CURRICULUM VITAE

PERSONAL INFORMATION

Name:	Xiaofeng Wang
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	Cleveland Clinic Lerner Research Institute,
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RESEARCH OVERVIEW

My primary research areas are *Radiomics, Clinical Machine Learning Models, Clinical Trial Designs with Imaging Biomarkers, Bayesian Inference, and Healthcare Big Data Analytics.* My research has achieved via developing innovative statistical models and machine learning algorithms to solve data science problems in medicine. In Cleveland Clinic Respiratory Institute, I led the development of data infrastructures and managed data resources for the lung cancer screening program and intensive critical care. Our team developed multiple software tools for query interfaces for clinical studies, data management for clinical trials, data integration and mining for multi-site research projects, and on-line cancer risk predictions.

EDUCATION

School:	Case Western Reserve University, U.S.
Degree:	Doctor of Philosophy in Statistics (with special training on Biomedical Engineering)
Thesis:	New Procedures for Data Mining and Measurement Error Models with Medical Imaging Applications
Dates:	2001 – 2005

School:	Huazhong University of Science and Technology, China
Degree:	Master of Science in Applied Mathematics
Date:	1996 – 1999

PROFESSIONAL APPOINTMENTS

Position/Rank:	Full Staff Member of Biostatistics
Institution/Department:	Department of Quantitative Health Sciences, Cleveland Clinic Lerner Research Institute, Cleveland OH
Dates:	2016 – present

Position/Rank:	Professor of Medicine, Epidemiology and Biostatistics
Institution/Department:	Cleveland Clinic Lerner College of Medicine of Case Western Reserve University, Cleveland OH
Dates:	2017 – present

Position/Rank:	Director of Biostatistics Core
Institution/Department:	Cleveland Clinic Respiratory Institute, Cleveland OH
Dates:	2013 – present

Position/Rank:	Associate Staff Member
Institution/Department:	Department of Quantitative Health Sciences, Cleveland Clinic Lerner Research Institute, Cleveland OH

	Dates	2011 – 2015

Position/Rank:	Associate Professor of Medicine
Institution/Department:	Cleveland Clinic Lerner College of Medicine of Case Western Reserve University, Cleveland OH
Dates	2013 – 2016

Position/Rank:	Associate Professor of Epidemiology and Biostatistics (Secondary appointment)
Institution/Department:	Department of Epidemiology and Biostatistics, Case Western Reserve University, Cleveland OH
Dates	2013 – 2016

Position/Rank:	Assistant Staff Member
Institution/Department:	Department of Quantitative Health Sciences, Cleveland Clinic Lerner Research Institute, Cleveland OH
Dates	2005 – 2011

Position/Rank:	Assistant Professor of Medicine
Institution/Department:	Cleveland Clinic Lerner College of Medicine of Case Western Reserve University, Cleveland OH
Dates	2006 – 2012

Position/Rank:	Assistant Professor of Epidemiology and Biostatistics (Secondary appointment)
Institution/Department:	Department of Epidemiology and Biostatistics, Case Western Reserve University, Cleveland OH
Dates	2006 – 2012

HONORS AND AWARDS

2015 Society of Critical Care Medicine Annual Scientific Award (Joint with Drs. Keller, Reed, Guzman)

2015 American Thoracic Society Abstract Award (Joint with Drs. Panchabhai, Pioro, Mireles- Cabodevila, and Aboussouan)

Selected as an Early Career Reviewer for Center for Scientific Review, National Institute of Health, 2013

Highlight Paper Award, 2011 Orthopaedic Trauma Association Annual Meeting (Joint with Drs. Vallier, Moore, Wilber, and Como.)

Cleveland Clinic Innovator Award, 2010

Travel award to the 12th Institute of Mathematical Statistics Meeting of New Researchers in Statistics and Probability, John Hopkins University, Baltimore, MD, 2009

Elected Member/Fellow of the International Statistical Institute, 2006

Researcher Selected for the 2006–7 The Value of Research, Case Western Reserve University

LAHA Award, Institute of Mathematical Statistics, 2005

MEMBERSHIP IN PROFESSIONAL SOCIETIES

Member of American Statistical Association (ASA)
Member of Institute of Mathematical Statistics (IMS)
Member of International Statistical Institute (ISI)
Member of International Biometric Society (IBS)
Member of International Chinese Statistical Association (ICSA)

PROFESSIONAL SERVICES

Editorial Boards
Editorial Board Member and Appointed Statistical Reviewer, Chest, 2019 – present
Editorial Board Member, Statistical Methods in Medical Research, 2015 – 2020
Appointed Statistical Reviewer, JAMA Network Open, 2020 – present

Editorial Board Member, Journal of Medical Artificial Intelligence, 2018 – present
Academic Editor, PLoS ONE, 2012 – present
Guest Associate Editor, Stataistica Sinica, 2013
Editorial Board Member, Journal of Biometrics and Biostatistics, 2012 – 2016
Editorial/Review board member for Proceedings of the 4th Ohio Collaborative Conference on Biomedical Informatics, IEEE Press, 2009
Editorial Assistant for IMS Lecture Notes – Monograph Series: Recent Developments in Nonparametric Inference and Probability, 2006

Study Sections/Grant Review/Others

Multi-parametric Metrology Committee Member, Quantitative Imaging Biomarker Alliance (QIBA), Radiological Society of North America (RSNA), 2019 –
External Grant Reviewer: Johns Hopkins University (JHU) Older Americans Independence Center (OAIC)
    Dates of Service: August, 2015
Study Section Review Panel: Department of Defense (DoD) Clinical and Rehabilitative Medicine Research Program (CRMRP)
    Dates of Service: March, 2014
Review Panel: NIH/VA/DoD Consortium to Alleviate Post-Traumatic Stress Disorder (PTSD)
    Dates of Service: May, 2014
Grant Reviewer: National Security Agency (NSA), Mathematical Sciences Program
    Dates of Service: April, 2012
Grant Reviewer: National Science Foundation (NSF), Cognitive Neuroscience Program
    Dates of Service: May, 2010
Member of the Algorithm Comparison Group, Quantitative Imaging Biomarker Alliance (QIBA), Radiological Society of North America (RSNA), 2012 – 2015
Member of Reviewer Board: Mathematical Reviews, American Mathematical Society
    2012 – present

Committee Services
National/International
Chair for Session "Recent Development of Statistical Methods in Radiological Research", Joint Statistical Meeting; Montréal, Canada, 2013
Program Committee, Ohio Collaborative Conference on Bioinformatics, at Ohio State University, Columbus, Ohio; June 2010
Program Committee, International Workshop on Emerging Issues and Challenges to Statistics, Xiamen, China, co-sponsored by IMS and ICSA; December, 2010
Program Committee and Poster Session Chair, Ohio Collaborative Conference on Bioinformatics, Cleveland OH; June 2009
Organizer and Chair for Invited Session "Statistics in Nanoscience and Imaging": ICSA 2009 Applied Statistics Symposium; San Francisco, California; June, 2009
Organizer and Chair for Session "Nonparametric and Semiparametric Methods for Data with Measurement Errors", Joint Statistical Meeting; Salt Lake City, Utah, July, 2007
Institutional
Advisory committee for Cleveland Clinic's Center for Clinical Artificial Intelligence,
    2019 – present
Education committee and the webinar organizer, Department of Quantitative Health Sciences, Cleveland Clinic, 2009 – present
Review Committee for Cleveland Clinic's Annual Research Day, 2006 – present

Journal Reviewer (>100 times total)
Journal of American Statistical Association, 2008 –
Biometrics, 2013 –
Statistics in Medicine, 2011 –
Statistical Methods in Medical Research, 2013 –
Journal of Statistical Planning and Inference, 2007 –
Electronic Journal of Statistics, 2008 –
Statistics and Probability Letters, 2008 –
Statistical Papers, 2011 –

Communications in Statistics-Theory and Methods, 2011 –
Environmetrics, 2011 –
Statistics in Biosciences, 2012 –
Journal of Applied Statistics, 2012 –
Journal of Statistical Computation and Simulation, 2013 –
Journal of Biometrics and Biostatistics, 2012 –
Journal of Probability and Statistics, 2012 –
Journal of Statistical Distributions and Applications, 2014 –
NeuroImage, 2007 –
Briefings in Bioinformatics, 2011 –
BMC Bioinformatics, 2012 –
Bioinformatics, 2014 –
PloS One, 2012 –
BMJ Open, 2011 –

Book Reviewer
Chapman & Hall/CRC Biostatistics Series, 2013

TEACHING ACTIVITIES

Curriculum/Course Development and Teaching Activities

1. *Applied Biostatistics in Clinical Research: from Basic to Intermediate Techniques*
   Cleveland Clinic Respiratory Institute, Cleveland, Ohio; 2014 – 2015
   This *annual* biostatistical course is targeted to fellows, faculty members, and others involved in clinical research at Cleveland Clinic Respiratory Institute. We introduce and address statistical issues and methodology having wide applications and arising frequently during preparation and conduct of clinical studies.

2. *Applied Biostatistics and Epidemiology in Clinical Research*
   Cleveland Clinic Respiratory Institute, Cleveland, Ohio; 2016 – 2018
   This course will be the monthly lecture for fellows, faculty members, and others involved in clinical research at Cleveland Clinic Respiratory Institute. The course covers both applied biostatistics and epidemiology materials in Clinical Research. We address statistical and epidemiological issues and methodologies arising frequently during preparation and conduct of clinical studies.

3. *Statistics for Social and Life Sciences*
   Case Western Reserve University, Department of Statistics, Cleveland, Ohio; May – August, 2004
   This is an undergraduate/graduate level statistical course for students in social and life sciences. Responsibility for lectures, exams, homework assignments, and grades.

4. *Other Teaching Activities*
   One-to-One tutoring for Respiratory Institute Fellows: Statistical tutoring for fellows to prepare presentations in Respiratory Institute monthly journal club series; 2013 – now.

Trainees / Mentees

1. Master's level trainees

Trainee Name (Current Degree)	Training Period	Title of Research Project	Current Position of Past Trainees
Xiaozhen Han, M.S.	2015-current	A variety of pulmonary & respiratory medicine projects	Biostatistician at Cleveland Clinic Lerner Research Institute
Manshi Li, M.S.	2016 – current	A variety of pulmonary & respiratory medicine projects	Statistical Programmer at Cleveland Clinic Lerner Research Institute
Xinge Ji, M.S.	2019-current	A variety of Clinical Machine Learning projects	Data Scientist/Programmer at Cleveland Clinic Lerner Research Institute

Katrina Zell, M.S.	2013-2015	A variety of pulmonary & respiratory medicine projects	Statistician at Centers for Medicare & Medicaid Services, Maryland
Qiuqing Wang, M.S.	2014	Survival analysis for patients with lower-risk myelodysplastic syndromes	Biostatistician at Cleveland Clinic Coordinating Center for Clinical Research
Qi Zhang, M.S.	2013-2015	A variety of medicine projects	Senior business info analyst at Anthem, Inc. Newbury Park, California

2. M.S. Candidates

Trainee Name (Current Degree)	Training Period	Title of Research Project	Current Position of Past Trainees
Yige Sun, BS	2019-	Deep learning on low-dose chest computed tomography	M.S. Student in Computer Science, Case Western Reserve University

3. Ph.D. Candidates

Trainee Name (Current Degree)	Training Period	Title of Research Project	Current Position of Past Trainees
Han Sun, MS	2017-	Random lasso with Split-merging algorithms	Ph.D. Student in Biostatistics, Case Western Reserve University
Lu Wang, MS	2018-	Deep Learning for diagnosing sleep apnea from multi-source neurophysiological data	Ph.D. Student in Biostatistics, Case Western Reserve University

4. Clinical Fellows

Trainee Name (Current Degree)	Training Period	Title of Research Project	Current Position of Past Trainees
Christopher Lau, MD	2016-2017	Impact of a Post-Discharge Integrated Disease Management Program on COPD Hospital Readmissions	Pulmonologist, University of Pittsburgh Medical Center - Hamot
Tanmay S Panchabhai, MD	2014-2015	Pattern of lung function decline in patients with amyotrophic lateral sclerosis	Pulmonologist, St. Joseph's Hospital and Medical Center
Amit Banga, MD	2013-2014	Characteristics and Outcomes of Patients with Lung Transplantation Requiring Admission to the Medical ICU	Assistant Professor in the Department of Internal Medicine at UT Southwestern Medical Center

Teaching Material Produced

1. Lecture notes for *Applied Biostatistics in Clinical Research: from Basic to Intermediate Techniques, 2014*

2. Lecture notes for *Applied Biostatistics and Epidemiology in Clinical Research, 2016*

RESEARCH FUNDING

Current Funding

1. **NIH-NICHD**. "Contralaterally Controlled FES Combined with Brain Stimulation for Severe Upper limb Hemiplegia"
    R01HD098073, $3.5 million (PI: Plow, CCF).
    Role: **Co-Investigator**; 5/1/2019 - 4/30/2024.

2. **NIH-NINDS**. "MR Fingerprinting for Epilepsy"
   R01NS109439, $3.5 million (PIs: Ma, Case; Wang, CCF).
   Role: **Co-Investigator**; 1/15/2019 - 12/31/2023.

3. **NIH**. "A Nomogram to Predict Seizure Outcomes after Resective Epilepsy Surgery"
   R01 NS097719-01A1, $3.2 million (PI: Jehi, CCF).
   Role: **Co-Investigator**; 4/1/2017 - 3/31/2022.

4. **DoD**. "Improving Spinal Cord Injury Rehabilitation Interventions by Retraining the Brain"
   NCT01539109, $2.0 million (PI: Plow, CCF).
   Role: **Co-Investigator**; 09/01/2018 – 08/31/2022.

5. **NIH**. "Thalamic MRI, histopathologic, and clinical correlations in multiple sclerosis"
   NINDS K23NS109328, $170,699 (PI: Mahajan, CCF).
   Role: **Mentor/ Co-Investigator**; 09/01/2018 – 08/31/2022.

6. **NIH**. "A Brain Atlas for Mapping Connectivity in Focal Epilepsy"
   NINDS R01 NS089212-01, $3.3 million (PIs: Nair, CCF; Leahy, USC).
   Role: **Co-Investigator**; 4/1/2015 - 3/31/2020.

Completed Funding

7. **American Heart Association**. "Novel brain stimulation therapies in Stroke guided by expressions of plasticity"
   16GRNT27720019, $200,000 (PI: Ela Plow, Ph.D., Biomedical Engineering, Cleveland Clinic)
   Role: **Co-Investigator**; 01/01/2016– 12/31/2018.

8. **NIH** "Neurophysiological Evaluation of Training Effect on Cancer-Related Weakness"
   NCI 1R01CA189665-01A1, $2.0 million (PI: Guang H. Yue, Ph.D., Kessler Foundation).
   Role: **Statistical Consultant**; 11/1/2014 - 10/31/2019.

9. **DoD** (U.S. Department of Defense). "Effectiveness of Acupressure Treatment for Pain Management and Fatigue Relief in Gulf War Veterans"
   281X2H1210567, $430,186 (PI: Vernon Lin, M.D., Physical Medicine and Rehabilitation, Cleveland Clinic)
   Role: **Co-Investigator**; 01/30/2013-02/28/2018.

10. **NIH**. "Brain Stimulation-aided Stroke Rehabilitation: Neural Mechanisms of Recovery"
    1K01HD069504 (NICHD), $509,595 (PI: Ela Plow, Ph.D., Biomedical Engineering, Cleveland Clinic)
    Role: **Co-Investigator**; 09/10/2011 – 06/30/2016.

11. **NIH**. "Hand Sensorimotor Function and Carpal Tunnel Syndrome"
    R01AR056964, $1.4 million (PI: Zong-Ming Li, Ph.D., Biomedical Engineering, Cleveland Clinic)
    Role: **Co-Investigator**; 02/01/2011 – 01/31/2015.

12. **American Heart Association**. "Improving Targeting of Brain Stimulation in Stroke Using Novel Image-Guidance"
    13BGIA17120055, $132,000 (PI: Ela Plow, Ph.D., Biomedical Engineering, Cleveland Clinic)
    Role: **Co-Investigator**; 07/01/2013– 06/31/2015.

13. **NIH**. "Effects of Mental Training on Voluntary Muscle Strength in Aging"
    R01NS035130, $1,503,527 (PI: Guang H. Yue, Ph.D., Biomedical Engineering, Cleveland Clinic)
    Role: **Co-Investigator**; 2/1/2008- 1/31/2013.

14. **AAMDS** (Aplastic Anemia & MDS Foundation). "Myelodysplastic Syndrome Clinical Research Consortium"
    AAMDS1209MS, $16 million (PI: Mikkael Sekeres, M.D., Taussig Cancer Institute, Cleveland Clinic)
    Role: **Co-Investigator** (biostatistics team leader); 07/01/2012 - 12/31/2016.

15. **NIH**. "Contralaterally Controlled FES for Chronic Arm/Hand Hemiplegia: Single-Site RCT."
R01HD059814, $1.2 million (PI: Jayme Knutson, Ph.D., Biomedical Engineering, Case Western Reserve University)
Role: **Co-Investigator**; 10/01/2008 – 9/30/2013

16. **VA** (U.S. Department of Veterans Affairs). "Determination of Physiological Mechanisms for Electrical Wound Therapy"
VA Merit Review Grant: F7129R, $825,000 (PI: Kath Bogie, D. Phil, Cleveland VA Medical Center)
Role: **Co-Investigator**; 10/01/2010 – 09/30/2013

17. **Metabalomx Inc**. "Detection of cancer by the analysis of exhaled gases with a colorimetric sensor array"
Sponsor: Metabalomx Inc., $356,482 (PI: Peter Mazzone, M.D., Respiratory Institute, Cleveland Clinic)
Role: **Statistical Consultant**; 05/01/2011 – 04/30/2013

18. **NIH Subaward**. for NIH-NHLBI: 1RC1HL101060-01 "Comparative Effectiveness of Noninvasive Cardiac Imaging" (the challenge grant) (PI: Marcelo Di Carli, Ph.D., Brigham and Women's Hospital, Harvard Medical School, Harvard University, Boston MA)
Award No: 105073;
Role: **Principal Investigator**, 08/01/2010 – 01/31/2012.

19. **VA**. "Statistical Analysis for Functional Electrical Stimulation"
VA Medical Center Grant: VA250-P-0462, direct costs: $57,200 (PI: Xiaofeng Wang, Ph.D.)
Role: **Principal Investigator**; 9/29/2009 – 9/27/2012.

20. **NIH**. "Translational Methodological Research Core" of "Clinical and Translational Science Award (CTSA)"
UL1 RR024989-01, $64 million (PI: Pamela Davis, M.D., Ph.D., Case Western Reserve University; Co-Director of translational methodological research (TMR), Michael Kattan, Ph.D., Cleveland Clinic) ($79,555 for TMR)
Role: **Co-Investigator**; 10/01/2007 – 09/30/2011.

21. **NIH**. "Electrical Stimulation for Hemiplegic Shoulder Pain"
R01HD059777, $1.2 million (PI: John Chae, M.D., Physical Medicine and Rehabilitation, MetroHealth Medical Center, Cleveland OH)
Role: **Co-Investigator**; 10/01/2008 – 09/30/2012

22. **NMSS** (National Multiple Sclerosis Society). "A Validation Study of Diffusion Tensor Imaging as a Physiologically Relevant Biomarker of Brain Tissue Integrity"
RG 4091A3/1, $759,876 (PI: Robert J. Fox, M.D., Mellen Center for Multiple Sclerosis, Cleveland Clinic)
Role: **Co-Investigator**; 07/01/2009 – 06/30/2012

23. **BIOGEN Inc**. "De-identified Human RNA Samples from MS Patients"
Sponsor: Biogen Idec, Inc. - Corporate Clinical General Research Program, $94,789 (PI: Richard A. Rudick, M.D., Mellen Center for Multiple Sclerosis, Cleveland Clinic)
Role: **Statistical Consultant**; 1/01/2011 – 12/31/2011

24. **Summit Doppler Inc**. "Pilot Study to Determine the Optimal Oscillometric-Based Technique for Measurement of Ankle Blood Pressures for the Ankle-Brachial Index"
Sponsor: Summit Doppler Systems, Inc. Golden, Colorado, $90,000 (PI: Heather Gornik, M.D., Department of Cardiovascular Medicine, Cleveland Clinic)
Role: **Co-Principal Investigator**; Status: 02/01/2009 – 07/31/2010.

25. **PFC**. "Identification and Validation of Exhaled Breath Biomarkers for the Detection of Early Stage Lung Cancer"
Sponsor: Partnership for Cures, $45,000 (PI: Peter Mazzone, M.D., Respiratory Institute, Cleveland Clinic)
Role: **Co-Investigator**; 02/01/2010 – 01/31/2012

26. **VA**. "Implanted Gluteal Stimulation System for Pressure Sore Prevention"
VA Merit Review Grant: B4664R, $750,000 (PI: Kath Bogie, D. Phil, Cleveland VA Medical Center)

Role: **Co-Investigator**; 10/01/2007 – 09/30/2010

27. **VA**. "Functional Electrical Stimulation Center of Excellent"
    VA Merit Review Center Grant: B2649C, (PI: Peckham H. Peckham, Ph.D. Case Western Reserve University)
    Role: **Biostatistician**; 08/01/2005 – 09/31/2009 (0.5FTE)

28. **NIH**. "Brain Activation During Muscle Fatigue"
    R01NS37400 (PI: Guang H. Yue, Ph.D., Department of Biomedical Engineering, Cleveland Clinic),
    Role: **Training Student**; 07/01/2003 - 07/31/2005.

29. **NIH**. "Topography of Spinal Neurons Active during the Hindlimb Withdrawal Reflexes"
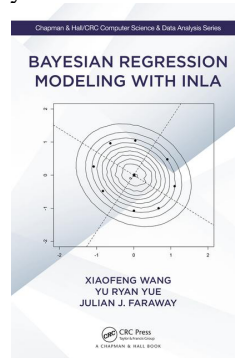   N01-NS82300 (PI: Warren W. Grill, Ph.D., Department of Biomedical Engineering, Case Western Reserve University)
    Role: **Training Student**; 07/01/2002 - 08/31/2004.

BIBLIOGRAPHY

Peer Reviewed Books

1. **Wang, X.F.**, Yue, Y.R., and Faraway, J. (2018) *Bayesian Regression Modeling with INLA*. Chapman & Hall/CRC Computer Science and Data Analysis Series.

Peer Reviewed Articles ([*] Corresponding/Senior Author; [†] Trainee)

2. **Wang, X.F.** [*], Jehi, L, Ji, X. [†], and Mazzone P. (2021). Phenotypes and Subphenotypes of Patients with COVID-19: a Latent Class Modeling Analysis. *Chest*. in press.

3. **Wang, X.F.** [*], Ren, R.[†], Kattan, M.W., Jehi, L, Cheng, Z, and Fang, K. (2020) Public Health Interventions' Effect on Hospital Use in Patients With COVID-19: Comparative Study. *JMIR Public Health and Surveillance*. 6(4):e25174.

4. **Wang, X.F.** [*], Hu, X., Tan, W., Mazzone, P., Mireles-Cabodevila, E., Han, X.[†], Huang, P., Hu, W., Dweik, R. and Cheng, Z. (2020). Multi-center study of temporal changes and prognostic value of a CT visual severity score in hospitalized patients with COVID-19. *American Journal of Roentgenology*. PMID:32903056. doi: 10.2214/AJR.20.24044.

5. Zhang, X. [†], Zhang, Q.Z., **Wang, X.F.**, Ma, S., and Fang, K. (2020). Structured sparse logistic regression with application to lung cancer prediction using breath volatile biomarkers. *Statistics in Medicine*, 39(7):955-967.

6. Choi, H., **Wang, X.F.**, and Mazzone, P. (2020). Artificial intelligence as a diagnostic tool for lung nodule evaluation. *Journal of Medical Artificial Intelligence*, 3:16. doi:10.21037/jmai-20-29.

7. **Wang, X.F.** [*] and Ji, X. [†] (2020). Sample Size Estimation in Clinical Research: from Randomized Controlled Trials to Observational Studies. *Chest*.158(1S):12-20. doi: 10.1016/j.chest.2020.03.010.

8. **Wang, X.F.** [*] and Kattan, M. (2020). Cohort Studies: Design, Analysis and Reporting. *Chest*, 158(1S):72-78. doi: 10.1016/j.chest.2020.03.014.

9. **Wang, X.F.** [*] and Cheng, Z. (2020). Cross-sectional Studies: Strengths, Weaknesses, and Recommendations. *Chest*, 158(1S):65-71. doi:10.1016/j.chest.2020.03.012.

10. Harper, L.J. [†], Gerke, A.K., **Wang, X.F.**, Ribeiro-Neto, M.L., Baughman, R.P., Beyer, K., Drent, M., Judson, M.A., Maier, L.A., Serchuck, L., Singh, N., Spitzer, G., Culver, D.A. (2020). Income and other contributors to poor outcomes in US sarcoidosis patients. *American Journal of Respiratory and Critical Care Medicine*, 201(8):955-964.

11. Raju, S., Khawaja, A., **Wang, X.F.,** Han, X. [†], and Mazzone, P.J. (2020). Lung cancer screening: characteristics of non-participants and potential screening barriers. *Clinical Lung Cancer*, 21(5):e329-e336. doi: 10.1016/j.cllc.2019.11.016.

12. Rice, R.D., Han, X. [†], **Wang, X.F**. and Al-Jaghbeer, M.J., (2021). COPD overdiagnosis and its effect on 30-day hospital readmission rates. Respiratory Care, 66(1), pp.11-17.

13. Rajendram, P., Sacha, G.L., Mehkri, O., **Wang, X.F.,** Han, X., Vachharajani, V., Duggal, A. (2021) Tocilizumab in Coronavirus Disease 2019-Related Critical Illness: A Propensity Matched Analysis, *Critical Care Explorations*, 1, e0327. doi: 10.1097/CCE.0000000000000327.

14. Hawn, J.M., Bauer, S.R., Yerke, J., Li, M. [†], **Wang, X.F.,** Reddy, A.J., Mireles-Cabodevila, E. and Sacha, G.L., (2020). Effect of phenylephrine push prior to continuous infusion norepinephrine in patients with septic shock. *Chest*. doi: 10.1016/j.chest.2020.11.051.

15. Saand, A.R., Flores, M., Kewan, T., Alqaisi, S., Alwakeel, M., Griffiths, L., **Wang, X.F.,** Han, X. [†], Burton, R., Al-Jaghbeer, M.J. and Abi Fadel, F., (2020). Does inpatient hyperglycemia predict a worse outcome in COVID-19 intensive care unit patients? *Journal of Diabetes*. doi: 10.1111/1753-0407.13137.

16. Taylor, K.N., Joshi, A.A., Li, J., Gonzalez-Martinez, J.A., **Wang, X.F.,** Leahy, R.M., Nair, D.R. and Mosher, J.C., (2020). The FAST graph: A novel framework for the anatomically-guided visualization and analysis of cortico-cortical evoked potentials. *Epilepsy Research*, 161, 106264.

17. Lin, Y.L., Potter-Baker, K.A., Cunningham, D.A., Li, M. [†], Sankarasubramanian, V., Lee, J., Jones, S., Sakaie, K., **Wang, X.F.**, Machado, A.G. and Plow, E.B. (2020). Stratifying chronic stroke patients based on the influence of contralesional motor cortices: An inter-hemispheric inhibition study. *Clinical Neurophysiology*, 131(10), pp.2516-2525.

18. Flores, M., Amir, M., Ahmed, R., Alashi, S., Li, M. [†], **Wang, X.F.,** Lansang, M.C. and Al-Jaghbeer, M.J., 2020. Causes of diabetic ketoacidosis among adults with type 1 diabetes mellitus: insulin pump users and non-users. *BMJ Open Diabetes Research and Care*, 8(2), e001329.

19. Abi Fadel, F., Al-Jaghbeer, M., Kumar, S., Griffiths, L., **Wang, X.F.,** Han, X. [†] and Burton, R. (2020). Clinical characteristics and outcomes of critically Ill patients with COVID-19 in Northeast Ohio: low mortality and length of stay. *Acute and Critical Care*, 35(4), pp.242-248.

20. Gadre, S.K., Jhand, A.S., Abuqayyas, S., **Wang, X.F.,** Guzman, J. and Duggal, A. (2020). Effect of anemia on mortality in mechanically ventilated patients with chronic obstructive pulmonary disease. *Journal of Intensive Care Medicine*, 35(3), pp.251-256.

21. Noh, S., Yadav, R., Li, M., **Wang, X.F.**, Sahoo, D., Culver, D.A. and Pande, A. (2020). Use of leflunomide in patients with chronic hypersensitivity pneumonitis. *BMC Pulmonary Medicine*, 20(1), 1-10.

22. Abi Fadel, F., Al-Jaghbeer, M., Kumar, S., Griffiths, L., **Wang, X.F.,** Han, X. [†] and Burton, R., 2020. The impact of the state of Ohio stay-at-home order on non-COVID-19 intensive care unit admissions and outcomes. *Anaesthesiology Intensive Therapy*, 52(3), pp.249-252.

23. Meena, N.K., Sinokrot, O., Duggal, A., Alpat, D., Singh, Z.N., Coviello, J.M., Li, M. [†], **Wang, X.F.** and Mireles-Cabodevila, E. (2020). The performance of diagnostic criteria for hemophagocytic lymphohistiocytosis in critically ill patients. *Journal of Intensive Care Medicine*, 35(12), 1476-1482.

24. Alshabani, K., Attaway, A.A., Smith, M.J., Majumdar, U., Rice, R., Han, X. [†], **Wang, X.F.** and Hatipoğlu, U., (2020). Electronic inhaler monitoring and healthcare utilization in chronic obstructive pulmonary disease. *Journal of Telemedicine and Telecare*, 26(7-8), 495-503.

25. Khan, R. A., Khan, N. A., Bauer, S. R., Li, M. [†], Duggal, A., **Wang, X.F.,** & Reddy, A. J. (2020). Association Between Volume of Fluid Resuscitation and Intubation in High Risk Septic Patients with Heart Failure, End Stage Renal Disease and Cirrhosis. *Chest*, 157(2):286-292.

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223. Allred, W.T., French, L., **Wang, X.F.**, Riechers, R.G. (2009). Incidence and clinical features of autonomic dysfunction in a military severe traumatic brain injury population. *Neurology*, 72 (11): A494.

224. Riechers, R.G., **Wang, X.F.**, Hughes, J.D. (2009). Dopaminergic modulation of degenerative spatial neglect phenomena. *Neurology*, 72 (11): A332.

225. Cronin, T., Lin, J., **Wang, X.F.**, Sakaie, K., Lowe, M.J., Phillips, M., and Fox, R.J., (2009). Longitudinal imaging of myelin repair and axonal loss in multiple sclerosis. *Neurology*, 72 (11): A143.

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Non-Peer Reviewed Proceedings

230. Fan, Z. and **Wang, X.F.** (2007). On the analysis of multivariate failure time data with measurement error in covariates. 2007 Proceedings of the American Statistical Association, Alexandria, VA: American Statistical Association, 1599-1605.

231. Gu, R., Sun, J., **Wang, X.F.**, and Zhang, G.Q. (2007). Simultaneous confidence bands for analyzing gene expression count data. 2007 Proceedings of the American Statistical Association, Alexandria, VA: American Statistical Association, 304-310.

232. **Wang, X.F.**, Sun, J. and Bogie, K. (2005) Mining huge-p-small-n data and new image registration procedures. 2005 Proceedings of the American Statistical Association, Alexandria, VA: American Statistical Association, 420-424.

PUBLIC R PACKAGES

1. Sun, H., and **Wang, X.F.** (2020). RAEN: Random Approximate Elastic Net (RAEN) Variable Selection Method. R package version 0.1. https://cran.r-project.org/web/packages/RAEN/index.html
Current penalized variable selection methods show unsatisfactory performance in ultra-high dimensional data. We propose a novel method, the Random Approximate Elastic Net (RAEN), with a robust and generalized solution to the variable selection problem for completing risks models. Our method shows improved sensitivity for variable selection compared with current methods.

2. Faraway, J., Yu, Y. and **Wang, X.F.** (2018). brinla: Bayesian Regression with INLA. R package version 0.1.0 http://github.com/julianfaraway/brinla
INLA stands for Integrated Nested Laplace Approximations. It is used for fitting Latent Gaussian models (LGM). The brinla R package contains data and functions to support Bayesian regression with INLA.

3. Xu, Y. and **Wang, X.F.** (2015). ADPclust: Fast Clustering Using Adaptive Density Peak Detection. R package version 0.6.3. http://CRAN.R-project.org/package=ADPclust
ADPclust clusters data by finding density peaks in a density-distance plot generated from multivariate Gaussian density estimation. It includes an automatic centroids selection and parameter optimization algorithm, which finds the number of clusters and cluster centroids by comparing average silhouettes on a grid of testing clustering results; It also includes an user interactive algorithm that allows the user to manually selects cluster centroids from a two dimensional "density-distance plot".

4. **Wang, X.F.** (2012). sROC: Nonparametric Smooth ROC Curves for Continuous Data. R package version 0.1-2. http://CRAN.R-project.org/package=sROC
This package contains a collection of functions to perform nonparametric estimation of ROC curves, kernel smooth distribution function estimation for continuous data. A variety of bandwidth selection methods are also provided.

5. **Wang, X.F.** (2011). NPsimex: Nonparametric smoothing for contaminated data using Simulation-Extrapolation. R package version 0.2-1. http://CRAN.R-project.org/package=NPsimex
NPsimex is an R software package to perform nonparametric deconvolution using simulation extrapolation (SIMEX). We propose an estimator that adopts the SIMEX idea but bypasses the simulation step in the original SIMEX algorithm. There is no bandwidth parameter and the estimate is determined by appropriately selecting "design points".

6. **Wang, X.F.** and Wang, B. (2010). decon: Deconvolution Estimation in Measurement Error Models. R package version 1.2-1. http://CRAN.R-project.org/package=decon

   Decon is an R software package to deal with nonparametric measurement error problems using deconvolution kernel methods.

7. **Wang, X.F.** and Ji. X.(2010). fANCOVA: Nonparametric Analysis of Covariance. R package version 0.5-1. http://CRAN.R-project.org/package=fANCOVA

   fANCOVA is an R software package to perform nonparametric analysis of covariance for regression curves /surfaces or functional data.

PRESENTATIONS/TALKS

Invited Talks

1. "Challenges in Deep Learning for Lung Cancer Detection using Low-Dose Computed Tomography" University of Florida Department of Biostatistics 2018 IISA International Conference, May, 2018.

2. "Semiparametric deconvolution methods in background correction problems with medical applications" ICSA 2017 Symposium: Frontiers of Big Data and Statistical Sciences, Vancouver, Canada, August, 2017

3. "Machine Learning in Diagnostics of Lung Cancer". The 3rd Shanghai Zhongshan Lung Cancer Forum, China, October, 2017.

4. "Multi-modal data integration and joint learning in lung cancer detection". The 10th ICSA International Conference on Global Growth of Modern Statistics in the 21st Century, December, 2016

5. "Statistical Learning for Multi-modal Data in Lung Cancer Detection". Tsinghua Sanya International Mathematics Forum: Mathematics and Statistics in Medical Imaging Applications, December, 2016

6. "Statistical Machine Learning for Multi-modal Medical Imaging Data". Ocean University of China, December, 2016

7. "Approximate Bayesian Inference for Structured Additive Regression Models with Penalized Splines". Department of Epidemiology and Biostatistics, Case Western Reserve University, Cleveland OH, October 2015.

8. "Supervised and Unsupervised Learning for Multi-modal Data in Lung Cancer Detection," Department of Mathematics and Statistics, University of South Alabama, November 2015.

9. "A Bayesian Multivariate Smoothing Spline Model for Spatial-Temporal Data", Joint Statistical Meeting (Invited Papers: Estimation and Testing Problems in Large Spatial Data Sets and Their Applications), Boston, MA, August 2014.

10. "A semiparametric approach for gene array background correction". 2014 International Indian Statistical Association Conference, Riverside, CA, July 2014.

11. "Predictive Modeling with High-Dimensional Colorimetric Image Data for Lung Cancer Detection", Joint Statistical Meeting (Topic-Contributed Session: Challenges and New Developments in Imaging with Large Data Sets), Montréal, Canada, August 2013.

12. "Approximate Bayesian inference for penalized spline models: Methods, applications and case studies", Wang-Yanan Institute for Studies in Economics, Xiamen University, China, September, 2012.

13. "Generalized varying coefficient models for longitudinal proportional data with errors-in-variables", International Symposium in Statistics (ISS) on Longitudinal Data Analysis Subject to Outliers, Measurement Errors, and/or Missing Values, St. John's, Canada, July, 2012.

14. "New Developments in Measurement Error Models with Applications to Medical Studies", Department of Biostatistics, University of Pittsburgh, Pittsburgh, PA, January 2012.

15. "Heteroscedastic deconvolution: Alternative approaches to Fourier-based methods," Department of Statistics, University of Manitoba, Winnipeg, Canada, November 2011.

16. "Measurement error models with applications in medicine and finance," School of Mathematics and Statistics, Huazhong University of Science & Technology, Wuhan, China, September 2011.

17. "Measurement error models with applications to financial asset returns," Department of Statistics, School of Economics, Xiamen University, Xiamen, China, September 2011.

18. "Measurement error models with applications to biomedical sciences," Department of Statistics, Purdue University, West Lafayette, IN, February 2010.

19. "Analyzing medical data with measurement error: challenges and solutions in real studies," Department of Statistics, Case Western Reserve University, Cleveland OH, February 2010.

20. "Semiparametric deconvolution in gene array background correction". The Eighth ICSA International Conference, Guangzhou, China, December 2010.

21. "Measurement error models in R: the package decon," International Workshop on Emerging Issues and Challenges to Statistics, Xiamen, China, December 2010.

22. "Nonparametric smoothing in presence of heteroscedastic measurement errors," ICSA 2009 Applied Statistics Symposium, San Francisco, California, June 2009.

23. "Modeling heterogeneity and dependence of neural data," Ohio State University/Case Western Reserve University/Cleveland Clinic Foundation 2009 Joint Biostatistics Symposium, May 2009.

24. "Nonparametric methods and measurement error problems," Department of Mathematics and Statistics, University of South Alabama, November 2008.

25. "Deconvolution estimation for the data with heteroscedastic errors", IMS-China International Conference on Statistics and Probability, Hangzhou, China, June, 2008,

26. "Nonparametric regression with measurement errors in predictors," Department of Statistics, Case Western Reserve University, Cleveland OH, April 2006.

27. "Semiparametric regression for repeated image data," Twelfth International Conference of The Forum for Interdisciplinary Mathematics on Statistics, Combinatorics, Mathematics and Applications, Auburn University, Auburn, AL, December 2005.

28. "Longitudinal analysis with self-registration in medical image data," Metro-Health Medical Center, Cleveland, OH, October 2005.

29. "Medical image data mining and deconvolution problems," Department of Mathematics and Statistics, Bowling Green State University, Bowling Green, OH, 2005.

Selected Contributed Talks
1. "Spatial models for replicated regional count data in neuroscience", Twelfth Meeting of New Researchers in Statistics and Probability, Baltimore, MD, July 2009.

2. "Analyzing data from gene expression in neuronal activity ", Joint Statistical Meeting, Salt Lake City, Utah, July 2007.

3. "Mining huge-p-small-n data and new image registration procedures", Joint Statistical Meeting, Minneapolis, MN, August 2005.

4. "Spatial regression for spinal interneuron data mapped using gene c-Fos expression", ENAR Meeting, The International Biometric Society, Pittsburgh, PA, March 2004.

HARDWARE/MEDICAL DEVICE

ABI/Vascular Systems for the diagnosis of Peripheral Arterial Disease (P.A.D.).
Summit Doppler Systems, Inc., Golden, CO
http://www.summitdoppler.com
Role: Developed predictive models and computer algorithms built-in the new diagnosis device. (2010 Cleveland Clinic Innovator Award winner).

PATENT

Evaluation of peripheral arterial disease in a patient using an oscillometric pressure signal obtained at a lower extremity of the patient
US patent with Heather L. Gornik, Dave Jones, and Ken Jarrell.
No: WO2012040428; Publication Date: 03/29/2012