

# CHONG WU

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## RESEARCH INTEREST

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High-dimensional data, big data, machine learning, statistical genetics

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## EDUCATION

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<b>University of Minnesota (UMN)</b>	Minneapolis, MN
Ph.D., Biostatistics	May 2018 (Expected)
Advisors: Prof. Weihua Guan & Prof. Wei Pan	GPA: 3.8/4.0
Thesis: Statistical methods for high-dimensional genetic and genomic data	

<b>Huazhong University of Science &amp; Technology</b>	Wuhan, China
B.S., Applied Mathematics	Jun. 2013
Advisor: Prof. Xiaoyang Zhou	GPA: 3.9/4.0; Ranking: 1/29

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## RESEARCH EXPERIENCE

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<b>Graduate Research Assistant</b> , Advisor: Prof. Wei Pan	Sept. 2014–Present
Research areas: high-dimensional genetic and genomic data, machine learning, statistical genetics	
Division of Biostatistics, University of Minnesota	

<b>Graduate Research Assistant</b> , Advisor: Prof. Weihua Guan	Sept. 2013–May 2017
Research areas: statistical genetics, methylation data	
Division of Biostatistics, University of Minnesota	

<b>Undergraduate Research Assistant</b> , Advisor: Prof. Xiaoyang Zhou	2011–2013
Research areas: data mining on regional economic indicators	
School of Mathematics and Statistics, Huazhong University of Science & Technology	

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## TEACHING EXPERIENCE

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<b>Guest Instructor</b>	Jan. 2017–May 2017
Course Name: PUBH 7475/8475 Statistical Learning and Data Mining	
Division of Biostatistics, University of Minnesota	

<b>Lab Instructor</b> , Instructor: Prof. William Thomas	Jan. 2014–May 2014
Course Name: PUBH 6451 Biostatistics II	
Division of Biostatistics, University of Minnesota	

<b>Teaching Assistant</b> , Instructor: Prof. Ann M. Brearley	Sept. 2013–Dec. 2014
Course Name: PUBH 6414 Biostatistical Methods I (Online Section)	

Division of Biostatistics, University of Minnesota

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## PEER-REVIEWED PUBLICATIONS

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1. Xu, Z., **Wu**, C., Wei, P., and Pan, W. (2017+). A powerful framework for integrating eQTL and GWAS summary data. Accepted by *Genetics*, early online. (IF: 4.6)
2. Liu, B., **Wu**, C., Shen, X., and Pan, W. (2017+). A novel and efficient algorithm for de novo discovery of mutated driver pathways. Accepted by *Annals of Applied Statistics*, early online.
3. Xu, Z., **Wu**, C., Pan, W., and Alzheimer's Disease Neuroimaging Initiative (ADNI). (2017). Imaging-wide association study: integrating imaging endophenotypes in GWAS. *NeuroImage*, 159:159–169.  
(IF: 5.8. This paper won a platform presentation at the American Society of Human Genetics (ASHG) 2017 Annual Meeting.)
4. **Wu**, C.\*, Kwon, S.\*, Shen, X., and Pan, W. (2016). A new algorithm and theory for penalized regression-based clustering. *Journal of Machine Learning Research*, 17(188):1–25.  
(\* Co-first author. IF: 5.0, a leading journal in machine learning area.)
5. **Wu**, C., Chen, J., Kim, J., and Pan, W. (2016). An adaptive association test for microbiome data. *Genome Medicine*, 8(1):1–12.  
(IF: 7.1. This paper won the 2016 Joint Statistical Meetings (JSM) Distinguished Student Paper Award on Statistics in Genomics and Genetics Section.)
6. **Wu**, C., Demerath, E. W., Pankow, J. S., Bressler, J., Fornage, M., Grove, M. L., Chen, W., and Guan, W. (2016). Imputation of missing covariate values in epigenome-wide analysis of DNA methylation data. *Epigenetics*, 11(2):132–139.  
(IF: 4.4, the official journal of the DNA Methylation Society.)
7. Bose, M., **Wu**, C., Pankow, J. S., Demerath, E. W., Bressler, J., Fornage, M., Grove, M. L., Mosley, T. H., Hicks, C., North, K., Kao, W. H., Zhang, Y., Boerwinkle, E., and Guan, W. (2014). Evaluation of microarray-based DNA methylation measurement using technical replicates: the Atherosclerosis Risk In Communities (ARIC) Study. *BMC Bioinformatics*, 15(1):1–10. (IF: 2.4)

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## PEER-REVIEWED PROCEEDINGS

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8. Park, J. Y., **Wu**, C., and Pan, W. (2017+). An adaptive gene-level association test for pedigree data. Accepted by *BMC Proceedings*, a special issue for the Genetic Analysis Workshop (GAW 20).
9. **Wu**, C., Park, J. Y., Guan, W., and Pan, W. (2017+). A powerful gene-based test for methylation data. Accepted by *BMC Proceedings*, a special issue for the Genetic Analysis Workshop (GAW 20).

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## SUBMITTED AND IN PREPARATION

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10. **Wu, C.**, Xu, G., Shen, X., and Pan, W. (2017+). An adaptive test on a high-dimensional parameter in the presence of a high-dimensional nuisance parameter in GLM with application to detect gene-environment interactions. Manuscript.  
(Job talk manuscript, to be submitted to *Journal of the American Statistical Association*.)
  11. **Wu, C.** and Pan, W. (2017+). Integrating eQTL data with GWAS summary statistics in pathway-based analysis. Submitted.  
(This paper won a poster talk (top 24 posters among about 3000 posters) at ASHG 2017 Annual Meeting.)
  12. **Wu, C.\***, Xu, G., and Pan, W.\* (2017+). An adaptive test on high dimensional parameters in generalized linear models. *Statistica Sinica*, revised and resubmitted. (\* Corresponding author)
  13. Zhu, L., Li, Y., Chen, Y., Carrera, C., **Wu, C.**, and Fork, A. (2017+). Comparison between two post-dentin bond strength measurement methods. *Scientific Reports*, revised and resubmitted.
  14. Park, J.Y., **Wu, C.**, Basu, S., McGue, M., and Pan, W. (2017+). Adaptive SNP set association testing in generalized linear mixed models with application to family studies. *Behavior Genetics*, revised and resubmitted.
  15. **Wu, C.**, Xu, G., and Pan, W. An adaptive and powerful test for high dimensional covariance matrices. In Preparation.
  16. **Wu, C.** and Pan, W. Network-based support vector machines with a new penalty. In Preparation.
  17. **Wu, C.**, Kim, J., Wei, P., and Pan, W. Adaptive test for meta-analysis of rare variants in sequencing association studies. In preparation.
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## SOFTWARE

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- Owner and maintainer for the following R packages:
    - prclust: Penalized Regression-Based Clustering Methods;
    - MiSPU: Microbiome Based Sum of Powered Score (MiSPU) Tests;
    - aSPU2: A New Version of Adaptive Sum of Powered Score (aSPU) Test;
    - GLMaSPU: Adaptive Tests on High Dimensional Parameters in Generalized Linear Models;
    - glmtp: Truncated Lasso Regularized Generalized Linear Models.
  - Contributor: Theano (Pull request: # 6130).
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## PRESENTATIONS

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- “An adaptive association test for microbiome data.”
  - Presentation at Eastern North American Region (ENAR) 2016 Spring Meeting

Austin, TX	Mar. 2016
– Poster presented at School of Public Health Research Day, University of Minnesota Minneapolis, MN	Apr. 2016
– Poster presented at Minnesota Supercomputing Institute (MSI) Research Exhibition Minneapolis, MN	Apr. 2016
– Presentation at 2016 Joint Statistical Meetings (JSM) Chicago, IL	Aug. 2016
• “Iterative PCA in epigenome-wide association studies.”	
– Poster presented at American Society of Human Genetics (ASHG) 2016 Annual Meeting Vancouver, BC, Canada	Oct. 2016
• “A gene-level adaptive association test for methylation data.”	
– Presentation at Genetic Analysis Workshop (GAW) 20 San Diego, CA	Mar. 2017
• “An adaptive test on high dimensional parameters in GLMs.”	
– Presentation at ENAR 2017 Spring Meeting Washington, DC	Mar. 2017
– Poster presented at MSI Research Exhibition Minneapolis, MN	Apr. 2017
– Presentation at 2017 JSM Baltimore, MD	Aug. 2017
• “Imaging-wide association study: integrating imaging endophenotypes in GWAS”	
– Invited presentation at 2017 JSM (On Prof. Wei Pan’s behalf) Baltimore, MD	Aug. 2017
– Invited presentation at Third Annual Kliakhandler Conference (On Prof. Wei Pan’s behalf) Houghton, MI	Aug. 2017
• “Integrating eQTL data with GWAS summary statistics in pathway-based analysis”	
– Poster talk at ASHG 2017 Annual Meeting Orlando, FL	Oct. 2017

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## HONORS & AWARDS

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• <b>Poster Award</b>	May 2017
– University of Minnesota Chapter of Sigma Xi	
• <b>Elected to Delta Omega (Public Health Honorary Society)</b>	May 2017
– University of Minnesota	
• <b>Elected to Sigma Xi (The Scientific Research Society)</b>	May 2017
– University of Minnesota	

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- **Distinguished Student Paper Award**, Genomics and Genetics Section Aug. 2016  
   – 2016 Joint Statistical Meetings
  - **Doctoral Dissertation Fellowship** 2016–2017  
   – University of Minnesota
  - **Travel Award**, Computational Neuroscience Summer School Jul. 2015  
   – Statistical and Applied Mathematical Sciences Institute
  - **Dean's Ph.D. Scholarship** Sept. 2013  
   – University of Minnesota
  - **Honorable Mention in Mathematical Contest in Modeling** Apr. 2012  
   – Consortium for Mathematics and Its Application
  - **National Scholarship** Sept. 2011  
   – Ministry of Education, China
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## WORK EXPERIENCE

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**Biostatistics Intern**, Advisor: Dr. Jeff Budd May 2014–Aug. 2014  
 Roles: Developed programs in S+ for statistical analysis  
 Beckman Coulter, Chaska, MN

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## PROFESSIONAL ACTIVITIES

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### Manuscript Reviewer

- Journal: Statistics in Biosciences, Journal of Theoretical Biology, Biometrical Journal, Computational Statistics and Data Analysis, Genetic Epidemiology, Bioinformatics
- Conference: 2017 Joint Statistical Meetings Student Paper Award Reviewer

### Professional Memberships

- Member, American Statistical Association 2014–Present
- Member, Eastern North American Region 2015–Present
- Member, The American Society of Human Genetics 2016–Present

### Programming Skills

- R, Python, MATLAB, C++