured Survival Model on biomarker searching in rat 5/6 renal failure survival data. (Poster) May 2005, MBSW (Midwest Biopharmaceutical Statistics Workshop), MUNCIE, IN.
- Determining Prognostic Biomarkers from an In Vivo Study of Renal Failure. August 2005, *Eli Lilly & Company*, Indianapolis, IN.
- Recurrent events methods in the analysis of clinical trials for Cardiac-resynchronization therapy. Joint Statistics Meeting, August 2005, Minnesota, MN.
- Meunier, J., **Song, R.** , Scott, R. L., Doherty, E. K., David O. E., Andersen, E., Bruggink, G. J. and Kosorok, M. R. Fall Migration Chronology of American Woodcock (*Scolopax minor*) in the Western Great Lakes Region. Sep., 2005, Wildlife Society Conference, Madison, WI.
- Boehmer, J. P., Kosorok, M. R., **Song, R.** , Carson, R., Feldman, A., Saxon, L., DeMarco, T., Yong, P. Galle, E., Ecklund, E., and Bristow, M.. Cardiac Resynchronization Therapy with and without defibrillator: the effect on Cardiac Morbidity. Nov., 2005, Scientific Sessions of American Heart Association, Dallas, TX.

Professional Services

- Associate Editor for *Annals of Statistics* (2022-current).
- Associate Editor for *Journal of American Statistical Association, Theory & Method section* (2021-current) and *book review section* (2017-current).
- Associate Editor for *Journal of Computational and Graphical Statistics* (2021-current).
- Associate Editor for *Contemporary Clinical Trials* (2021-now).
- Associate Editor for *Biometrics* (2018-2020).
- Guest Associate Editor for *Journal of Econometrics* (2021-2022).
- Program Committee member for the Thirty-Second AAAI Conference on Artificial Intelligence (AAAI-18) and the 28th International Joint Conference on Artificial Intelligence (IJCAI 2019).
- NSF-DMS review panelist (four times) and ad-hoc reviewer (three times) in 2012-2019; NHLBI review panelist in 2012-2019; Grant reviewer for Hong Kong Research Grants Council (twice) in 2012-2019; External grant reviewer for internal grants in some universities in 2012-2019.

- Referee for *Annals of Statistics*, *Applied Statistics*, *Biometrics*, *Biometrika*, *Lifetime Data Analysis*, *Electric Journal of Statistics*, *International Journal of Biostatistics*, *Journal of American Statistical Association*, *Journal of Biopharmaceutical Statistics*, *Journal of Multivariate Analysis*, *Metrika*, *Nonparametric Statistics*, *Scandinavia Journal of Statistics*, *Statistical sinica*, *Test*, *Journal of Royal Statistical Society, volume B* and several others.
- Program committee member and Student Paper Award committee member for 2019 ICSA meeting, Raleigh NC.
- Organizer for a few invited sessions in various conferences.
- Treasurer for Nonparametric Statistics section of ASA for year 2011-2012 and Secretary for year 2012-2013.
- Organizing committee member for Graybill conference 2011, Department of Statistics, Colorado State University.
- Committee member for 2010 ASA Nonparametric Statistics Section Student Paper Award.
- Vilas award committee member, Graduate School, University of Wisconsin, Madison, 2005.