

# Pang Du

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## Education

**Ph.D., Statistics** (2006), Purdue University, West Lafayette, IN  
**M.S.E., Computer Science** (2002), The Johns Hopkins University, Baltimore, MD  
**M.A., Mathematics** (2002), The Johns Hopkins University, Baltimore, MD  
**M.S., Mathematics** (1999), University of Science and Technology of China, Anhui, China  
**B.S., Mathematics** (1996), University of Science and Technology of China, Anhui, China

## Research Interests

**Functional data analysis; Nonparametric smoothing; Survival Analysis; High dimensional data; ROC curve methodology.**

## Professional Experience

**Professor**, Department of Statistics, Virginia Tech, 2023 - Present  
**Associate Professor**, Department of Statistics, Virginia Tech, 2012 - 2023  
**Associate Department Head**, Department of Statistics, Virginia Tech, Apr 2018 - Aug 2019  
**Assistant Professor**, Department of Statistics, Virginia Tech, 2006 - 2012

## Honors

**Elected Member** of the International Statistical Institute (since 2011).  
**Honorable Paper Award**, Section on Nonparametric Statistics, American Statistical Association. Baltimore, Maryland. July 30 - August 3, 2017.  
**Honorable Paper Award**, Section on Statistics in Epidemiology, American Statistical Association. Salt Lake City, Utah. July 29 - August 2, 2007.  
**Best Paper Award**, International Chinese Statistical Association 2006 Applied Statistics Symposium. Storrs, Connecticut. June 14-17, 2006.  
**Ross Assistantship**, Purdue University, August 2002 - August 2006.

## Professional Memberships

**American Statistical Association (ASA)**, 2004-Present  
**Institute of Mathematical Statistics (IMS)**, 2004-Present  
**International Biometric Society, Eastern North American Region (IBS-ENAR)**, 2005-Present  
**International Chinese Statistical Association (ICSA)**, 2005-Present  
**Mu Sigma Rho** (National Statistical Honor Society), 2006-Present

## Publications

**Note:** Names with “\_\_” were PhD students at the completion of the paper.

- [57] Du, Z., **Du, P.**, and Liu, A. (2024). Likelihood ratio combination of multiple biomarkers via smoothing spline estimated densities. *Statistics in Medicine*, to appear.
- [56] Jin, Z., Min, J., Hong, Y., **Du, P.**, and Yang, Q. (2024). Multivariate functional clustering with variable selection and application to sensor data from engineering systems. *INFORMS Journal on Data Science*, to appear.
- [55] Do, Q. and **Du, P.** (2023). Contrast tests for groups of functional data. *Canadian Journal of Statistics*, to appear.
- [54] Xing, X., Shang, Z., **Du, P.**, Ma, P., Zhong, W., and Liu, J. S. (2023). Minimax nonparametric multi-sample test under smoothing. *Statistica Sinica*, to appear.
- [53] **Du, P.**, Parmeter, C. F., and Racine, J. S. (2023). Shape constrained kernel PDF and PMF estimation. *Statistica Sinica*, to appear.
- [52] Leung, J. M., Rojas, J. C., Tang, C., Chan, B., Lario-Lago, A., Boxer, A. L., Do, Q., Kramer, J. H., Du, Z., **Du, P.**, Sands, L. P., Perioperative Medicine Research Group (2023). Presence of preoperative neurodegeneration biofluid markers in patients with postoperative delirium. *Anesthesiology* 139, 432-443.
- [51] Jin, H., Sun, X., and **Du, P.** (2023). Optimal function-on-function regression with interaction between functional predictors. *Statistica Sinica* 33(2), 1047–1068.
- [50] Robertson, J., Senger, R., Talty, J., **Du, P.**, Sayed Issa, A., Avellar, M., Ngo, L., Gomez de la Espriella, M., Fazili, T., Jackson-Akers, J., Guruli, G. (2022). Alterations in the molecular composition of COVID-19 patient urine, detected using Raman spectroscopic/computational analysis. *PloS ONE* 17(7): e0270914.
- [49] De Vita, R., Huntington, A., Udayasuryan, B., **Du, P.**, Verbridge, S., and Abramowitch, S. (2022). Smooth muscle organization and nerves in the rat vagina: a first look using tissue clearing and immunolabeling. *Annals of Biomedical Engineering* 50(4), 440–451.
- [48] Xu, Y., **Du, P.**, Robertson, J., and Senger, R. (2022). Sparse logistic regression on functional data. *Statistics and Its Interface* 15(2), 171–179.
- [47] **Du, P.** (2022). Invited discussion of “Estimation of Hilbertian varying coefficient models” by Lee, Park, Hong and Kim. *Statistics and Its Interface* 15(2), 151–151.
- [46] Sands, L. P., Do, Q., **Du, P.**, and Pruchno, R. (2022). Peritraumatic stress from a disaster increases risk for onset of chronic diseases among older adults. *Innovation in Aging* 6(1), 1–11.
- [45] Sands, L. P., Do, Q., **Du, P.**, Xu, Y., and Pruchno, R. (2022). Long term impact of Hurricane Sandy on hospital admissions of older adults. *Social Science & Medicine* 293, 114659.
- [44] Guron, G. K., Chen, C., **Du, P.**, Pruden, A., and Ponder, M. (2021). Manure-based amendments influence surface-associated bacteria and markers of antibiotic resistance on radishes grown in soils with different textures. *Applied and Environmental Microbiology* 87(10), e02753-20.
- [43] Tabatabai, S., Do, Q., Min, J., Tang, C. J., Pleasants, D., Sands, L. P., **Du, P.**, and Leung, J. M. (2021). Obesity and perioperative outcomes in older surgical patients undergoing elective spine and major arthroplasty surgery. *Journal of Clinical Anesthesia* 75, 110475.
- [42] Charlton, J., **Du, P.**, and Xu, S. (2021). A new method for inferring ground-truth labels and malware detector effectiveness metrics. *The International Conference on Science of Cyber Security - SciSec 2021*.
- [41] Wang, L., **Du, P.**, and Jin, R. (2021). MOSS: multi-modal best subset modeling in smart manufacturing. *Sensors* 21(1), 1–18.
- [40] Xu, Y., **Du, P.**, Senger, R., Robertson, J., and Pirkle, J. (2021). ISREA: An efficient peak-preserving baseline correction algorithm for Raman spectra. *Applied Spectroscopy* 75(1), 34–45.

- [39] Sun, J., **Du, P.**, Miao, H., and Liang, H. (2020). Robust feature screening procedures for single and mixed types of data. *Journal of Statistical Computation and Simulation* 90(7), 1173–1193.
- [38] Huttanus, H.M., Vu, T., Guruli, G., Tracey, A., Carswell, W., Said, N., **Du, P.**, Parkinson, B.G., Orlando, G., and Robertson, J.L. (2020). Raman chemometric urinalysis (Rametrix) as a screen for bladder cancer. *PLoS ONE* 15(8): e0237070.
- [37] Senger, R. S., Sullivan, M., Gouldin, A., Lundgren, S., Merrifield, K., Steen, C., Baker, E., Vu, T., Agnor, B., Martinez, G., Coogan, H., Carswell, W., Kavuru, V., Karageorge, L., Dev, D., **Du, P.**, Sklar, A., Pirkle, J., Guelich, S., Orlando, G., and Robertson, J. L. (2020). Spectral characteristics of urine from patients with end-stage kidney disease analyzed using Raman chemometric urinalysis (Rametrix). *PLoS ONE* 15(1): e0227281.
- [36] Li, M., Knolton, K., Pruden, A., Ponder, M., Xia, K., Teets, C., and **Du, P.** (2020). Fate of pirlimycin and antibiotic resistance genes in dairy manure slurries in response to temperature and pH adjustment. *Science of the Total Environment* 710:136310.
- [35] Gao, Z., **Du, P.**, Jin, R., and Robertson, J. L. (2020). Surface temperature monitoring in liver procurement via functional variance change point analysis. *Annals of Applied Statistics* 14(1), 143–159.
- [34] Chen, C., Pankow, C. A., Oh, M., Heath, L. S., Zhang, L., **Du, P.**, Xia, K., and Pruden, A. (2019). Effect of antibiotic use and composting on antibiotic resistance gene abundance and resistome risks of soils receiving manure-derived amendments. *Environment International* 128, 233–243.
- [33] Senger, R. S., Kavuru, V., Sullivan, M., Gouldin, A., Lundgren, S., Merrifield, K., Steen, C., Baker, E., Vu, T., Agnor, B., Martinez, G., Coogan, H., Carswell, W., Karageorge, L., Dev, D., **Du, P.**, Sklar, A., Orlando, G., Pirkle, J., and Robertson, J. L. (2019). Spectral characteristics of urine specimens from healthy human volunteers analyzed using Raman chemometric urinalysis (Rametrix). *PLoS ONE* 14(9): e0222115.
- [32] Gao, Z., Shang, Z., **Du, P.**, and Robertson, J. L. (2019). Variance change point detection under a smoothly-changing mean trend with application to liver procurement. *Journal of the American Statistical Association* 114(526), 773–781.
- [31] Chen, C., Guron, G. K., Pruden, A., Ponder, M., **Du, P.**, and Xia, K. (2018). Antibiotics and antibiotic resistance genes in bulk and rhizosphere soils subject to manure amendment and vegetable cultivation. *Journal of Environmental Quality* 47(6), 1318–1326.
- [30] Charlton, J., **Du, P.**, Cho, J.-H., and Xu, S. (2018). Measuring relative accuracy of malware detectors in the absence of ground truth. *IEEE MILCOM 2018*.
- [29] **Du, P.**, Sun, Z., Chen, H., Cho, J.-H., and Xu, S. (2018). Statistical estimation of malware detection metrics in the absence of ground truth. *IEEE Transactions on Information Forensics and Security* 13(12), 2965–2980.
- [28] Wind, L., Krometis, L.-A., Hession, W. C., Chen, C., **Du, P.**, Jacobs, K., Xia, K., and Pruden, A. (2018). Fate of pirlimycin and antibiotic-resistant fecal coliforms in field plots amended with dairy manure or compost during vegetable cultivation. *Journal of Environmental Quality* 47, 436–444.
- [27] Chen, T. and **Du, P.** (2018). Promotion time cure rate model with nonparametric form of covariate effects. *Statistics in Medicine* 37(10), 1625–1635.
- [26] Chen, T. and **Du, P.** (2018). Mixture cure rate models with accelerated failures and nonparametric form of covariate effects. *Journal of Nonparametric Statistics* 30(1), 216–237.
- [25] Sun, X., **Du, P.**, Wang, X., and Ma, P. (2018). Optimal penalized function-on-function regression under a reproducing kernel Hilbert space framework. *Journal of the American Statistical Association* 113(524), 1601–1611.
- [24] **Du, P.** (2014). Invited discussion of “Sparse semiparametric nonlinear model with application to chromatographic fingerprints” by Wiezbicki, Guo, Du and Guo. *Journal of the American Statistical Association* 109, 1349–1350.

- [23] Lian, H., **Du, P.**, Li, Y., and Liang, H. (2014). Partially linear structure identification in generalized additive models with NP-dimensionality. *Computational Statistics and Data Analysis* 80, 197–208.
- [22] **Du, P.**, Wu, P., and Liang, H. (2014). Variable selection for ultra-high dimensional logistic models. *Contemporary Mathematics* 622, 141–158.
- [21] Searle, C. L., Belden, L. K., **Du, P.**, and Blaustein, A. R. (2014). Stress and chytridiomycosis: Exogenous exposure to corticosterone does not alter amphibian susceptibility to a fungal pathogen. *Journal of Experimental Zoology Part A: Ecological Genetics and Physiology* 321(5), 243–253.
- [20] Chen, Y., **Du, P.**, and Wang, Y. (2014). Variable selection in linear models. *WIREs Computational Statistics* 6, 1–9.
- [19] **Du, P.** and Wang, X. (2014). Penalized likelihood functional regression. *Statistica Sinica* 24(2), 1017–1041.
- [18] Wang, X., **Du, P.**, and Shen, J. (2013). Smoothing splines with varying smoothing parameter. *Biometrika* 100(4), 955–970.
- [17] Chambers, D. L., Wojdak, J. M., **Du, P.**, and Belden, L. K. (2013). Pond acidification may explain differences in corticosterone among salamander populations. *Physiological and Biochemical Zoology* 86(2), 224–232.
- [16] **Du, P.**, Parmeter, C. F., and Racine, J. S. (2013). Nonparametric kernel regression with multiple predictors and multiple shape constraints. *Statistica Sinica* 23(3), 1347–1371.
- [15] **Du, P.** (2012). Invited book review for “Smoothing Splines: Methods and Applications” by Yuedong Wang, *Biometrics* 68, 1327–1328.
- [14] Liang, H. and **Du, P.** (2012). Maximum likelihood estimation in logistic regression models with a diverging number of covariates. *Electronic Journal of Statistics* 6, 1838–1846.
- [13] **Du, P.**, Cheng, G., and Liang, H. (2012). Semiparametric regression models with additive nonparametric components and high dimensional parametric components. *Computational Statistics and Data Analysis* 56, 2006–2017.
- [12] Ma, S. and **Du, P.** (2012). Variable selection in partly linear regression model with diverging dimensions for right censored data. *Statistica Sinica* 22, 1003–1020.
- [11] Wang, L., **Du, P.**, and Liang, H. (2012). Two-component mixture cure rate model with spline estimated nonparametric components. *Biometrics* 68, 726–735.
- [10] Chambers, D. L., Wojdak, J. M., **Du, P.**, and Belden, L. K. (2011). Corticosterone level changes throughout larval development in the amphibians *Rana sylvatica* and *Ambystoma jeffersonianum*. *Copeia* 2011(4), 530–538.
- [9] **Du, P.**, Jiang, Y., and Wang Y. (2011). Smoothing spline ANOVA frailty model for recurrent event data. *Biometrics* 67, 1330–1339.
- [8] Tang, L., **Du, P.**, and Wu, C. (2010). Compare diagnostic tests using transformation-invariant smoothed ROC curves. *Journal of Statistical Planning and Inference* 140, 3540–3551.
- [7] Woodall, W. H., Birch, J. B., and **Du, P.** (2010). Discussion of Nonparametric profile monitoring by mixed effects modeling by Qiu, Zou and Wang. *Technometrics* 52, 285–287.
- [6] **Du, P.**, Ma, S. and Liang, H. (2010). Penalized variable selection procedure for Cox models with semiparametric relative risk. *Annals of Statistics* 38, 2092–2117.
- [5] **Du, P.** and Ma, S. (2010). Frailty model with spline estimated nonparametric hazard function. *Statistica Sinica* 20, 561–580.
- [4] **Du, P.** and Tang, L. (2009). Transformation-invariant and nonparametric monotone smooth estimation of ROC curves. *Statistics in Medicine* 28, 349–359.
- [3] **Du, P.** (2009). Nonparametric modeling of the gap time in recurrent event data. *Lifetime Data Analysis* 15, 256–277.
- [2] **Du, P.** and Gu, C. (2009). Penalized pseudo-likelihood hazard estimation: a fast alternative to penalized likelihood. *Journal of Statistical Planning and Inference* 139, 891–899.

- [1] **Du, P.** and Gu, C. (2006). Penalized likelihood hazard estimation: efficient approximation and Bayesian confidence intervals. *Statistics and Probability Letters* 76: 244–254.

## Grants

### CURRENT

- [2] Agency: University of Virginia  
 Amount: \$12,544 (05/01/2023 - 01/31/2024)  
 Title: *Equanimity in education: A functional data analysis approach*  
 Role: Principal Investigator (\$12,544 for VT, 100% credit for Du)  
 PI: Tara Hofkens (University of Virginia)  
 Description: Conduct functional data analysis on data from education experiments on equanimity.
- [1] Agency: National Institute of Health  
 Amount: \$3,447,241 (07/28/2021 - 05/31/2026)  
 Title: *Clinically assessed risk factors for a second ACL injury using an innovative wearable sensor* (1R01AR078811-01)  
 Role: Co-Investigator (\$2,905,233 for VT, 5% credit for Du + a full-year statistics GRA)  
 PI: Robin Queen (VT ME)  
 Description: Develop prognostic models from traditional and novel clinical measures to predict second ACL injury.

### AWARDED

- [8] Agency: Carilion Clinic  
 Amount: \$31,357 (01/12/2022 - 01/11/2023)  
 Title: *Detecting renal complications associated with COVID-19 infections using Raman molecular urinalysis*  
 Role: Senior Personnel (\$25,000 for VT, 0% credit for Du)  
 PI: Mariana Gomez, M.D. (Carilion Clinic)  
 Description: Use Raman molecular urinalysis to study and characterize potential renal complications in hospitalized COVID-19 patients.
- [7] Agency: National Science Foundation  
 Amount: \$160,005 (08/15/2019 - 07/31/2022)  
 Title: *Collaborative Research: A symphony of smoothing and change point analysis*  
 Role: Principal Investigator (\$160,005 for VT, 100% credit for Du, DMS-1916174)  
 Description: Develop a suite of statistical methods for retrospective change point analysis with the aid of smoothing.
- [6] Agency: National Science Foundation  
 Amount: \$454,426 (08/01/2016 - 07/31/2020)  
 Title: *Collaborative Research: Analysis of longitudinal multi-scale data in immunological bioinformatics — Feature selection, graphical models, and structure identification*  
 Role: Principal Investigator (\$125,226 for VT, 100% credit for Du, DMS-1620945)  
 Joint PIs: Hua Liang (George Washington University),  
 Hongyu Miao (University of Texas Health Sciences Center at Houston)  
 and Haoquan Wu (Texas Tech University Health Sciences Center).  
 Description: Develop a suite of statistical methods for analyzing longitudinal multi-scale data in immunological bioinformatics.

- [5] Agency: U.S. Department of Agriculture  
Amount: \$278,911 (01/01/2018 - 12/31/2020)  
Title: *Training future leaders to solve resource challenges at the confluence of water and society*  
Role: Senior Personnel (\$278,911 for VT, 0% credit for Du)  
PIs: W. Cully Hession (VT BSE), Leigh-Anne Krometis (VT BSE),  
Brian Badgley (VT CSES), Amber Vallotton (VT VCE)  
Description: Summer research experience for undergraduate students.
- [4] Agency: Virginia Tech College of Science Dean's Discovery Fund  
Amount: \$18,250 (08/01/2019 - 12/31/2019)  
Title: *Statistical monitoring of Raman spectral data from biomedical studies*  
Role: Principal Investigator (100% credit for Du),  
co-PIs: John Robertson (VT BME) and Ryan Senger (VT BSE).  
Description: Support a GRA to develop a statistical testing procedure for distinguishing two groups of Raman spectra.
- [3] Agency: U.S. Department of Agriculture  
Amount: \$2,250,000 (01/01/2015 - 01/31/2019)  
Title: *Identification and management of critical control points in the spread of antibiotic resistance from animal manure to raw produce*  
Role: Statistical Consultant (\$2,250,000 for VT, 0.5 summer months for Du)  
PIs: Amy Pruden-Bagchi (VT CE), Katherine Knowlton (VT DS),  
Monica Ponder (VT FST), Kang Xia (VT CSES),  
W. Cully Hession (VT BSE), Leigh-Anne Krometis (VT BSE),  
Tiffany Drape (VT ALCE).  
Description: Understand how antibiotic use in livestock is transmitted to antibiotic resistance in humans and design strategies to manage such transmission.
- [2] Agency: National Science Foundation  
Amount: \$200,000 (06/01/2010 - 05/31/2013)  
Title: *Collaborative Research: Nonparametric smoothing for data with multiple components*  
Role: Principal Investigator (\$100,006 for VT, 100% credit for Du, DMS-1007126).  
Collaborative PI: Hua Liang.  
Description: Develop nonparametric smoothing spline methods for data with complex structures.
- [1] Agency: Institute for Biomedical and Public Health Sciences, Virginia Tech  
Amount: \$20,000 (01/01/2009 - 12/31/2009)  
Title: Spatial risk mapping of *Ixodes scapularis* and *Borrelia burgdorferi* in Virginia: Evaluation of risk and spread of Lyme disease  
Role: Co-Principal Investigator.  
PI: Eric Smith.  
Co-PIs: David Gaines, Dana Hawley, Korine Kolivras, Stephen Sedlock.  
Description: Seed money for a project studying the spread of the Lyme disease in Virginia.

## Invited Talks and Department Colloquia

- [55] "Reliability study of battery lives: A functional degradation analysis approach". *The 6th International Conference on Econometrics and Statistics*, Waseda University, Tokyo, Japan, August 3, 2023.
- [54] "Reliability study of battery lives: A functional degradation analysis approach". *Academy of Mathematics and System Science, Chinese Academy of Science*, Beijing, China, July 7, 2023.

- [53] “Model-free change point analysis with statistical guarantee”. *The 2023 ICSA Applied Statistics Symposium*, Ann Arbor, MI, June 14, 2023.
- [52] “Sparse graphical modeling of longitudinal data”. *the 10th International Purdue Symposium on Statistics*, West Lafayette, IN, June 7, 2023.
- [51] “Minimax nonparametric multi-sample test under smoothing”. *the 15th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2022)*, King’s College London, London, United Kingdom, December 18, 2022.
- [50] “Minimax nonparametric multi-sample test under smoothing”. *ICSA-Canada Chapter 2022 Symposium*, Banff, Alberta, Canada, July 8, 2022.
- [49] “A sparse functional contrast test with application to medical Raman spectroscopy”. *Department of Statistics, University of Georgia*, Athens, Georgia, January 20, 2022.
- [48] “Minimax nonparametric multi-sample test under smoothing”. *Department of Mathematics, Statistics, and Computer Science, University of Illinois at Chicago*, Chicago, Illinois, November 10, 2021.
- [47] “A sparse follow-up procedure for functional contrast tests”. *The 2021 ICSA Applied Statistics Symposium*, Washington, D. C., September 12, 2021.
- [46] “A new change point analysis problem motivated by a liver procurement study”. *Department of Biostatistics, Bioinformatics, and Biomathematics, Georgetown University Medical Center*, Washington, D. C., March 26, 2021.
- [45] “A new change point analysis problem motivated by a liver procurement study”. *Department of Statistics and Data Science, University of Central Florida*, Orlando, FL, January 22, 2021.
- [44] “Two-sample test on funscalar data with application to hemodialysis monitoring by Raman spectroscopy”. *The 2020 ICSA Applied Statistics Symposium*, Houston, Texas, December 15, 2020.
- [43] “Sparse logistic regression on functional data”. *The 2020 ICSA Applied Statistics Symposium*, Houston, Texas, December 14, 2020.
- [42] “A new change point analysis problem motivated by a liver procurement study”. *Department of Mathematics, University of Arizona*, Tucson, Arizona, December 7, 2020.
- [41] “A new change point analysis problem motivated by a liver procurement study”. *Department of Statistics, University of Georgia*, Athens, Georgia, October 8, 2020.
- [40] “A new change point analysis problem motivated by a liver procurement study”. *Department of Mathematical Sciences, Michigan Technological University*, Houghton, Michigan, October 2, 2020.
- [39] “Two sample test on mixed data”. *Department of Statistics and Actuarial Science, University of Waterloo*, Waterloo, Ontario, Canada, May 7, 2020.
- [38] “Statistical monitoring of hemodialysis treatments via Raman spectral analysis”. *ICSA-Canada Chapter 2019 Symposium*, Kingston, Ontario, Canada, August 10, 2019.
- [37] “Sparse graphical modeling of longitudinal data”. *The 2019 ICSA Applied Statistics Symposium*, Raleigh, North Carolina, June 10, 2019.
- [36] “Surface temperature monitoring in liver procurement via functional variance change point analysis”. *The 4th International Conference on Big Data and Information Analytics*, Houston, Texas, December 17, 2018.
- [35] “Surface temperature monitoring in liver procurement via functional variance change point analysis”. *The 2nd International Conference on Econometrics and Statistics*, The City University of Hong Kong, Hong Kong, June 19, 2018.
- [34] “Variance change point detection under a smoothly-changing mean trend”. *Department of Mathematics, Hong Kong Baptist University*, Hong Kong, June 19, 2018.
- [33] “Variance change point detection under a smoothly-changing mean trend”. *The 1st International Conference on Econometrics and Statistics*, The Hong Kong University of Science and Technology, Hong Kong, June 17, 2017.

- [32] “Variance change point detection under a smoothly-changing mean trend”. *2017 Conference on Advanced Statistics at Jiangxi University of Finance and Economics*, Nanchang, Jiangxi, China, June 11, 2017.
- [31] “Promotion time cure rate model with nonparametric form of covariate effects”. *2017 Conference on Lifetime Data Science*, Storrs, Connecticut, May 26, 2017.
- [30] “Variance change point detection under a smoothly-changing mean trend with application to liver procurement”. *Department of Biostatistics and Epidemiology, University of Pennsylvania*, Philadelphia, Pennsylvania, January 31, 2017.
- [29] “Optimal penalized function-on-function regression under a reproducing kernel Hilbert space framework”. *Department of Statistical Sciences and Operations Research, Virginia Commonwealth University*, Richmond, Virginia, November 17, 2016.
- [28] “Optimal penalized function-on-function regression under a reproducing kernel Hilbert space framework”. *Department of Mathematical Sciences, SUNY at Binghamton*, Binghamton, New York, October 6, 2016.
- [27] “Optimal prediction for functional linear regression with a functional response”. *The 2016 ICSA Applied Statistics Symposium*, Atlanta, Georgia, June 14, 2016.
- [26] “Nonparametric modeling of cure rate data with two-component mixture and promotion time setups”. *Division of Biostatistics, School of Public Health, University of Texas Health Science Center at Houston*, Houston, Texas, January 26, 2016.
- [25] “Cure rate models with nonparametric forms of covariate effects”. *Department of Management Science and Statistics, College of Business, University of Texas at San Antonio*, San Antonio, Texas, February 6, 2015.
- [24] “Cure rate models with nonparametric forms of covariate effects”. *Department of Statistics, University of Virginia*, Charlottesville, Virginia, November 21, 2014.
- [23] “Cure rate models with nonparametric forms of covariate effects”. *Department of Statistics, Purdue University*, West Lafayette, Indiana, October 15, 2014.
- [22] “Cure rate models with nonparametric forms of covariate effects”. *Department of Statistics, University of Minnesota*, Minneapolis, Minnesota, October 9, 2014.
- [21] “Discussion of ‘Sparse Semiparametric Nonlinear Model with Application to Chromatographic Fingerprints’”. *The 2014 Joint Statistical Meeting, JASA Applications and Case Studies Invited Session*, Boston, MA, August 6, 2014.
- [20] “Nonparametric kernel regression with multiple predictors and multiple shape constraints”. *Department of Statistics, University of North Carolina*, Chapel Hill, North Carolina, January 13, 2014.
- [19] “Nonparametric spline models for cure rate data”. *Department of Statistics, North Carolina State University*, Raleigh, North Carolina, October 31, 2013.
- [18] “Mixture cure rate model with nonparametric spline regression components”. *The 2013 Joint Statistical Conference by the International Chinese Statistical Association (ICSA) and the International Society for Biopharmaceutical Statistics (ISBS)*, Washington, D.C., June 10, 2013.
- [17] “Two-component mixture cure rate model with spline estimated nonparametric components”. *Department of Statistics, University of South Carolina*, Columbia, South Carolina, March 7, 2013.
- [16] “Two-component mixture cure rate model with spline estimated nonparametric components”. *International Conference on Advances in Interdisciplinary Statistics and Combinatorics*, Greensboro, North Carolina, October 6, 2012.
- [15] “Two-component mixture cure rate model with spline estimated nonparametric components”. *Department of Biostatistics, Indiana University School of Medicine*, Indianapolis, Indiana, February 24, 2012.
- [14] “Two-component mixture cure rate model with spline estimated nonparametric components”. *Department of Statistics, University of Illinois at Urbana-Champaign*, Champaign, Illinois, September 8, 2011.



- [13] “Variable selection in partly linear censored regression model”. *International Chinese Statistical Association 2011 Applied Statistics Symposium*, New York City, New York, June 28, 2011.
- [12] “Variable selection in semiparametric regression model for right censored data”. *2011 IISA Conference on Probability, Statistics, and Data Analysis*, Raleigh, North Carolina, April 23, 2011.
- [11] “Cure Rate Model with Nonparametric Spline Estimated Components”. *2010 WNAR/IMS Spring Meeting*, Seattle, WA, June 23, 2010.
- [10] “Frailty Model with Spline Estimated Nonparametric Hazard Function”. *Department of Biostatistics and Epidemiology, Center for Clinical Epidemiology and Biostatistics, University of Pennsylvania*, Philadelphia, Pennsylvania, September 9, 2008.
- [9] “Frailty model with spline estimated nonparametric hazard function”. *International Chinese Statistical Association 2008 Applied Statistics Symposium*, Piscataway, New Jersey, June 7, 2008.
- [8] “Nonparametric smoothing spline model for gap time hazard function in recurrent event data”. *Department of Statistics, George Mason University*, Fairfax, Virginia, November 2, 2007.
- [7] “Penalized likelihood frailty model with smooth baseline hazard function”. *The Tenth Meeting of New Researchers in Statistics and Probability*, Salt Lake City, Utah, July 27, 2007.
- [6] “Nonparametric smoothing spline model for gap time hazard function in recurrent event data”. *ICSA 2006 Applied Statistics Symposium*, Storrs, Connecticut, June 15, 2006.
- [5] “Nonparametric smoothing spline model for gap time hazard function in recurrent event data”. *Department of Mathematical Sciences, Indiana University-Purdue University Indianapolis*, Indianapolis, Indiana, March 3, 2006.
- [4] “Nonparametric smoothing spline model for gap time hazard function in recurrent event data”. *Department of Applied Mathematics, University of Colorado at Boulder*, Boulder, Colorado, February 9, 2006.
- [3] “Nonparametric smoothing spline model for gap time hazard function in recurrent event data”. *Department of Statistics, Virginia Tech*, Blacksburg, Virginia, January 31, 2006.
- [2] “Nonparametric smoothing spline model for gap time hazard function in recurrent event data”. *RAND Corporation*, Santa Monica, California, January 23, 2006.
- [1] “Nonparametric smoothing spline model for gap time hazard function in recurrent event data”. *Stowers Institute*, Kansas City, Kansas, January 13, 2006.

## Teaching Experience

### Short Course: Functional Data Analysis and Its Applications

- *University of Virginia*, October 27, 2022
- *2022 Fall Technical Conference*, October 12, 2022

### Virginia Tech

- Undergraduate courses (total 477 students): STAT 4105/5105G *Theoretical Statistics I*, STAT 4584 *Advanced Calculus for Statistics*,
- Graduate courses (total 1289 students): STAT 5554 *Functional Data Analysis*, STAT 5594 *Topics in Biostatistics: Functional Data Analysis*, STAT 5615 *Statistics in Research I*, STAT 5616 *Statistics in Research II*, STAT 6105 *Measure and Probability*,

## Professional Service

### Student Paper Award Committee for professional organizations and conferences:

- ENAR Spring Meeting (2021, 2022 and 2023)
- ASA Section on Nonparametric Statistics (2017 and 2018)

**Scientific Committee** for a data analysis competition event sponsored by the ASA Statistical Learning and Data Science Section: the Second Event on Play with Real Data, Bu-Ali Sina University, March 2023.

**Program Committee** for the 3rd International Conference on BioMedical Engineering and Informatics (BMEI'10).

**Invited Session Organizer and Chair** : the 2018 ICSA Applied Statistics Symposium.

**Invited Session Chair**: 2021 ICSA Applied Statistics Symposium, ENAR Spring Meeting (2008 and 2010),

**(Topic) Contributed Session Chair**: Joint Statistical Meeting (2008 and 2009), the Third Erich L. Lehmann Symposium.

**NSF Panel Review Member**

- 2020, MMS/Division of Social and Economic Sciences
- 2020, MPS/Division of Mathematical Sciences
- 2015, BIO/Division of Environmental Biology
- 2015, CISE/Computing and Communication Foundations

**Proposal Reviewer, Hong Kong Baptist University**, 2015 and 2020.

**Proposal Reviewer, Chronic Renal Insufficiency Cohort (CRIC) Study Opportunity Pool Program**, 2019 and 2020.

**Panel Review Member** for the Scientific and Technical Advisory Committee (STAC) of the Chesapeake Bay Program partnership, **Chesapeake Research Consortium (CRC)**, 2016.

**Associate Editor** for *Journal of Statistical Computation and Simulation* (2015-present, 4 in 2015, 17 in 2016, 20 in 2017, 12 in 2018, 14 in 2019, 19 in 2020, 14 in 2021, 17 in 2022, 16 in 2023).

**Associate Editor** for *Statistics and Its Interface* (2021-present, 1 in 2021, 4 in 2022, 3 in 2023).

**Referee** of 300+ papers and revisions for 54 journals.

**Tenure/Promotion Assessment**: 1 in 2014, 1 in 2015, 1 in 2020, 1 in 2023.

## Selected University and Departmental Services

Chair of Collegiate Faculty Search Committee, Fall 2016 - Spring 2018

SAMSI Affiliate Representative for VT Statistics, Fall 2014 - Summer 2015

PhD students supervised:

- Active: Youngjin Cho, Zhiyuan Du, Anbin Rhee, Xiaofan Zhu
- 2022: Quyen Do (August 2022, Corning Inc.)
- 2020: Yunnan Xu (June 2020, Novartis Oncology)
- 2019: Yafei Zhang (May 2019, Merck & Co.)
- 2018: Zhenguo Gao (May 2018, *tenure-track AP* at Shanghai Jiaotong University)
- 2016: Jinhui Sun (December 2016, JD.com Inc.)
- 2015: Tianlei Chen (May 2015, Celgene Corporation)
- 2010: Lu Wang (August 2010, Novartis Oncology)

Member of Graduate Student Committees for 24 doctoral students and 19 master students.