

Wenxuan Zhong

CURRICULUM VITA

1. ACADEMIC HISTORY

- Office Address: 202 Statistics Building, University of Georgia, Athens, GA 30602-7952
- Lab Address: Pound Hall, Health Sciences Campus, University of Georgia, Athens, GA 30602
- Phone (O): (706)542-0120 Email: wenxuan@uga.edu
- personal webpage: <http://faculty.franklin.uga.edu/wenxuan/>
- Lab webpage: <http://bigdata.uga.edu/>

Degrees

- Ph.D. in Statistics, Purdue University, IN MAY 2005
- M.S. in Statistics, Purdue University, IN JUL 2003
- B.E. in Statistics, Nankai University, Tianjin, China JUL 1996

Academic Positions Held

- Associate Professor, Department of Statistics, University of Georgia AUG 2013–
- Founding Director of the Big Data Analytics Research Initiative, Univ. of Georgia
AUG 2014–
- Faculty Member of Initiative of Obesity, Univ. of Georgia MAR 2014–
- Faculty Member of Bioenergy Systems Research Inst., Univ. of Georgia MAR
2014–
- Assistant Professor, Department of Statistics, Univ. of Illinois at Urbana-Champaign
AUG 2007–AUG 2013
- Faculty Member of Inst. of Genome Biology, Univ. of Illinois at Urbana-Champaign
AUG 2007–AUG 2013
- Postdoctoral Fellow, Department of Statistics & FAS Center for Systems Biology,
Harvard Univ. AUG 2005–AUG 2007

Awards and Honors

- Honorary Guest Speaker, Big Data Analytics Management and Innovation International Conference 2014
- Research featured in The Red and Black (A newspaper in Athens) 2014
- Research featured in University of Georgia UGA Today 2014
- Research featured in University of Illinois College of Liberal Arts & Sciences Newsletter 2012

- International Statistical Institute (ISI) elected member Since 2012
- NSF-AWM travel award SUMMER 2009

Research Interests

Dr. Zhong's research focuses on the statistical methodology and theory development to face the striking new phenomena emerged under the big data regime. Over the past few years, Dr. Zhong has established diverse extramurally funded research programs to overcome the computational and theoretical challenges arise from the big data analysis. The basic statistical researches are successfully applied in modern genomic, epigenetic, metagenomics, text-mining and chemical sensing researches. Dr. Zhong is the founding director of the Big Data Analytics Research Initiative and the PI for a big data analytics dry lab located in the Pound Hall in University of Georgia.

2. SCHOLARLY ACTIVITIES

Publications

- Books authored or co-authored
 - Wu, X., Cheng, B., Liu, L., Tong, L., **Zhong, W.** and Xiong, H. (2000). Statistics: The Conceptual Approach (Translation of Gudmund R. Iversen Mary Ger-gen). *Springer*.
- Peer-Reviewed/Refereed Journal Articles
 - [1] Seok, S., Kumar S., Choi, S., Zhu, R. Kang, Y. Yoon, G., Sun X., **Zhong, W.**, Kemper, B. and Kemper, K. (2014). The bile acid nuclear receptor FXR is a key transcriptional repressor of autophagy. *Nature*, In press.
 - [2] **Zhong, W.**, Xing, X. and Suslick, K., (2014). Tensor dimension reduction. *Wiley Interdisciplinary Reviews: Computational Statistics* Invited publication. (**First and Corresponding author**)
 - [3] Zhang, L., Ma, P., Collery, R., Trowbridge, S., Zhang, M., **Zhong, W.** and Leung, Y.F. (2014). Expression profiling of the RPE in zebrafish smarca4 mutant revealed altered signals that potentially affect RPE and retinal differentiation. *Molecular Vision* 20:56-72.
 - [4] Zhang, Y., Askim, J.R., **Zhong, W.**, Orlean, P., Suslick, K.S. (2014). Identification of pathogenic fungi with an optoelectronic nose. *Analyst* 139(8):1922-8.
 - [5] Zeng, P. and **Zhong, W.** (2013). Dimension reduction for tensor classification, Topics in Applied Statistics: 2012 Symposium of the International Chinese Statistical Association. *Springer Proceedings in Mathematics & Statistics* 55: 213-227.(**Corresponding Author**)
 - [6] **Zhong, W.** and Suslick, K., (2013). Matrix discriminant analysis with application to colorimetric sensor arrays. *Technometrics* doi:10.1080/00401706.2014.965347. (**First and corresponding author**)

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- [7] Qian, T., Lu, S. Ma, H. Fang, J. **Zhong, W.** and Wang, Y. (2013). FRET imaging of microenvironment effects on calcium signaling in living cells. *Integrative Biology* 5(2):431-8. (**Co-Corresponding Author**)
- [8] Li, Z., Ptak, D., Zhang, L., Walls, E., **Zhong, W.** and Leung, Y. (2012). Phenylthiourea specifically reduces zebrafish eye size. *PLoS ONE* 7(6): e40132.
- [9] Zhang, Y. Yang, Y. Trujillo, C. **Zhong, W.** and Leung, Y. (2012). The expression of *irx7* in the inner nuclear layer of zebrafish retina is essential for a proper development of both inner and outer nuclear layers and formation of retinal lamination. *PLoS ONE* 7(4): e36145.
- [10] Parcel, T., Campbell, L.A. and **Zhong, W.** (2012). Children's behavior problems in the United States and Great Britain. *Journal of Health and Social Behavior* 53 (2): 165-182.
- [11] **Zhong, W.**, Zhang, T., Zhu, M. and Liu, J. S. (2012). Correlation pursuit: forward stepwise variable selection for index models. *Journal of Royal Statistical Society, Ser B.* 74 (5): 849-870. (**First and Corresponding author**)
- [12] Hensley, M.R. Emran, F., Bonilla, S. Zhang, L., **Zhong, W.**, Grosu, P., Dowling, J.E. and Leung Y. F., (2011). Cellular Expression of *Smarca4* (*Brg1*)-regulated Genes in Zebrafish Retinas. *BMC Developmental Biology* 11:45.
- [13] Feng, L., Lim, S. Kemling, J., Musto, C., Jiang, M., Lin, H., **Zhong, W.**, Suslick, K. (2010). A colorimetric sensor array for determination and identification of toxic industrial chemicals. *Analytical Chemistry* 82(22): 9433-9440.
- [14] Ma, P., **Zhong, W.**, and Liu, J. S. (2009). Identification of differentially expressed genes in time course microarray experiment. *Statistics in Biosciences* 1(2):144-159.
- [15] Lim, S., Musto, C., Park, E., **Zhong, W.**, and Suslick, K. (2008). A colorimetric sensor array for detection and identification of sugars. *Organic Letters* 10(20): 44054408.
- [16] Ma, P., **Zhong, W.** (2008). Penalized clustering for large scale functional data with multiple covariates. *Journal of American Statistical Association* 103 (482): 625-636.
- [17] Ma, P., **Zhong, W.**, Feng, Y., and Liu, J.S. (2008). Bayesian functional data clustering for temporal microarray data. *International Journal of Plant Genomics* article ID 231897.
- [18] Ma, P., Castillo-Davis, C., **Zhong, W.**, and Liu, J. S. (2006). A data-driven clustering methods for time course gene expression data, *Nucleic Acids Research* 34 (4):1261-1269.
- [19] Yuan, G. C., Ma, P., **Zhong, W.**, and Liu, J.S. (2006). Statistical assessment of the global regulatory role of histone acetylation in *Saccharomyces cerevisiae*. *Genome Biology* 7:R70.

- [20] **Zhong, W.**, Zeng, P., Ma, P., Liu, J. S., and Zhu, Y. (2005). RSIR: regularized sliced inverse regression for motif discovery. *Bioinformatics* 21:4169-4175. (**Joint First Author**)
- [21] Klocke, N. W., Snyder, P. W., Widmer, W. R., **Zhong, W.**, McCabe, G. P., and Breur, G. J. (2005). Detection of synovial macrophages in the joint capsule of dogs with naturally occurring rupture of the cranial cruciate ligament. *American Journal of Veterinary Research* 66 (3):493-499.
- [22] Vio, R., Ma, P., **Zhong, W.**, Nagy, J., Tenorio, L., and Wamsteker, W. (2004). Estimation of regularization parameters in multiple-image deblurring. *Astronomy & Astrophysics* 423:1179-1186.

Grants Received

• Active Grants

- [1] National Institute of Health R01 GM113242-01,
Principal investigator (\$1,480,000) 07/01/2014–06/30/2018
Novel Statistical Tools for Cell Line Specific Epigenetic Analysis
- [2] National Science Foundation DMS-1228288
Principal investigator (\$964,410) 08/01/2012–07/31/2015
Collaborative Research: Leverage Subsampling for Regression and Dimension Reduction
- [3] National Science Foundation MRI, CNS-1337732
Senior investigator (PI: Lumetta, S.S.\$1,800,000) 09/01/2013–08/30/2016
Development of a Novel Computing Instrument for Big Data in Genomics
- [4] National Institute of Health R01 DK062777,
Co-investigator (PI: Kim, J. Kemper \$1,300,000) 05/01/2013–08/15/2018
Regulation of Cholesterol Catabolism by Bile Acids

• Pending Grants

- [1] National Institute of Health R01 EB020657-01,
Principal investigator 08/01/2015–08/10/2020
Recovering the functional network of human brains in and across different tasks

• Finished Grants

- [1] National Science Foundation DMS-1120256
Principal investigator (\$615,557) 07/01/2011–07/31/2014
ATD Collaborative Research: Statistical Modeling of Short-Read Counts in RNA-Seq
- [2] Department of Energy, BER,
Senior collaborator (PI: Bill Metcalf \$2,300,641) 06/01/2010–05/30/2013
Methanogenic Archaea and the Global Carbon Cycle: A Systems Biology Approach to the Study of Methanosarcina Species

- [3] University of Illinois Research Board,
Principal Investigator (\$19,000) 07/01/2008–06/30/2009
*Variable Selection in Index Models with Applications to High Throughput Hi-
stone Modifications*
- [4] National Center for Supercomputing Applications, DMS080090
Principal investigator (One year TeraGrid Allocation) 2007–2008
Dimension Reduction in Transcription Factor Binding Motif Identification
- [5] National Institute of Health U01 ES016011,
Co-investigator (PI: Kenneth Suslick \$2,460,000) 07/01/2007–06/30/2012
A VOC Dosimeter based on a Colorimetric Sensor Array

Recognitions and Outstanding Achievements

- Elected Member, International Statistical Institute 2008–PRESENT
- Member, American Statistical Association 2007–PRESENT
- Member, International Chinese Statistical Association 2007–PRESENT

Areas In Which Research Is Done

- Nonparametric and Semiparametric Regression
- Variable Selection and Dimension Reduction
- Metagenomics, Epigenetics and Genomics
- Tensor Dimension Reduction with Applications in Image Processing
- Subsampling in Big Data

Supervision of Student and Postdoc Research

- Advisor for Postdoctoral Fellow
 - Rong Zhu 2013 (Finished)
- Major Advisor/Co-Advisor for UGA PhD students
 - Xin Xing 2017 (Expected)
 - Yiwen Liu (co-advising with Ping Ma) 2017 (Expected)
 - Xiaoxiao Sun (co-advising with Ping Ma) 2017 (Expected)
 - Rui Xie (co-advising with Ping Ma) 2018 (Expected)
 - Xinlian Zhang 2018 (Expected)
- Advisory Committee Member for UGA PhD students
 - Yan Zhen Current
 - Stacy Cobb Current
 - Debin Qiu Current
 - Chi Zhang Current

- Sha Cao Current
- Yuanwen Wang Current
- Xianyan Chen Current
- Liyu Wang Current
- Jing Zhao Current
- Xiang Li Current
- Research Advisor for UIUC Ph.D students:
 - Lee, H. (advisor: Wuebbles, D. J.)
Topic: The pattern of geopotential height at 1000 hPa optimized to explain anomalous wintertime temperature in the U.S.
 - Yifeng He (advising in UIUC) August, 2013 - April, 2014.
 - David Dalpiaz (advising in UIUC) April, 2014.
David is currently a Visiting Assistant Professor at UIUC

Editorship or Editorial Board Member

Editorial Board for American Journal of Bioinformatics and Computational Biology 2012–

Presentations

- Honorary Guest Speaker
 - Big Data Analytics Management and Innovation International Conference
- Invited Colloquium/Seminar Talks
 - Bioinformatics Center, Tsinghua University, Beijing, China, June 2014
 - Central University of Finance and Economics, Beijing, China, June 2014
 - Beijing Institute of Genomics, Beijing, China, Jun 2014
 - Mathematical Sciences Center, Tsinghua University, Beijing, China, May 2014
 - College of Computer Science and Technology, Jilin University, Changchun, China, December 2013
 - Statistica Sinica, Taiwan, December 2013
 - Bioinformatics Group, Harvard University March 2013
 - Institute of Bioinformatics, University of Georgia November 2013
 - Department of Statistics, University of Wisconsin-Madison, April 2013
 - Department of Statistics, University of North Carolina-Chapel hill, November 2012
 - Department of Biostatistics, Emory University October 2012
 - Department of Statistics, University of Georgia October 2012
 - School of Industrial & Systems Engineering, Georgia Institute of Technology October 2012
 - Department of Statistics, Northwestern University February 2012

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- Department of Statistics, Penn State University Ocotober 2009
 - Department of Statistics, Renmin University, Beijing, China, June 2008
 - Bioinformatics Group, Harvard University March 2008
 - Department of Statistics, Purdue University March 2008
 - Department of Biostatistics, University of Florida March 2007
 - Department of Statistics, Columbia University Feburary 2007
 - Department of Statistics, University of Illinois at Urbana-Champaign Feburary 2007
 - Department of Biostatistics, University of North Carolina-Chapel Hill Feburary 2007
 - Department of Statistics, University of South Carolina Feburary 2007
 - Department of Statistics, George Mason University January 2007
 - Department of Statistics, University of West Virginia January 2007
 - Department of Biostatistics, Harvard University November 2006
 - FAS center for System Biology, Harvard University August 2004
- Invited Conference Presentations
 - ICSA and KISS Applied Statistics Symposium, Portland, Oregon, June 2014
 - ISBIS 2014 and SLDM Meeting, Durham, NC, June 2014
 - Algorithms for Threat Detection, Boulder, CO, March 2014
 - ICSA International Conference, December 2013
 - DTRA/NSF Algorithm Workshop, San Diego, November 2012
 - Joint Statistical Meetings, San Diego, July 2012
 - ICSA Applied Statistics Symposium, June 2012
 - Conference on Statistical Learning and Data Mining, Ann Arbor, June 2012
 - 8th International Purdue Symposium on Statistics, June 2012
 - Joint Statistical Meetings, Miami, FL, August 2011
 - The First Wuxi International Statistics Forum, China, July 2011
 - ICSA Applied Statistics Symposium, New York City, June 2011
 - Invited speaker, DTRA/NSF Algorithm Workshop, Boston, June 2011.
 - Joint Statistical Meetings, Vancouver, BC, Canada, July 2010
 - ICSA Applied Statistics Symposium, Indianapolis, IN, June 2010
 - Conference on Resampling and High Dimensional Data, Texas A&M University, March 2010
 - Joint Statistical Meetings, DC, August 2009
 - IMS-China Weihai Conference, China, June 2009.
 - Joint Statistical Meetings, Denver, CO, August 2008
 - Joint Statistical Meetings, Salt Lake City, UT, August 2007

- New England Statistics Symposium, Worcester, MA , October 2006
- ICSA Applied Statistics Symposium, Storrs, CT, June 2006
- The Second Workshop on Monte Carlo Method, August 2004

3. RESIDENT INSTRUCTION AND CONTINUING EDUCATION

Courses Taught (*: new course; **: new teaching materials)

- Course taught at UGA
 - STAT 4230** Applied Linear Regression SPRING 2014
 - STAT 6230** Applied Linear Regression SPRING 2014
 - STAT 8230** Nonlinear Regression FALL 2013
- Course taught at UIUC
 - STAT 212** Biostatistics SP2012, FALL 2011, FA 2010
 - STAT 200** Statistical Analysis FALL 2009, SPRING 2010
 - STAT 400/MATH 463** Statistics and Probability I SPRING 2010
 - STAT 428** Computational Statistics SPRING 2012

4. PUBLIC SERVICES

International Programs

- Scientific Advisory Committee, Kuang-Chi Institute of Advanced Technology, May 2014 -present
- Scientific Review Board, CISP'10-MEI'10 Conference Summer 2010

Local Community Services and Relations

- Serve as judge for Georgia Science Fair 2014
- Serve as judge for Illinois Science Fair 2012
- Invited speaker for country-side primary school's engineering event 2012
- Serve as coach for Champaign Kids Chess Club 2012

Service To Governmental Agencies

- PI of “white paper on behave of UIUC submitted to The Office of Science and Technology Policy of White House”. This white paper was written upon the request from vice chancellor for research to respond a grand challenge call from white house.
- PI of “response to NIH’s Request for Information (RFI): Training Needs in Response to Big Data to Knowledge (BD2K) Initiative.” This response was written in collaboration with multiple research institutes at UIUC. Wenxuan represented Department of Statistics.

5. OTHER SERVICES

Service To The Department

- Member of Graduate Committee 2013-2014
- Member of Statistics Department Head Search Committee 2014-2015
- Member of Undergraduate Program 2014-2015
- Member of Examination Committee 2014-2015

Journal Editing Services

- **Editorial Board** for American Journal of Bioinformatics and Computational Biology 2012–

Journal Referee Services (more than 60 articles)

- Annals of Statistics
- Annals of Applied Statistics
- Bernoulli
- Biometrics
- Journal of American Statistical Association
- Journal of Royal Statistical Society series B
- Biostatistics
- Bioinformatics
- BMC bioinformatics
- Nucleic Acids Research
- Proceedings of the National Academy of Science
- PLOS one
- PLOS computational biology
- IEEE/ACM transactions on computational biology and bioinformatics
- Journal of Computational and Graphical Statistics
- Journal of Multivariate Analysis
- Journal of Statistical Planning and Inference

- Statistica Sinica
- Statistics and Its Interface
- Mathematical Bioscience
- Canadian Journal of Statistics

Grant Reviews

- Panel Review, National Science Foundation FALL 2014
- Panel Review, National Science Foundation SPRING 2014
- Panel Review, National Science Foundation SPRING 2013
- Panel Review, Department of Energy: Innovative and Novel Computational Impact on Theory and Experimentation (INCITE) SPRING 2007
- Panel Review, Department of Energy: ASCR Leadership Computing Challenge (ALCC) SPRING 2008
- Postal Review, National Security Agency FALL 2009

Other Professional Services

- Funding member of organizing committee, the second Midwest Symposium on Computational Biology and Bioinformatics 2008
- Invited Session Organizer and Chair, ICSA applied symposium 2009
- Invited Session Organizer and Chair, ICSA applied symposium 2010
- Invited Session Organizer and Chair, ICSA applied symposium 2011
- Invited Session Organizer and Chair, Joint Statistical Meetings 2009
- Invited Session Organizer and Chair, Joint Statistical Meetings 2010
- Invited Session Organizer and Chair, Joint Statistical Meetings 2012
- Member of organizing committee, Bohrer Workshop in UIUC 2008
- Invited Session Chair, Joint Statistical Meetings 2011