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.

[58] Cho, Y., Do, Q., **Du, P.**, and Hong, Y. (2024). Reliability study of battery lives: A functional degradation analysis approach. *Annals of Applied Statistics*, to appear.

[57] Du, Z., **Du, P.**, and Liu, A. (2024). Likelihood ratio combination of multiple biomarkers via smoothing spline estimated densities. *Statistics in Medicine*, 43, 1372–1383.

[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* 52(3), 713–733.

[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 jeffersoniannum*. *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:	National Institute of Health
	Amount:	$1,563,337 (*02/21/2024 - 01/30/2028*)
	Title:	*Predicting second injuries after primary ACL reconstruction using clininically accessible videography* (1R01AR083709)
	Role:	Co-Investigator ($692,000 for VT, 6% effort for Du + a full-year statistics GRA)
		PI: Jeffrey Hart (UNC)
	Description:	Develop prognostic models integrating traditional and clinically accessible videography measures to predict second ACL injury.

[1]	Agency:	National Institute of Health
	Amount:	$3,447,241 (*07/28/2021 - 05/31/2027*)
	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% effort 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

[9]	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.

[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.