

Raymond Ka Wai Wong

Curriculum Vitae

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Texas A&M University
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College Station, TX 77843
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Education

2010–2014	Doctor of Philosophy Major in Statistics	<i>University of California at Davis</i>
2008–2010	Master of Philosophy Major in Statistics	<i>The Chinese University of Hong Kong</i>
2004–2008	Bachelor of Science Major in Statistics with minor in Mathematics and Risk Management Science	<i>The Chinese University of Hong Kong</i>

Academic positions

2020–now	Associate Professor (with tenure) <i>Department of Statistics, Texas A&M University</i>	<i>Texas, U.S.A.</i>
2017–2020	Assistant Professor <i>Department of Statistics, Texas A&M University</i>	<i>Texas, U.S.A.</i>
2014–2017	Assistant Professor <i>Department of Statistics, Iowa State University</i>	<i>Iowa, U.S.A.</i>

Publications

(★ represents a student co-author; ♦ indicates alphabetical order)

Journal papers

1. M. M. Meskhi★, N. E. Wolfe★, Z. Dai★, C. Fröhlich, J. M. Miller, **R. K. W. Wong** and R. Vilalta. A New Constraint on the Nuclear Equation of State from Statistical Distributions of Compact Remnants of Supernovae. *Astrophysical Journal Letters* (2022+). To appear.
2. J. Wang★, **R. K. W. Wong**, S. Yang and K. C. G. Chan. Estimation of Partially Conditional Average Treatment Effect by Double Kernel-covariate Balancing. *Electronic Journal of Statistics* (2022+). To appear.
3. R. Miao★, X. Zhang and **R. K. W. Wong**. A Wavelet-Based Independence Test for Functional Data with an Application to MEG Functional Connectivity. *Journal of the American Statistical Association* (2022+). To appear.
▶ **2021 Student Paper Award, International Chinese Statistical Association**
4. J. Wang★, **R. K. W. Wong** and X. Zhang. Low-Rank Covariance Function Estimation for Multidimensional Functional Data. *Journal of the American Statistical Association* **117**(538) (2022), 809–822.
▶ **2020 Student Paper Award, ASA Section on Nonparametric Statistics**
5. M. E. Lockhart★, O.-M. Kwok, M. Yoon and **R. K. W. Wong**. Uncovering a Missing Link to STEM Persistence: The Important Role of Science Identity and the Development of the Science Identity (SciID) Scale. *International Journal of STEM Education* **9**(1) (2022), 34.
6. J. Wang★, **R. K. W. Wong**, M. Jun, C. Schumacher, R. Saravanan and C. Sun. Statistical and Machine Learning Methods Applied to the Prediction of Tropical Rainfall. *Environmental Research Communications* **3** (2021), 111001.
7. X. Mao★, **R. K. W. Wong** and S. X. Chen. Matrix Completion under Low-Rank Missing Mechanism. *Statistica Sinica* **31**(4) (2021), 2005–2030.
8. T. V. Nguyen★, **R. K. W. Wong** and C. Hegde. Benefits of Jointly Training Autoencoders: An Improved Neural Tangent Kernel Analysis. *IEEE Transactions on Information Theory* **67**(7) (2021), 4669–4692.
9. Y. Zhou★, **R. K. W. Wong** and K. He. Tensor Linear Regression: Degeneracy and Solution. *IEEE Access* **9** (2021), 7775–7788.

10. X. Mao^{*}, S. Dutta, **R. K. W. Wong** and D. Nettleton. Adjusting for Spatial Effects in Genomic Prediction. *Journal of Agricultural, Biological, and Environmental Statistics* **25**(4) (2020), 699–718.
11. Y. Su^{*}, **R. K. W. Wong** and T. C. M. Lee. Network Estimation via Graphon with Node Features. *IEEE Transactions on Network Sciences and Engineering* **7**(3) (2020), 2078–2089.
12. I. Song^{*}, I. H. Cho and **R. K. W. Wong**. An Advanced Statistical Approach to Data-Driven Earthquake Engineering. *Journal of Earthquake Engineering* **24**(8) (2020), 1245–1269.
13. T. V. Nguyen^{*}, **R. K. W. Wong**, and C. Hegde. Provably Accurate Double-Sparse Coding. *Journal of Machine Learning Research* **20**(141) (2019), 1–43.
14. **R. K. W. Wong**, Y. Li and Z. Zhu. Partially Linear Functional Additive Models for Multivariate Functional Data. *Journal of the American Statistical Association* **114**(525) (2019), 406–418.
15. X. Mao^{*}, S. X. Chen[♦], and **R. K. W. Wong**[♦]. Matrix Completion with Covariate Information. *Journal of the American Statistical Association* **114**(525) (2019), 198–210.
► 2017 Student Paper Award, International Chinese Statistical Association
16. J. Wang^{*}, **R. K. W. Wong**, and T. C. M. Lee. Locally Linear Embedding with Additive Noise. *Pattern Recognition Letters* **123** (2019), 47–52.
17. **R. K. W. Wong** and X. Zhang. Nonparametric Operator-regularized Covariance Function Estimation for Functional Data. *Computational Statistics & Data Analysis* **131** (2019), 131–144.
18. **R. K. W. Wong** and K. C. G. Chan. Kernel-based Covariate Functional Balancing for Observational Studies. *Biometrika* **105**(1) (2018), 199–213.
19. **R. K. W. Wong** and T. C. M. Lee. Matrix Completion with Noisy Entries and Outliers. *Journal of Machine Learning Research* **18**(147) (2017), 1–25.
20. **R. K. W. Wong**, C. B. Storlie, and T. C. M. Lee. A Frequentist Approach to Computer Model Calibration. *Journal of the Royal Statistical Society: Series B* **79**(2) (2017), 635–648.
21. **R. K. W. Wong**, V. L. Kashyap, T. C. M. Lee, and D. A. van Dyk. Detecting Abrupt Changes in the Spectra of High-Energy Astrophysical Sources. *The Annals of Applied Statistics* **10**(2) (2016), 1107–1134.
22. **R. K. W. Wong**, T. C. M. Lee, D. Paul and J. Peng. Rejoinder: “Fiber Direction Estimation, Smoothing and Tracking in Diffusion MRI”. *The Annals of Applied Statistics* **10**(3) (2016), 1166–1169.
23. **R. K. W. Wong**, T. C. M. Lee, D. Paul, J. Peng, and the Alzheimer’s Disease Neuroimaging Initiative. Fiber Direction Estimation, Smoothing and Tracking in Diffusion MRI. *The Annals of Applied Statistics* **10**(3) (2016), 1137–1156.
► Discussion Paper
24. S. Han, **R. K. W. Wong**, T. C. M. Lee, L. Shen, S.-Y. R. Li, and X. Fan. A Full Bayesian Approach for Boolean Genetic Network Inference. *PLoS One* **9**(12) (2014), e115806.
25. **R. K. W. Wong**, P. Baines, A. Aue, T. C. M. Lee, and V. L. Kashyap. Automatic Estimation of Flux Distributions of Astrophysical Source Populations. *The Annals of Applied Statistics* **8**(3) (2014), 1690–1712.
26. **R. K. W. Wong**, F. Yao, and T. C. M. Lee. Robust Estimation for Generalized Additive Models. *Journal of Computational and Graphical Statistics* **23**(1) (2014), 270–289.
► 2011 Student Paper Award, ASA Section on Nonparametric Statistics
27. R. C. S. Lai[♦], T. C. M. Lee[♦], **R. K. W. Wong**[♦], and F. Yao[♦]. Nonparametric Cepstrum Estimation via Optimal Risk Smoothing. *IEEE Transactions on Signal Processing* **58**(3) (2010), 1507–1514.
28. **R. K. W. Wong**, R. C. S. Lai, and T. C. M. Lee. Structural Break Estimation of Noisy Sinusoidal Signals. *Signal Processing* **90**(1) (2010), 303–312.

Conference papers (peer-reviewed)

Statistics / Machine learning

29. Z. Wei^{*}, **R. K. W. Wong** and T. C. M. Lee. Extending the Use of MDL for High-Dimensional Problems: Variable Selection, Robust Fitting, and Additive Modeling. In: *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. 2022.
30. J. Li^{*}, T. V. Nguyen, C. Hegde and **R. K. W. Wong**. Implicit Sparse Regularization: The Impact of Depth and Early Stopping. In: *Advances in Neural Information Processing Systems (NeurIPS)*. 2021.
31. J. Wang^{*}, **R. K. W. Wong**, X. Mao, and K. C. G. Chan. Matrix Completion with Model-free Weighting. In: *Proceedings of the 38th International Conference on Machine Learning (ICML)*, 139, pp.10927–10936, 2021.

32. W. Liu[♦], X. Mao[♦] and **R. K. W. Wong[♦]**. Median Matrix Completion: from Embarrassment to Optimality. In: *Proceedings of the 37th International Conference on Machine Learning (ICML)*, 119, pp.6294–6304, 2020.
33. T. V. Nguyen^{*}, **R. K. W. Wong** and C. Hegde. On the Dynamics of Gradient Descent for Autoencoders. In: *Proceedings of the Twenty-Second International Conference on Artificial Intelligence and Statistics (AISTATS)*, 89, pp.2858–2867, 2019.
34. T. Nguyen^{*}, **R. K. W. Wong**, and C. Hegde. A Provable Approach for Double-Sparse Coding. In: *Thirty-Second AAAI Conference on Artificial Intelligence (AAAI)*, 2018.
 - **Oral presentation**

Others

35. R. Woodruff^{*}, N. Beebe^{*}, P. K. Josan^{*}, P. Dutta^{*}, **R. K. W. Wong**, B. Dunbar, D. Selva, and A. Diaz-Artiles. A 3D Interactive Model of HERA to Support ECLSS Anomaly Resolution Using a Virtual Assistant. In: *2021 IEEE Aerospace Conference*, pp.1–10, 2021.
36. P. K. Josan^{*}, P. Dutta^{*}, R. Woodruff^{*}, N. Beebe^{*}, K. York^{*}, O. Balcells-Quintana^{*}, L. Kluis^{*}, A. Viros^{*}, B. Dunbar, **R. K. W. Wong**, D. Selva, and A. Diaz-Artiles. Experimental Design & Pilot Testing for ECLSS Anomaly Resolution using Daphne-AT Virtual Assistant. In: *2021 IEEE Aerospace Conference*, pp.1–13, 2021.
37. P. Dutta^{*}, O. Balcells-Quintana^{*}, A. Viros^{*}, R. Whittle^{*}, P. K. Josan^{*}, N. Beebe^{*}, B. Dunbar, **R. K. W. Wong**, A. Diaz-Artiles, and D. Selva. Virtual Assistant for Anomaly Treatment in Long Duration Exploration Missions. In: *AIAA Scitech 2020 Forum*, 2255, 2020.
38. Z. Liao^{*}, G. T. Amariucaⁱ, **R. K. W. Wong**, and Y. Guan. The Impact of Discharge Inversion Effect on Learning SRAM Power-Up Statistics. In: *IEEE Asian Hardware Oriented Security and Trust Symposium (AsianHOST)*, pp.31–36, 2017.

Grants

External grants

- | | |
|-------------|--|
| Jan21–Jan24 | Unoccupied Aerial System Enabled Phenomic Selection to Develop Improved Southern Maize Hybrids
<i>National Institute of Food and Agriculture (2021-67013-33915)</i> , Co-PI (PI: Seth Murray) |
| Oct19–Sep22 | HDR Tripods: Texas A&M Research Institute for Foundations of Interdisciplinary Data Science (FIDS)
<i>National Science Foundation (CCF-1934904)</i> , Senior Personnel (PI: Bani Mallick) |
| Mar19–Mar23 | Virtual Assistant for Spacecraft Anomaly Treatment during Long Duration Exploration Missions
<i>National Aeronautics and Space Administration (80NSSC19K0656)</i> , Co-I (PI: Daniel Selva) |
| Aug17–Jul21 | Covariate Balancing in Missing Data and Observational Studies
<i>National Science Foundation (DMS-1711952)</i> , Co-I, via a subcontract from <i>University of Washington</i> (PI: Kwun Chuen Gary Chan) |
| Jul16–Jun20 | Collaborative Research: New Directions in Multidimensional and Multivariate Functional Data Analysis
<i>National Science Foundation (DMS-1612985 / DMS-1806063)</i> , PI |

Internal grants

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| Jun22–May23 | Assessing the Stochasticity of Thunderstorms Using Advanced Statistical and Machine Learning Methods
<i>Seed Grant Program for Promoting Research Collaborations (Type I)</i> , PI |
| Jun22–May23 | Optimizing the Analysis and Interpretation of Geobiological Datasets in the Quick-pace Context of Operating the NASA Perseverance Rover on Mars
<i>Seed Grant Program for Promoting Research Collaborations (Type II)</i> , Co-I |

- Jan20–Dec21 **Defining and Measuring Science Identity: A Critical Factor in High School Students' Selection of an Undergraduate STEM Major**
T3: Texas A&M Triads for Transformation, Co-PI (PI: Myeongsun Yoon)
- Jan20–Jan22 **An Interdisciplinary Approach For Teaching Data Science For Medical And Public Health Studies**
The Presidential Transformational Teaching Grant (PTTG) program, Co-PI (PI: Hongwei Zhao)
- Apr18–Mar20 **Improving Unmanned Aerial System (UAS) Estimates Of Crop Height By Spatio-Temporal Statistics**
T3: Texas A&M Triads for Transformation, Co-PI (PI: Seth Murray)

Honors and awards

- 2020 **Top Reviewer**
International Conference on Machine Learning (ICML 2020)
- 2014 **Best Student Paper Award**
International Indian Statistical Association
- 2014 **Los Alamos Statistical Sciences Conference Grant**
Los Alamos National Laboratory
 Awarded with a grant to support participation in the *Conference on Data Analysis* poster session
- 2011 **Student Paper Award**
Section on Nonparametric Statistics, American Statistical Association
 Awarded to a winner of the student paper competition
- 2011 **Julius Blum Award**
Department of Statistics, University of California at Davis
 Awarded annually since 1983 to an outstanding Statistics graduate student
- 2005–2008 **Dean's Honor List**
Faculty of Science, The Chinese University of Hong Kong
 For three consecutive academic years
- 2003 **Excellent Performance Award**
Department of Mathematics, The Chinese University of Hong Kong
 Presented by *Enrichment Programme for Young Mathematics Talents*

Teaching

Texas A&M University

- **Stat 211: Principles of Statistics I**
 - Spring 2018, Spring 2019
- **Stat 404: Statistical Computing**
 - Spring 2020, Spring 2021, Spring 2022
- **Stat 408: Introduction to Linear Models**
 - Spring 2022
- **Stat 612 (graduate level): Theory of Linear Models**
 - Fall 2017, Fall 2018, Fall 2019, Fall 2020, Fall 2021
- **Stat 616 (graduate level): Statistical Aspects of Machine Learning I: Classical Multivariate Methods**
 - Fall 2019

Iowa State University

- **Stat 105: Introduction to Statistics for Engineers**
 - Fall 2016
- **Stat 330: Probability & Statistics for Computer Science and Engineering**

- Fall 2014, Fall 2015, Spring 2017
- **Stat 580 (graduate level): Statistical Computing**
 - Spring 2015, Spring 2016, Spring 2017

University of California at Davis

- **STA 13: Elementary Statistics**
 - Summer 2012

Graduate committees

Advisor

- **Ph.D. students**
 1. Xiaojun Mao (2018; Statistics; co-supervision with Song Xi Chen and Dan Nettleton; ISU)
Dissertation: Topics in Matrix Completion and Genomic Prediction
Winner of 2017 ICSA Student Paper Award
 2. Thanh V. Nguyen (2020; Electrical and Computer Engineering; co-supervision with Chinmay Hegde; ISU)
Dissertation: Provable Surrogate Gradient-based Optimization for Unsupervised Learning
Winner of 2020 Research Excellence Award, Graduate College of ISU
 3. Jiayi Wang (2022; Statistics; TAMU)
Dissertation: Reproducing Kernel Hilbert Space Modeling in Functional Data Analysis and Causal Inference
Winner of 2020 ASA Section on Nonparametric Statistics Student Paper Award
Winner of 2021 Emanuel Parzen Graduate Research Fellowship Award
 4. Jiangyuan Li (in progress; Statistics; TAMU)
 5. Jianing Dong (in progress; Statistics; TAMU)
 6. Sungee Hong (in progress; Statistics; TAMU)
 7. Weiwei Wang (in progress; Statistics; TAMU)
- **M.S. students**
 1. Lukang Huang (2019; Statistics; TAMU)
Dissertation: Efficient Estimation of Counterfactual Distributions and Testing Distributional Treatment Effects
 2. Ya Zhou (2019; Statistics; TAMU)
Dissertation: Broadcasted Nonparametric Tensor Regression

Committee member

- **Ph.D. students**
 - Israel Almodóvar (2017; Statistics; ISU) – Maggie Johnson (2017; Statistics; ISU) – Liuhua Peng (2017; Statistics; ISU) – Zhenfeng Lin (2019; Statistics; TAMU) – Yan Zhong (2021; Statistics; TAMU) – Huijuan Zhou (2021; Statistics; TAMU) – Dongbang Yuan (2022; Statistics; TAMU) – Antoni Viros-i-Martin (2022; Aerospace Engineering; TAMU) – Asmita Roy (in progress; Statistics; TAMU) – Jian Yan (in progress; Statistics; TAMU) – Gecheng Chen (in progress; Industrial and Systems Engineering; TAMU) – Prachi Dutta (in progress; Aerospace Engineering; TAMU) – Hanxuan Ye (in progress; Statistics; TAMU) – Xi-aomeng Yan (in progress; Statistics; TAMU) – Justin Cole (in progress; Astronomy; TAMU) – Miao Rui (in progress; Statistics; George Washington University; dissertation reader) – Felix Jimenez (in progress; Statistics; TAMU) – Aaron J. DeSalvio (in progress; Genetics and Genomics; TAMU)
- **M.S. students**
 - Kyle Andrews (2019; Statistics; distance program; TAMU) – Ke Huang (2019; Statistics; TAMU)
 - Haoyuan Chen (2020; Mathematics; TAMU) – Chi-Yang Li (in progress; Chemical Engineering; TAMU)

Professional activities

Editorial and reviewing activities

Associate editor

- 2021–now *Journal of Computational and Graphical Statistics*
 2019–2021 *Canadian Journal of Statistics*

Referee

- Journals
- *Journal of Machine Learning Research* (Editorial Board Reviewer since 2020)
 - *Annals of Applied Statistics* • *Annals of the Institute of Statistical Mathematics* • *Bernoulli* • *Biometrics* • *Biometrika* • *Canadian Journal of Statistics* • *Chemometrics and Intelligent Laboratory Systems* • *Communications in Statistics – Case Studies & Data Analysis* • *Computational Statistics & Data Analysis* • *Electronic Journal of Statistics* • *IEEE Transactions on Network Science and Engineering* • *Journal of Computational and Graphical Statistics* • *Journal of Multivariate Analysis* • *Journal of Statistical Computation and Simulation* • *Journal of the American Statistical Association* • *Journal of the Korean Statistical Society* • *Journal of the Royal Statistical Society: Series B* • *SIAM/ASA Journal on Uncertainty Quantification* • *STAT* • *Statistica Sinica* • *Statistical Analysis and Data Mining* • *Statistical Science* • *Statistics in Medicine* • *Studies in Nonlinear Dynamics & Econometrics*
- Conferences
- *International Conference on Machine Learning (ICML 2020)* (Reviewer; selected as a Top Reviewer)
 - *AAAI Conference on Artificial Intelligence (AAAI 2021)* (Program Committee) • *International Conference on Machine Learning (ICML 2021)* (Reviewer)

Conference organizing activities

Organizer

- 2022 **Scientific programme committee**
International Conference on Econometrics and Statistics (Kyoto, Japan)
- 2019 **Program committee** *Co-chair of Computational Statistics Track (6 invited and 4 contributed sessions)*
Symposium on Data Science and Statistics (Bellevue, WA)

Session organizer

- 2022 **Advances in Matrix and Tensor Learning** *Invited Session*
Conference on Advances in Data Science (College Station, TX)
- 2022 **Student Paper Award and John M. Chambers Statistical Software Award** *Topic-contributed Session*
Joint Statistical Meetings (Washington DC)
- 2022 **Novel Developments for Functional Data Analysis** *Invited Session*
ICSA Applied Statistics Symposium (Gainesville, FL)
- 2022 **Recent Advances in Matrix and Tensor Learning** *Invited Session*
International Conference on Econometrics and Statistics (Virtual)
- 2021 **Student Paper Award and John M. Chambers Statistical Software Award** *Topic-contributed Session*
Joint Statistical Meetings (Virtual)
- 2021 **Novel Developments in Low-rank Modeling** *Invited Session*
International Conference on Econometrics and Statistics (Virtual)
- 2021 **Recent Advances in Functional Data Analysis** *Invited Session*
International Conference on Econometrics and Statistics (Virtual) (co-organized with Yuhang Xu)
- 2019 **Functional Data Analysis: Foundations, Tools and Applications** *Invited Session*
ICSA Applied Statistics Symposium (Raleigh, NC) (co-organized with Luo Xiao)
- 2019 **Longitudinal, Multilevel, Multiway and Spatial Functional Data Analysis** *Invited Session*
ICSA Applied Statistics Symposium (Raleigh, NC) (co-organized with Luo Xiao)

2019 **Recent Advances in Matrix and Tensor Factorization Models** *Invited Session*
Symposium on Data Science and Statistics (Bellevue, WA)

2017 **Advances in Low-rank Modeling and Its Estimation** *Invited Session*
ICSA Applied Statistics Symposium (Chicago, IL)

Session chair

2021 **Novel Developments in Low-rank Modeling** *Invited Session*
International Conference on Econometrics and Statistics (Virtual)

2019 **Functional Data Analysis: Foundations, Tools and Applications** *Invited Session*
ICSA Applied Statistics Symposium (Raleigh, NC)

2019 **Recent Developments in Lower Rank Learning for Complex Data** *Invited Session*
Symposium on Data Science and Statistics (Bellevue, WA)

2016 **Recent Advances in Functional Data Analysis** *Contributed Session*
Joint Statistical Meetings (Chicago, IL)

2015 **New Approaches for Analyzing Time Series Data** *Invited Session*
Joint 24th ICSA Applied Statistics Symposium and 13th Graybill Conference (Fort Collins, CO)

Others

2020–2023 **Awards chair (an appointed officer of both sections)**
 ASA Sections on Statistical Computing and Statistical Graphics

2020 **Review committee**
 Student Paper Competition, ASA Sections on Statistical Computing and Statistical Graphics

2019 **Judge**
 Poster Session, Southeastern Texas Chapter of the American Statistical Association (SETCASA)

2019 **Chair of the review committee**
 Student Paper Competition, ASA Sections on Statistical Computing and Statistical Graphics

2018 **Reviewer**
 National Science Foundation

2018 **Review committee**
 Student Paper Competition, ASA Sections on Statistical Computing and Statistical Graphics

2018 **Judge**
 Poster Session, Southeastern Texas Chapter of the American Statistical Association (SETCASA)

Research interests

- Causal inference
- Functional data analysis
- Low-rank modeling
- Reinforcement learning
- Statistical learning