

Curriculum Vitae

FEIFANG HU

Department of Statistics

George Washington University, USA

Telephone: (804)-310-0383

Email: feifang@gwu.edu

Education:

- PhD in Statistics, 1994, University of British Columbia, Vancouver, B. C., Canada. Advisor: Professor James V. Zidek.
- MSc in Statistics, 1988, Zhejiang University, Hangzhou, Zhejiang, P. R. China. Advisor: Professor Yaoting Zhang.
- BSc in Mathematics, 1985, Hangzhou Normal University, Hangzhou, Zhejiang, P. R. China

Working Experience:

- Professor, Aug, 2013-present: Department of Statistics, George Washington University, USA.
- Professor, 2008-2013; Associate Professor, 2004-2008; Assistant Professor, 2001-2004: Department of Statistics, University of Virginia, USA.
- Adjunct Professor, 2001-2013: Division of Biostatistics and Epidemiology, Department of Health Evaluation Science, University of Virginia School of Medicine. USA.
- Visiting Assistant Professor, 2001: Department of Biometrics, Cornell University, USA.
- Associate Professor/Assistant Professor, 1995-2003: Dept of Statistics & Applied Probability, National University of Singapore, Singapore.
- Post-Doctoral Fellow, 1994-1995: Department of Statistics and Actuarial Science, University of Waterloo, Canada.

DSMB (DATA AND SAFETY MONITORING BOARD) Experience:

- July, 2017-March, 2020, DSMB member of one clinical trial.
- Jan, 2018-Dec, 2019, DSMB member of one clinical trial.
- March, 2018-present, DSMB member of one clinical trial.
- Jan, 2019-present, DSMB member of one NIH clinical trial.
- Aug, 2020-present, DSMB member of one clinical trial.

- June, 2022-present, DSMB member of one clinical trial.

Research Interests:

- Adaptive design and inference of clinical trials; Bioinformatics; Biostatistics; Bootstrap methods; Designing Big Data studies; Online A/B testing; Network A/B testing; Statistical issues in precision medicine.

Research Grants:

- National Science Foundation grant: High Dimension Quantile. Award number: DMS-1712760. Period: 2017-2021. Principal Investigator.
- National Science Foundation grant: New covariate-adjusted response-adaptive designs and associated methods for statistical inference. Award number: DMS-1612970. Period: 2016-2020. Principal Investigator.
- Hong Kong Research Grants Council grant: Adaptive treatment allocation strategies in clinical studies with survival and categorical data. Period: July, 2018-June, 2020. Co-Investigator.
- Hong Kong Research Grants Council grant: Response-adaptive designs in non-inferiority clinical trials. Period: July, 2016-June, 2018. Co-Investigator.
- National Science Foundation grant: Adaptive design based upon covariate information: new designs and their properties. Award number: DMS-1442192. Period: 2014-2016. Principal Investigator.
- National Science Foundation grant: Adaptive design based upon covariate information: new designs and their properties. Award number: DMS-1209164. Period: 2012-2015. Principal Investigator.
- National Science Foundation grant: Adaptive Designs and Sequential Monitoring. Award number: DMS-0907297. Period: 2009-2013. Principal Investigator.
- National Science Foundation grant: New Developments in Estimation, Selection and Applications for Mixed Models. Award number: DMS-0906661. Period: 2010-2012. Principal Investigator.
- Career Award, National Science Foundation: Use of Covariate Information in Adaptive Designs. Award number: DMS-0349048. Period: 2004-2010. Principal Investigator.
- National Science Foundation grant: Power, Variability, and Optimality in Adaptive Designs. Award number: DMS-0204232. Period: 2002-2005. Principal Investigator.
- Hong Kong Research Grants Council grant: Multiple Comparisons with Treatments in Clinical Studies with Adaptive Allocation Schemes. Award number: CUHK400204, Period: 2004-2006. Co-Investigator.

- National University of Singapore grant: Optimal Sequential Designs for Medical Studies (Singapore). Period: 2000-2003. Principal Investigator.
- National University of Singapore grant: Adaptive Designs for Clinical Trial (RP3991608, Singapore). Period: 1999-2001. Principal Investigator.
- National University of Singapore grant: Pivotal Bootstrap and Statistical Classification (RP3960626, Singapore). Period: 1996-1998. Principal Investigator.

Editorial Board:

- Associate Editor: *Journal of the American Statistical Association*. 2011-2020.
- Associate Editor: *Annals of Statistics*. 2007-2012.
- Associate Editor: *Statistics and Its Interface*. 2007-2016.
- Guest Editor: A special issue of *Science in China Ser A*. 2008-2009.

Honors and Award Received:

- CCAS Dean's Research Chair Award, George Washington University, 2018.
- Fellow, American Statistical Association, 2009.
- Fellow, Institute of Mathematical Statistics, 2009.
- Keynote Speaker of the SRCOS (Southern Regional Council on Statistics) Summer Research Conference at Norfolk, Virginia, USA, 2010.
- Career Award, National Science Foundation, 2004.
- Joint Keynote Speaker of the SSC (Statistical Society of Canada) Annual Meeting at Ottawa, 2000.
- Pierre Robillard Award (Statistical Society of Canada), 1995: for the best PhD thesis in Canada in the area of probability and statistics, 1994.
- A.W. Marshall Prize, 1994: for achieving great distinction in a graduate statistics program, University of British Columbia.

Book:

- Hu, F. and Rosenberger, W.F. (2006) *The Theory of Response-Adaptive Randomization in Clinical Trials*. John Wiley and Sons. Wiley Series in Probability and Statistics.
- Chen, Z., Zhang, J. and Hu, F. (Editors) (2008) *Advances in Statistics: Proceedings of the Conference in Honor of Professor Zhidong Bai on His 65th Birthday*, World Scientific.

Publications:

- [106] Wang, J., Li, P. and Hu, F. (2022). A/B testing in Network Data with Covariate-Adaptive Randomization. Submitted.
- [105] Yang, H, Qin, Y., Wang, F., Li, Y. and Hu, F. (2022). Balancing covariates in multi-arm trials via adaptive randomization. *Computational Statistics and Data Analysis*. Revision.
- [104] Liu, Y., Zhou Y., Li, P.,and Hu, F. (2022). Adaptive A/B Test on Network with Cluster Structures. In *International Conference on Artificial Intelligence and Statistics*. PMLR. To appear.
- [103] Zhang H., Hu, F. and Ying, J. (2022). Covariate-adaptive randomization with variable selection in clinical trials. *Stat*. To appear.
- [102] Ma, W., Zhang, L.X. and Hu, F. (2022). Comment on "Inference After Covariate-Adaptive Randomization: Aspects of Methodology and Theory". *Statistical Theory and Related Fields*.To appear.
- [101] Ma, W. Ye, X., Tu, F. and Hu, F. (2022). carat: An R Package for Covariate-Adaptive Randomization in Clinical Trials. *Journal of Statistical Software*. Revision submitted.
- [100] Liu, Y. and Hu, F. (2022). The Impact of Unobserved Covariates on Covariate-Adaptive Randomized Experiments. *Annals of Statistics*, Revision.
- [99] Liu, Y., Zhou Y., Li, P.,and Hu, F. (2022). Cluster-Adaptive Network A/B Testing: From Randomization to Estimation. submitted.
- [98] Gao, J.Y., Su, P.F., Hu, F. and Cheung, S.H. (2022). Adaptive treatment allocation for comparative clinical studies with multi-treatment recurrent events data. *Statistical Methods in Medical Research*. To appear.
- [97] Hu, F. Ye, X., and Zhang L.X. (2022). The theory of multi-arm covariate-adaptive randomization. *Science in China, Series A*, To appear.
- [96] Zhou, Z., Li, P.,and Hu, F. (2022). A new adaptive design of Network A/B testing and its properties, submitted.
- [95] Qin, Y., Li, Y. Ma, W. and Hu, F. (2022). An optimal method for covariate balancing and its properties. *Statistica Sinica*, to appear
- [94] Ma, W., Li, P., Zhang, L.X. and Hu, F. (2022). A New and Unified Family of Covariate Adaptive Randomization Procedures and Their Properties. *Journal of the American Statistical Association*. to appear.
- [93] Liu, Y. and Hu, F. (2022). Balancing unobserved covariates with covariate-adaptive randomized experiments. *Journal of the American Statistical Association*. To appear.
- [92] Li, X. and Hu, F. (2022). Sample size re-estimation for response-adaptive randomized clinical trials. *Pharmaceutical Statistics*. To appear.

- [91] Zhao, W., Ma, W. Wang, F. and Hu, F. (2022). Incorporating Covariates Information in Adaptive Clinical Trials for Precision Medicine. *Pharmaceutical Statistics*. bf 21, 176-195.
- [90] Li, Y., Ma, W., Qin, Y. and Hu, F. (2021). Testing for treatment effect in covariate-adaptive randomized trials with generalized linear models and omitted covariates. *Statistical Methods in Medical Research*. **30**, 2148-2164.
- [89] Li, X., Ma, W. and Hu, F. (2021). Sample size re-estimation for covariate-adaptive randomized clinical trials. *Statistics in Medicine*. **40**, 2839-2858.
- [88] Ma, W., Qin, Y., Li, Y. and Hu, F. (2020). Statistical Inference for Covariate-Adjusted Randomization Procedures. *Journal of the American Statistical Association*, **115**, 1488-1497.
- [87] Gao J, Ma W, Cheung SH and Hu F. (2020) Response-Adaptive Randomization in Clinical Trials: Recent Advances and Future Perspectives. *Journal of Applied Statistics and Management*. **39(4)**: 595-610.
- [86] Gao. J.Y., Su, P.F., Hu, F. and Cheung, S.H. (2020). Adaptive treatment allocation for comparative clinical studies with recurrent events data. *Biometrics*. **76**, 183-196.
- [85] Zhu, H, Hu, F. Li, J. and Zhang, L.X. (2020). Response adaptive randomization procedures in seamless phase II/III clinical trials. *Journal of Biopharmaceutical Statistics*. **30**, 3-17.
- [84] Li, X., Zhou J. and Hu, F. (2019). Testing hypotheses under adaptive randomization with continuous covariates in clinical trials. *Statistical Methods in Medical Research*. **28**, 1609-1621.
- [83] Zhu, H.J. and Hu, F. (2019). Sequential monitoring of covariate-adaptive randomized clinical trials. *Statistica Sinica*. **29**, 265-282
- [82] Yang, H., Lu, K. Lyu, X. and Hu, F. (2019). Two-Way Partial AUC and Its Properties. *Statistical Methods in Medical Research*. **28**, 184-195.
- [81] Xu, W.F., Hu, F. and Cheung, S.H. (2018). Adaptive Designs for Non-inferiority Trials with Multiple Experimental Treatments. *Statistical Methods in Medical Research*. **27**, 3255-3270.
- [80] Liu, Z.Q, Hu, F. and Zhang, L.X. (2018). Nonparametric response-adaptive randomization for continuous responses. *Pharmaceutical Statistics*. **17**, 781-796.
- [79] Tong, X., Wang, P. and Hu, F. (2018). Out-of-sample equity premium prediction: a scenario analysis approach. *Journal of Forecasting*. **37**, 604-626.
- [78] Xu, W.F., Gao. J.Y., Hu, F. and Cheung, S.H. (2018). Response-adaptive treatment allocation for non-inferiority trials with heterogeneous variances. *Computational Statistics and Data Analysis*. **124**, 168-179.
- [77] Feng, C. and Hu, F. (2018). Optimal Responses-Adaptive Designs Based on Efficiency, Ethic, and Cost. *Statistics and Its Interface*, **11**, 99-108.
- [76] Xiao, Y., Hu, F., Liu, Z., Lu, F., Zhao Y. and Gao R. (2017). Application of adaptive designs in clinical trials of developing new drugs. *Chinese Journal of New Drugs*, **26**, 29-33.

- [75] Xiao, Y., Liu, Z. and Hu, F. (2017). Bayesian doubly adaptive randomization in clinical trials. *Science in China, Series A*, 60, 2503-2514.
- [74] Ma, Z., Kim, Y. Hu, F. and Lee, J. (2016). Point success rate for patient therapeutic response prediction by continuous biomarker scores. *Statistical Methods in Medical Research*, **25**, 1638-1647.
- [73] Ma, W., Hu, F. and Zhang, L.X. (2015). Testing Hypotheses of Covariate-Adaptive Randomized Clinical Trials. *Journal of the American Statistical Association*. **110**, 669-680.
- [72] Hu, F., Hu, Y., Ma, W., Zhang L.X. and Zhu, H. (2015). Statistical inference of adaptive randomized clinical trials for personalized medicine. *Clinical Investigation*. **5**, 415-425.
- [71] Hu, J., Zhu, H. and Hu, F. (2015). A Unified Family of Covariate-Adjusted Response-Adaptive Designs Based on Efficiency and Ethics. *Journal of the American Statistical Association*. **110**, 357-367.
- [70] Liu, Z. Yin, J. and Hu, F. (2015). Covariate-adaptive designs with missing covariates in clinical trials. *Science in China, Series A*, **58**, 1191-1202.
- [69] Mi-Ok Kim, Chunyan Liu, Feifang Hu and J. Jack Lee (2014). Outcome-Adaptive Randomization for a Delayed Outcome with a Short-Term Predictor: Imputation Based Delay Mitigating Designs. *Statistics in Medicine*. **33**, 4029-4042.
- [68] Hu, F., Hu, Y., Ma, Z. and Rosenberger, W.F. (2014). Adaptive Randomization for balancing covariates. *Wiley. Iner. Comput. Stat.* . Volume 6, Issue 4, pages 288-303.
- [67] Cheung, S.H. Zhang, L.X., Hu, F. and Chan, W.S. (2014). Covariate-adjusted response-adaptive designs for generalized linear models. *Journal of Statistical Planning and Inference*. **149**: 152-161.
- [66] Zhang, L.X., Hu, F., Cheung, S.H. and Chan, W.S. (2014). Asymptotic properties of multi-color randomly reinforced Pólya urns. *Advances in Applied Probability*. 46, 585-602.
- [65] Zhu, H., Hu, F. and Zhao, H. (2013). Optimal clinical trial designs to detect treatment-biomarker interaction. *Canadian Journal of Statistics*. 41, 525-539.
- [64] Huang, T., Liu Z. and Hu, F. (2013). Longitudinal Covariate-Adjusted Response-Adaptive Randomization Design. *Journal of Statistical Planning and Inference*. 143, 1816-1827.
- [63] Ma, Z. and Hu, F. (2013). Balancing continuous covariates based on kernel densities. *Contemporary Clinical Trials*., 34, 262-269.
- [62] Hu, Y. and Hu, F. (2012b). Balancing treatment allocation over continuous covariates: a new imbalance measure for minimization. *Journal of Probability and Statistics*.
- [61] Lebowitsch, J., Ge, Y., Young, B. and Hu, F. (2012) Generalized multidimensional dynamic allocation method. *Statistics in Medicine*. 31, 3537-44.
- [60] Hu, F., Lu, J.D. and Tai, F. (2012). Type I Error for a Chi-Square Test When the Response Probability Changes During a Trial. *Statistics and Its Interface*. 5, 471-478

- [59] Hu, Y. and Hu, F. (2012a). Asymptotic Properties of Covariate-Adaptive Randomization. *Annals of Statistics*. 40, 1794-1815.
- [58] Sverdlov, O., Rosenberger, W. F. and Hu, F. (2012). Adaptive Randomization for Clinical Trials. *Statistics in Biopharmaceutical Research*. 22, 719-736.
- [57] Zhu, H. and Hu, F. (2012). Interim Analysis of Clinical Trials Based on Urn Models. *Canadian Journal of Statistics*. 40, 550-568.
- [56] Hu, F. (2012). Statistical issues in trial design and personalized medicine. *Clinical Investigation*, 2, 121-124.
- [55] Zhang, L.X., Hu, F., Cheung. S.H. and Chan, W.S. (2011). Immigrated urn models – theoretical properties and applications. *Annals of Statistics*, 39, 643-671.
- [54] Gwise, T., Zhu, J. and Hu, F. (2011). An optimal response-adaptive biased coin design with K treatments. *Journal of Statistical Planning and Inference*. 141, 235-242.
- [53] Zhu, H. and Hu, F. (2010). Sequential monitoring of response-adaptive randomized clinical trials. *Annals of Statistics*. 38, 2218-2241.
- [52] Jeon, Y. and Hu, F. (2010). Optimal adaptive designs for binary response trials with three treatments. *Statistics in Biopharmaceutical Research*. 2, 310-318.
- [51] Hu, F., Zhang, L.X. and He, X. (2009). Efficient randomized adaptive designs, *Annals of Statistics*. 37, 2543-2560.
- [50] Hu, F., Choe, E. and Xia, L. (2009). Sample Size of Randomized Clinical Trials: A Simulation Study. *The Proceedings of the Second International Workshop in Sequential Methodologies*.
- [49] Hu, J. and Hu, F. (2009). Estimating equation-based causality analysis with application to microarray time series experiment. *Biostatistics*, 10, 468-480.
- [48] Duan, L. and Hu, F. (2009). Doubly adaptive biased coin designs with heterogeneous responses. *Journal of Statistical Planning and Inference*, 139, 3220-3230.
- [47] Zhang, L.X. and Hu, F. (2009). The Gaussian approximation for multi-color generalized Friedman’s urn model. *Science in China, Series A*, 52, 1305-1326.
- [46] Zhang, L.X. and Hu, F. (2009). A new family of covariate-adjusted response adaptive designs and their asymptotic properties. *Applied Mathematics - A Journal of Chinese Universities*, 24, 1-13.
- [45] Zhu, H. and Hu, F. (2009). Implementing optimal allocation in sequential continuous response experiments. *Journal of Statistical Planning and Inference*, 139, 2420-2430.
- [44] Hu, F. Zhang, L.X., Cheung. S.H. and Chan, W.S. (2008). Doubly adaptive biased coin designs with delayed responses. *Canadian Journal of Statistics*. 36, 541-559.
- [43] Gwise, T., Hu, J. and Hu, F. (2008). Optimal biased coin designs for two-arm clinical trials. *Statistics and Its Interface*, 1, 125-136.

- [42] He, X. and Hu, F. (2007). Comments on “Implementation of estimating-function based inference procedure with MCMC samples”. *Journal of the American Statistical Association*, 102, 889-890.
- [41] Zhang, L.X., Hu, F., Cheung. S.H. and Chan, W.S. (2007). Asymptotic properties of covariate-adjusted adaptive designs. *Annals of Statistics*, 35, 1166-1182.
- [40] Tymofyeyev, Y., Rosenberger, W.F. and Hu, F. (2007). Implementing optimal allocation in sequential binary response experiments. *Journal of the American Statistical Association*, 102, 224-234.
- [39] Zhang, L.X., Chan, W.S., Cheung. S.H. and Hu, F. (2007). A generalized urn model for clinical trials with delayed responses. *Statistica Sinica*. 17, 387-409.
- [38] Zhang, L.X., Hu, F. and Cheung. S.H. (2006). Asymptotic theorems of sequential estimation-adjusted urn models. *Annals of Applied Probability*. 16, 340-369.
- [37] Hu, F., Rosenberger, W.F. and Zhang, L.X. (2006). Asymptotically best response-adaptive randomization procedures. *Journal of Statistical Planning and Inference*. 136, 1911-1922.
- [36] Hu, F. (2006). Bootstrap, Markov Chain and Estimating Function. *Springer Handbook of Engineering Statistics*, Editor: Hoang Pham, 673-686.
- [35] Bai, Z.D. and Hu, F. (2005). Asymptotics in randomized urn models. *Annals of Applied Probability*. 15, 914-940.
- [34] He, X. and Hu, F. (2005). Some recent advances on bootstrap. *COSMOS*. 1, 75-86.
- [33] Hu, F. and Zhang, L.X. (2004a). Asymptotic properties of doubly adaptive biased coin designs for multi-treatment clinical trials. *Annals of Statistics* . 32, 268-301.
- [32] Hu, F. and Zhang, L.X. (2004b). Asymptotic normality of adaptive designs with delayed response. *Bernoulli* . 10, 447-463.
- [31] Rosenberger, W.F. and Hu, F. (2004). Maximizing power and minimizing treatment failures. *Clinical Trials*. 1, 141-147.
- [30] Tymofyeyev, Y., Rosenberger, W.F. and Hu, F. (2004) Asymptotic properties of urn designs for three-arm clinical trials. *MODA7 Advances in Model Oriented Design and Data Analysis*, (editors: Di Bucchianico, Alessandro; Luter Henning; Wynn, Henry P.), Heidelberg: Physica-Verlag, 159-166.
- [29] Hu, F. and Zidek, J.V. (2004). Forecasting NBA basketball playoff outcomes using the weighted likelihood. IMS Lecture Note-Monograph Series. Vol 45. 385-395.
- [28] Hu, F. and Ivanova, A. (2004). Adaptive Designs. *Encyclopedias of Biopharmaceutical Statistics*. Marcel Dekker, New York, 1-6.
- [27] Hu, F. and Rosenberger, W.F. (2003). Optimality, variability, power: Evaluating response-adaptive randomization procedures for treatment comparisons. *Journal of the American Statistical Association*, 98, 671-678.

- [26] Chen, G.J., Chen, Y.M., Bai, Z.D. and Hu, F. (2003). A kind of optimal design in urn models. *Acta Math. Sci.* Series A. 23, 208-214.
- [25] Hu, F. (2003). Some recent advances of response adaptive randomization procedures. *Development of Modern Statistics and Relative Topics*. Editors: Heping Zhang and Jian Wang. World Scientific, 205-219.
- [24] Hu, F. and Zidek, J.V. (2002). The weighted likelihood. *Canadian Journal of Statistics*, 30, 347-371.
- This work was the basis of the second author's Gold Medal address given at the Annual Meeting of the Statistical Society of Canada, June 2001.*
- [23] Bai, Z.D., Hu, F. and Zhang L.X. (2002). The Gaussian approximation theorems for urn models and their applications. *Annals of Applied Probability*, 12, 1149-1173.
- [22] He, X. and Hu, F. (2002). Markov chain marginal bootstrap. *Journal of the American Statistical Association*, 97, 783-795.
- The algorithm of He and Hu (2002) has been implemented in SAS version 9.1.*
- [21] Bai, Z.D., Hu, F. and Rosenberger, W.F. (2002). Asymptotic properties of adaptive designs for clinical trials with delayed response. *Annals of Statistics*, 30, 122-139.
- [20] Bai, Z.D., Hu, F. and Shen, L. (2002) An Adaptive Design for Multi-Arm Clinical Trials. *Journal of Multivariate Analysis*, 81, 1-18.
- [19] Hu, F and Zidek, J.V. (2001) The relevance weighted likelihood with applications. *Empirical Bayes and Likelihood Inference*. (Eds: S.E. Ahmed and N. Reid.), New York: Springer.
- [18] Hu F. (2001). Efficiency and robustness in resampling M-estimator in the linear model. *Journal of Multivariate Analysis*, 78, 252-271.
- [17] Bai, Z.D., Chen G.J. and Hu, F. (2001) A kind of urn model for adaptive sequential design. *Acta Math. Sci.* Series B. 21, 224-228.
- [16] Bai, Z.D., Chen G.J. and Hu, F. (2001). Limit theorems in an urn model with trends in sequential experiment. *Chinese Annals of Mathematics*. 21A:1, 89-96.
- [15] Gu, B., Hu, F. and Liu, H. (2001). Modeling Classification Performance for Large Data Sets. *Proceedings of the Second International Conference of Web-Age Information Management*, WAIM 2001, 317-328.
- [14] Gu, B., Liu, B., Hu, F. and Liu, H. (2001). Efficiently Determining the Starting Sample Size for Progressive Sampling. *Proceedings of 12th European Conference on Machine Learning*, ECML 2001, 192-202.
- [13] Gu, B., Hu, F. and Liu, H. (2001). Sampling: knowing whole from its part. Book chapter in *Instance Selection and Construction for Data Mining*, Kluwer Academic Publishers. Editors: H. Liu and H. Motoda.

- [12] Hu, F. and Kalbfleisch, J.D. (2000). The estimating function bootstrap (with discussion). *Canadian Journal of Statistics*. 28, No 3, 449-499.

This work was the basis of the second author's Fisher Lecture of the 1999 Joint Statistical Meeting of ASA, IMS, IBS and SSC. It was also discussed at the SSC Annual Meeting held at Ottawa in June, 2000.

- [11] Hu, F. and Rosenberger, W.F. (2000). Analysis of time trends in adaptive designs with application to a neurophysiology experiment. *Statistics in Medicine*, 19, 2067-2075.

- [10] Hu, F. and Hu, J. (2000), A note on breakdown theory for bootstrap methods. *Statistics & Probability Letters*. 50, 49-53.

- [9] Hu, F. and Hu, J. (2000), Estimation of number of subjects required for comparison of drug versus control in adaptive designs. *Annals, Academy of Medicine, Singapore*, 29, 565-569.

- [8] Hu, F., Rosenberger, W.F. and Zidek, J.V. (2000). Weighted likelihood for dependent data. *Metrika*, 51, 223-243.

- [7] Hu, F. and Zidek, J.V. (2000). Relevance weighted likelihood and applications. *Empirical Bayes and Likelihood Inference*. Editors: S.E. Ahmed and N. Reid. Lecture Notes in Statistics by Springer, 211-235.

- [6] Bai, Z.D. and Hu, F. (1999). Asymptotic Theorems for urn models with nonhomogeneous generating matrix. *Stochastic Processes and Their Applications*, 80, 87-101.

- [5] Rosenberger, W.F. and Hu, F. (1999). Bootstrap methods for adaptive designs. *Statistics in Medicine*, 18, 1757-1767.

- [4] Hu, F. (1997). The consistency of the maximum relevance weighted likelihood estimator. *Canadian Journal of Statistics*, 25, 45-60.

This work was the basis of author's Pierre Robillard Award talk at the SSC Annual Meeting held at Montreal in July, 1995.

- [3] Hu, F. and Kalbfleisch, J.D. (1997). Estimating equations and the bootstrap. *Selected Proceedings of the Symposium on Estimating Equations*. Editors: Basawa, I.V., Godambe, V.P. and Taylor, R.L.. IMS Lecture Note-Monograph Series. Vol 32, 405-416.

- [2] Hu, F. and Zidek, J.V. (1995). A bootstrap based on the estimating equations of the linear model, *Biometrika*, 82, 263-275.

- [1] Hu, F. (1991). All admissible linear estimators of common mean vector in linear models. *Chinese Journal of Applied Probability and Statistics*. Vol. 7, No. 3, 275-281.

FDA (Food and Drug Administration, USA) White Papers:

- [2] Hu, F. and Rosenberger, W.F. (2007). Theoretical properties of response-adaptive randomization in clinical trials.

- [1] Rosenberger, W.F. and Hu, F. (2007). Using response-adaptive randomization in confirmatory clinical trials.

Students Supervised:

- Doctoral Students at GWU:

Guannan Zhai, George Washington University, 2026 (expected).

Jiaqian Yu, George Washington University, 2024 (expected).

Fengyu Zhao, George Washington University, 2023 (expected).

Jialu Wang, George Washington University, 2023 (expected).

Yifan Zhou, George Washington University, 2021. Thesis Title:

Yang Liu, George Washington University, 2022. Thesis Title:

Xin Li, George Washington University, 2019. Thesis Title:

Fan Wang, George Washington University, 2018. Thesis Title:

Wanying Zhao, George Washington University, 2017. Thesis Title:

- Doctoral Students at UVa:

Xiaoming Li (co-supervisor with Jianhui Zhou), University of Virginia, 2015. Thesis Title:

Yuan Xue (co-supervisor with Mark Conaway), University of Virginia, 2014. Thesis Title: Biomarker-based Dose-finding Designs for Single- or Multiple-Agent Phase I Trials.

Xiaoxiao Tang, University of Virginia, 2014. Thesis Title: Forecasting Economic Variables Using Markov Quantile Regression Approach.

Wei Ma, University of Virginia, 2014. Thesis Title: Statistical inference of covariate-adaptive randomized clinical trials.

Zhenjun Ma, University of Virginia, 2013. Thesis Title: Missing data and adaptive designs in clinical studies.

Yanqing Hu, University of Virginia, 2011. Thesis Title: Covariate-adaptive randomization: new designs and their properties.

Hongjian Zhu, University of Virginia, 2010. Thesis Title: Adaptive randomized clinical trial: Interim analysis and optimality.

Liangliang Duan, University of Virginia, 2010; Thesis Title: Heterogeneity in response-adaptive randomization.

Youngsook Jeon, University of Virginia, 2009; Thesis Title: Some statistical issues related to K -treatment clinical trials.

Thomas Gwise, University of Virginia, 2005; Thesis Title: Optimal biased coin designs for clinical trials.

Joshua Betcher (co-supervisor with S Peddada), University of Virginia, 2004; Thesis Title: Statistical inference under order restrictions with applications.

Mat Soukup (co-supervisor with Jae Lee), University of Virginia, 2004; Thesis Title: Robust optimization of classification models for human carcinomas using microarray gene expression data.

- Masters Students: I have supervised 8 theses at National University of Singapore.

Invited Presentations at International Conferences:

- Adaptive Designs of Network A/B Testing. *The 11th ICSA International Conference: Innovation with Statistics and Data Science*. Dec 19-22, Hangzhou, China.
- Post-Randomization Statistical Inference. *Network Analysis and Deep Learning Workshop*. Dec 18-19, 2019, Beijing University, Beijing, China.
- New Covariate-adaptive Designs and their Statistical Inference. *The Eleventh Beijing Biostatistics conference*. Dec 14, 2019, Beijing, China.
- Data Science in the AI and Big Data Era, *The 9th International Forum on Statistics*, June 29-30, 2019, Renmin University of China, Beijing, China.
- Program Committee, *The 9th International Forum on Statistics*, June 29-30, 2019, Renmin University of China, Beijing, China.
- Design of Experiments in Big Data Era. *New Challenges and Journeys for Statistics in Science Discovery Workshop*. April 20, 2019, UIUC, USA.
- AI, Big Data and Data Science. *The 2018 International Workshop on Data Science*. Dec 12, Shenzhen, China.
- How to Design Big Comparative Studies? *Workshop of new advances in Statistics and Data Science*, Dec 10-11, Northeast Normal University, Changchun, China.
- Statistical Inference of Covariate-Adjusted Randomized Experiments. *Innovative Statistics and Machine Learning in Precision Medicine*. Nov 7-9, 2018, Institute for Mathematics and its Applications (IMA), Minneapolis, USA.
- Program Committee. *Innovative Statistics and Machine Learning in Precision Medicine*. Nov 7-9, 2018, Institute for Mathematics and its Applications (IMA), Minneapolis, USA.
- Statistics in the Big Data and AI Era. *The 2018 International Workshop on Data Science*. Oct 22-23, 2018, Guangzhou, China
- Program Committee, *The 8th International Forum on Statistics*, July 1-2, 2018, Renmin University of China, Beijing, China.
- How to Design Big Comparative Studies? Keynote Speaker, *The 8th International Forum on Statistics*, July 1-2, 2018, Renmin University of China, Beijing, China.
- Producing Useful Data at AI and Big Data Era. *The 2018 International Workshop on Mathematical Science*. June 11-14, Shanghai, China.

- How to Design Experiments in the Big Data Era? *International Forum of Statistical Methods on Big Data*, May 20-22, 2018, Fudan University, Shanghai, China.
- Adaptive Designs for Big Comparative Studies. *Workshop on Design of Experiments*, April 30 to May 4, 2018, CIRM, Marseilles, France
- Balance Many Important Covariates In Big Comparative Studies, *International Workshop of Big Data and Machine Learning*, March 16-17, 2018, Fudan University, Shanghai, China.
- Post-Randomization Statistical Inference, *2017 International Conference on Data Science, Fudan Science and Innovation Forum*, Dec 17-19, 2017, Fudan University, Shanghai, China.
- New Biomarker-Adaptive Designs of Clinical Trials for Precision Medicine. *Innovative Statistics and Machine Learning in Precision Medicine*. Sept 14-16, 2017, Institute for Mathematics and its Applications (IMA), Minneapolis, USA.
- New biomarker-adaptive designs of clinical trials for precision medicine. *Joint Statistical Meeting, 2017*, July 30-Aug 3, 2017, Baltimore, USA
- New covariate-adaptive designs for precision medicine. *The 5th Workshop on Biostatistics and Bioinformatics*, May 5-7, 2017, Atlanta, USA
- New methods for balancing many covariates. *Mathematics and Statistics in Medical Imaging Applications and Big Data Integration Workshop at TSIMF*, Dec 26-30, 2016, Sanya, China.
- New adaptive designs for precision medicine. *The 10th ICSA International Conference*. Dec 19-22, 2016. Shanghai, China.
- The Role of Statistics in the Big Data Era. *The 2016 International Workshop on Mathematical Issues in Information Sciences (MIIS)*. Dec 17-20, 2016, Shenzhen, China.
- Developing Precision Medicine: Some Statistical Challenges. *The Eighth Beijing Biostatistics conference*. Dec 17. 2016, Beijing, China.
- From Big Data to Precision Medicine: The role of statisticians. *The Fourth IMS (Institute of Mathematical Statistics) Asia Pacific Rim Meetings*, Hong Kong, China, June 27 - July 1, 2016.
- New Covariate-adjusted Response-adaptive designs for Precision Medicine *25th ICSA Applied Statistics Symposium*, June 12-15, 2016, Atlanta, Georgia, USA.
- Developing Precision Medicine: Some Statistical Challenges. *International Workshop on emerging topics in statistics*. June 6, 2016, Zhejiang University, Hangzhou, China.
- Adaptive design and precision medicine. *Designed Experiments: Recent Advances In Methods And Applications*, Dec 14-17, 2015, Sydney, Australia.
- Group Sequential Response-Adaptive Designs. *JSM 2015*, Aug 8- 13, 2015, Seattle, Washington, USA.
- Non-parametrical Response-Adaptive Designs. *Joint 24th ICSA Applied Statistics Symposium and 13th Graybill Conference.*, June 14-17, 2015, Fort Collins, Colorado, USA.

- Statistical Issues of Personalized Medicine and Big Data. *The Sixth Beijing Biostatistics conference*. Dec 6. 2014, Beijing, China.
- Personalized Medicine and Big Data. *International conference on Big Data*. Nov 1-4, 2014, Shanghai, China.
- New Designs of Modern Clinical Trials. *Workshop of Advance Statistics*. Oct 24, Chengdu, China.
- Co-chair of scientific program committee, The Third IMS (Institute of Mathematical Statistics) Asia Pacific Rim Meetings, Chinese Taipei, June 30 - July 3, 2014.
- Adaptive Designs. *Workshop of Quantile Regression and related field*. May 6-9, Kunming, China.
- Statistical Inference of Covariate-Adaptive Randomized Clinical Trials. *ICSA conference of Statistics*. Dec 20-24, 2013. Hong Kong, China.
- Clinical Trials for Personalized Medicine: Designs and Inference. *Workshop of Advance Statistics*. Dec 19, Hong Kong, China.
- Covariate-Adaptive Designs for Personalized Medicine. *International conference of Experiment Design*. Dec 14-17. Guangzhou, China.
- Adaptive Designs and Personalized Medicine. *The Fifth Beijing Biostatistics conference*. Dec 7. 2013, Beijing, China.
- Adaptive Designs of Modern Clinical Trials. *the DIA/CFDA CDE quantitative science forum*. Oct 20-21. 2013, Beijing, China.
- Adaptive Designs for Personalized Medicine. *Statistical Modeling, Theory & Application Conference*, Oct 7-17, Fudan University, Shanghai, China.
- Statistical Inference of Covariate-Adaptive Randomized Clinical Trials. *A Workshop of Biostatistics*. July 5-9, 2013, Changchun, China.
- Balancing Many Important Covariates in Clinical Trials. *The 7th Research Symposium on Frontiers of Statistics*. June 27-30, 2013, Beijing, China.
- Clinical Trials for Personalized Medicine: New Designs and Their Properties. *ICSA/ISBS Joint Statistical Conference*. June 9-June 12, 2013, Washington, DC, USA.
- New Designs for Modern Clinical Trials. *The Research Symposium on Clinical Trial*. June 7-June 9, 2013, Beijing, China.
- Clinical Trials for Personalized Medicine: New Designs and Statistical Inference. Keynote Speaker of *Workshop of Statistical Methods in Clinical Trials*. Dec 8, 2012, Beijing, China.
- Some statistical issues of Personalized Medicine. Keynote Speaker of *Fifth International Conference on Statistics and Society*. July 14-15, 2012, Beijing, China.

- Clinical Trials for Personalized Medicine: Some Statistical Challenges, *The Second IMS (Institute of Mathematical Statistics) Asia Pacific Rim Meetings*, Tokyo, Japan. July 1-4, 2012.
- Covariate-adaptive Designs For Personalized Medicine, *The Research Symposium on Frontiers of Statistics*, Kunming, China, June 25-28, 2012.
- Covariate-adaptive Designs For Personalized Medicine, *IMS/ASA Spring Research Conference 2012: Enabling the Interface between Statistics & Engineering*. Jointly hosted/organized by the Department of Statistics and the School of Engineering & Applied Sciences (SEAS), Harvard University, USA, June 13-15, 2012.
- Clinical Trials for Personalized Medicine: Some Important Statistical Issues, *ASA/VAS Chapter Meeting 2012*. Norfolk, VA, USA, May 24, 2012.
- Clinical Trials for Personalized Medicine: Designs and Statistical Inference. *Workshop on Design and Analysis of Clinical Trials* IMS, National University of Singapore, Singapore, Oct 24-28, 2011.
- Series invited lectures on: ‘Adaptive designs in clinical trials’ at Summer school in Mathematics, Tenjin, China. Aug 1- Aug 5, 2011.
- Clinical Trial Designs for Personalized (Future) Medicine, *The Research Symposium on Frontiers of Statistics*, Hefei city, China, July 13, 2011 - July 18, 2011.
- Covariate-adaptive Randomization in Medical Studies. *The Third IMS-China International Conference on Statistics and Probability*. XiAn, China, July 8-11, 2011.
- Clinical Trials For Personalized Medicine: Some Statistical Challenges , *Workshop on Graphical Models and Related Topics*, Changchun, China, July 1-2, 2011.
- Interim analysis of response-adaptive randomized clinical trials. *2011 ENAR/IMS Spring Meetings*, Miami, FL, USA. March 20-23, 2011.
- Response-Adaptive Randomized Clinical Trials: Design and Inference, Keynote Speaker of the *Southern Regional Council on Statistics Summer Research Conference* at Norfolk, VA, June 6-9, 2010.
- Weighted Randomization Test for Multi-Arm Randomized Clinical Trials, *Joint Statistics Meetings of ASA, IMS, IBS and SSC*. Vancouver, Canada, Aug 1-5, 2010.
- Organizer and speaker of the invited session: Adaptive designs and clinical trial. *the International Conference on Statistics and Society*. Beijing, China, July 10-12, 2010.
- Organizer of the invited session: Response adaptive design and its applications. *the International Conference on Statistical Analysis of Complex Data*. Kunming, China, July 1-3, 2010.
- Covariate-adjusted response-adaptive randomization. *Design and Analysis of Experiments Conference: DAE 2009* Columbia, Missouri, USA. October 14-17, 2009
- Organizer of the invited session: Covariate-adjusted response adaptive (CARA) randomization in clinical trial. *Design and Analysis of Experiments Conference: DAE 2009* Columbia, Missouri, USA. October 14-17, 2009

- Re-randomization test and computational issues. *Workshop on computational statistics*. Changchun, China. July 7-9, 2009
- Why Adaptive?– Adaptive designs and response-adaptive randomization *The Second IMS-China International Conference on Statistics and Probability*. Weihai, China, July 4-6, 2009.
- Power, sample size and adaptive randomization. *The second International Workshop in Sequential Methodologies (IWSM)*. Troyes, France, June 15-17, 2009.
- Sequential monitoring response-adaptive randomized clinical trials. *2009 ENAR/IMS Spring Meetings*, San Antonio, TX, USA. March 15-18, 2009.
- Professor Bai's main contribution in urn model. *Conference in honor of Professor Bai Zhidong on his 65th Birthday*. Singapore, July 20, 2008.
- Response-adaptive randomization in Clinical trial. *The First Annual Symposium of The International Society for Biopharmaceutical Statistics*. Shanghai, China, June 30- July 2, 2008.
- Adaptive Designs in Clinical Trials, Plenary Speaker of *International Conference on Frontiers in Biostatistics and High Dimensional Data Analysis*. Shanghai, June 14, 2008.
- Organizer of the invited session: Likelihood methods. *IMS-China International Conference on Statistics and Probability*. Hangzhou, China, June 11-13, 2008.
- Weighted likelihood and its applications. *IMS-China International Conference on Statistics and Probability*. Hangzhou, China, June 11-13, 2008.
- Series lectures on 'Response-adaptive randomization in clinical trials: theory and application' at the Sixty-third Annual Deming Conference on Applied Statistics. Atlantic City, USA. Dec 3-5, 2007.
- Adaptive randomization in clinical trials. *Biostatistics Workshop at IMS, Singapore*, Oct 25, 2006. Singapore.
- Adaptive randomization in clinical trials. *International conference on frontiers of Statistics, Biostatistics and Bioinformatics*, July 7-9, 2006. Changchun, China.
- Organizer of the invited session: Adaptive randomizations in clinical trials. *The ICOSA (International Chinese Statistical Association) 2006 Applied Statistics Symposium*, June 14-17, 2006. USA.
- Series lectures on: 'Sequential design and analysis with application to clinical trials' at Summer school in Statistics and Probability, Torgnon, Italy. July 3-22, 2005.
- Sample size and power of randomized clinical trials. *Statistical Program of IMS (Institute for Mathematical Science)*, March 3, 2005. Singapore.
- Doubly adaptive biased coin designs. *The 6th ICOSA (International Chinese Statistical Association) International Conference*, July 21-23, 2004. Singapore.

- Organizer of the invited session: Response-adaptive designs in clinical trials. *The 6th ICOSA (International Chinese Statistical Association) International Conference*, July 21-23, 2004. Singapore.
- Robust sample size for sequential design. *International conference on Robust Statistics*, July 12-16, 2004. Beijing, China.
- Weighted Likelihood and its Applications. *Annual Meeting of SSC (Statistical Society of Canada)*, May 30-June 2, 2004. Montreal, Canada.
- Response-adaptive randomization: Maximizing power and minimizing treatment failures in clinical trial. *A Workshop on Adaptive Design*, Sept 25-27, 2003, Toronto, Canada.
- Handling delayed response in response-adaptive randomization procedures, *International Conference on Reliability and Survival Analysis 2003*, Columbia, South Carolina, USA (with Rosenberger).
- Optimality, variability, power: Evaluating response-adaptive randomization procedures for treatment comparisons. *International Conference on Reliability and Survival Analysis 2003*, Columbia, South Carolina, USA (with Rosenberger).
- Optimal adaptive designs for clinical trial, *The 5th ICOSA Statistical Conference*, Hong Kong, China, 2001.
- Joint keynote speaker of the SSC (Statistical Society of Canada) Annual Meeting at Ottawa, June, 2000. Hu, F. and Kalbfleisch, J.D., Title: ‘Estimating function bootstrap’.
- Markov chain marginal bootstrap, *Joint Statistics Meetings of ASA, IMS, IBS and SSC*. Indianapolis, Indiana, 2000 (with He).
- Relevance weighted likelihood and applications, *Joint Statistics Meetings of ASA, IMS, IBS and SSC*. Baltimore. Maryland, 1999 (with Zidek).
- Weighted likelihoods as a solution to heterogeneity in adaptive designs, *Joint Statistics Meetings of ASA, IMS, IBS and SSC*. Baltimore. Maryland, 1999 (with Rosenberger).
- Estimating function bootstrap of M-estimators. *The 4th ICOSA Statistical Conference*, Kunming, China, 1998.
- Relevance weighted likelihood. *Joint Statistical Meetings of IMS (58th Annual Meeting) and SSC*, The presentation of Pierre Robillard Award. Montreal, Quebec, 1995.

Invited Presentations at Universities:

- Since 1995, I have been invited to give talks at over 100 universities internationally.

Consulting:

- At George Washington University, I had worked on several consulting projects for both pharmaceutical, IT and financial companies. Currently I am also providing consulting service to pharmaceutical, IT and financial companies.
- At George Washington University, I have taught the statistical consulting courses since 2015 and have involved over 30 statistical consulting projects.
- At University of Virginia, I had taught the statistical consulting class for 6 years and had involved over 30 statistical consulting projects.
- At University of Virginia, I had worked on several statistical consulting projects for both pharmaceutical and financial companies.
- At National University of Singapore, I did some statistical consulting projects for Singapore Government and provided some free consulting projects inside university.

Teaching:

- Classes taught at George Washington University: STAT 6201, STAT6215, STAT6216, STAT6245, STAT6289, STAT8263, STAT8264, STAT8289.
- Classes taught at University of Virginia: APMA312, STAT596, STAT796, STAT519, STAT719, STAT711, STAT512, STAT513, STAT831, STAT5310, STAT5559, STAT7110, STAT7120, STAT7200, STAT7220,
- Class taught at Cornell: BTRY603
- Classes taught at National University of Singapore: ST2131, ST4213, ST5209, ST5215, GM203, MH443, MA340, MA2217, MA4243. MA5284.

Professional Service:

- Co-Chair, Workshop on Quantum Computing and Its Applications, March 16, 2017. Department of Statistics, George Washington University.
- Co-Chair, Workshop on the statistical analysis of multiple outcome data, July 4-5, 2016, Renmin University of China, Beijing, China.
- Co-chair of scientific program committee, the Third IMS (Institute of Mathematical Statistics) Asia Pacific Rim Meetings, Chinese Taipei, 2014.
- Co-chair of the IMS (Institute of Mathematical Statistics) Committee on Asia and Pacific Rim Meetings, 2012-2014.
- Member of program committee, The Ninth ICSA International Conference: Challenges of Statistical Methods for Interdisciplinary Research and Big Data, Hong Kong, Dec 20-23, 2013.
- Member of the subcommittee for the Asia Pacific Rim conference of Institute of Mathematical Statistics, 2009.

- Co-chair of scientific program committee, the First IMS (Institute of Mathematical Statistics) Asia Pacific Rim Meetings, Seoul, Korea. June 28-July 1, 2009.
- Member of the ICSA nomination and election committee, International Chinese Statistical Association, 2009.
- Co-chair of the IMS (Institute of Mathematical Statistics) Committee on Asia and Pacific Rim Meetings, 2007-2010.
- Co-organizer of the conference in honor of Professor Bai Zhidong on his 65th Birthday. Singapore, July 20, 2008.
- Chairman of the ICSA nomination and election committee, International Chinese Statistical Association (2007, 2008).
- External reviewer of the new PhD program (Statistical Science), George Mason University, 2006.
- Member of the ICSA nomination and election committee, International Chinese Statistical Association (2004-2006).

Service in George Washing University:

- Chair of search committee, Department of Statistics, George Washington University (2018-2019).
- Member of Deans Research Chair review committee, CCAS, George Washing University, 2019.
- Chair of search committee, Department of Statistics, George Washington University (2016-2017).
- Member of Deans Research Chair review committee, CCAS, George Washing University, 2017.
- Graduate director of PhD program, Department of Statistics, George Washington University, 2016-present.
- Graduate Advisor of Master program, Department of Statistics, George Washington University, 2013-2015.
- Member of departmental tenure and promotion committee, Department of Statistics, George Washing University, 2014.
- Member of departmental search committee, Department of Statistics, George Washing University, 2014.

Service in University of Virginia:

- Chair of departmental chairman search committee, Department of Statistics, University of Virginia (2012-2013).

- Member of statistics personnel committee, Department of Statistics, University of Virginia (2012-2013).
- Chair of departmental tenure and promotion committee, Department of Statistics, University of Virginia (2011).
- Director of graduate program, Department of Statistics, University of Virginia, 2009-2011.
- Chair of departmental tenure and promotion committee, Department of Statistics, University of Virginia (2010).
- Chair of departmental third-year review committee, Department of Statistics, University of Virginia (2007-2009).
- Member of departmental search committee, Department of Statistics, University of Virginia (2008-2009).
- Member of departmental search committee, Department of Statistics, University of Virginia (2004-2006).
- Member of Faculty Rules Committee, College of Arts and Sciences, University of Virginia (2004-2006).
- Member of biostatistics search committee, Division of Biostatistics and Epidemiology, Department of Health Evaluation Science, University of Virginia School of Medicine (2003-2005).
- Organizer of the department's weekly seminar, Department of Statistics, University of Virginia (2001-2005).
- Chairman of the summer session, Department of Statistics, University of Virginia (2003).
- Departmental library liaison, University of Virginia (2001-2004).

Public Service:

- Member of NHLBI Data and Safety Monitoring Board (DSMB), the PRone and OScillation PEdiatric Clinical Trial (PROSpect) BOARD, NIH, 2018-present.
- Member of Data and Safety Monitoring Board (DSMB), International Pharmaceutical Companies., 2017 - present.
- Principal (2004-2005), Central Virginia Chinese School, 13501 N Gayton Road, Richmond, USA