

HE REN

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EDUCATION

- Exp. Jun. 2027* **PhD Measurement & Statistics**
University of Washington (UW). Seattle, WA, United States
Advisor: Chun Wang, PhD
- Jun. 2022* **MEd Psychology**
Beijing Normal University (BNU). Beijing, China
Thesis Title: New termination rule for multcategory multidimensional computerized classification testing: From the perspectives of psychometrics and machine learning
- Jun. 2019* **BS Statistics**
Beijing Normal University (BNU). Beijing, China

INTERESTS

I am committed to the development and improvement of quantitative educational measurement methods and am always excited by the potential contribution that accurate measurement can make to educational equity. My research interests focus on Item Response Theory (IRT), Response Time (RT), Cognitive Diagnostic Modeling (CDM), Differential Item Functioning (DIF), and the application of machine learning in psychometrics.

RESEARCH EXPERIENCE

- Jun. 2024 – Sep. 2024* **University of Washington**
Seattle, WA, United States
Research Assistant *Project: Harvesting actionable results for learning and instruction: A novel mixed methods approach to extracting and validating information from diagnostic assessment*
PI: Chun Wang, PhD Funded by National Science Foundation
- Introduced and developed an innovative statistical method to recover the learning map
 - Cleaned massive response data by students across states
 - Collaborated weekly with content experts to refine and present results of cognitive diagnostic model, integrating feedback to improve the analytical process.
- Sep. 2022 – Jun. 2023* **University of Washington**
Seattle, WA, United States
Research Assistant *Project: HOPE: Achieving home discharge for institutionally bound patients with PROMs, AI, and the HER*
PI: Andrea Cheville, MD & Chun Wang, PhD Funded by National Institute of Health
- Cleaned a big clinic dataset with over 10 million records and conducted descriptive statistics
 - Handled the missingness and sampling weights in the dataset with multiple advanced statistical methods
 - Selected the most important variables on patients' discharge positions by regularization methods
- Jun. 2019 – Aug. 2019* **National Assessment Center for Education Quality**
Beijing, China
Research Assistant *Project: Vertical linking based on large-scale assessment projects in China*
PI: Ping Chen, PhD Funded by Chinese Testing International Co., Ltd.
- Participated in the research on test equating design and methods.

- Helped with programming for Monte Carlo simulation programs to compare different equating methods
- Assisted in creating research presentation posters and slides

TEACHING AND COUNSELING EXPERIENCE

Jun. 2023 – Present **Center for Social Science Computation and Research, University of Washington**
Seattle, WA, United States

Statistical Consultant *Supervisor: Jerald Herting, PhD*

- Instructed workshops on introductory R for faculty and students
- Provided statistical and computation consulting services 80 hours per month to improve the research of faculty and students

Sep. 2020 – Jan. 2021 **Beijing Normal University**

Beijing, China

Course: Adaptive testing and diagnostic adaptive assessment

Teaching Assistant
(Awarded as
Excellent TA)

- Undertook the task of introducing R
- Tutored 18 graduate students in remedial courses on the fundamentals of statistics.
- Corrected homework assignments weekly

INTERNSHIPS

May. 2022 – Jul. 2023 **ByteDance Ltd.**

Beijing, China

Psychometrician
(Internship)

- Conducted descriptive statistics, data visualization, and results interpretation
- Identified the items in which the difficulty parameters were abnormally labeled through quantitative analysis
- Simulated item recommendation rules and adjusted the recommendation rules based on the simulation results

PUBLICATIONS

Parker, M.C., **Ren, H.**, Li, M., & Wang, C. (2024). Intersectional Biases Within an Introductory Computing Assessment. *Proceedings of the 55th ACM Technical Symposium on Computer Science Education V. 1*, 1021–1027. <https://doi.org/10.1145/3626252.3630882>

Huang, Y., **Ren, H.**, & Chen, P. (2023). Item selection methods with exposure and time control for computerized classification test. *British Journal of Mathematical and Statistical Psychology*, 76(1), 52–68. <https://doi.org/10.1111/bmsp.12281>

Chen, P., Li, X., **Ren, H.**, & Xin, T. (2023). Influence factors of cross-test-cycles linking: A modified single group design (in Chinese). *Journal of Psychological Science*, 46(4), 960–970. <https://doi.org/10.16719/j.cnki.1671-6981.202304025>

Ren, H., Huang, Y., & Chen, P. (2022). Types, characteristics, and application of termination rules in computerized classification testing (in Chinese). *Advances in Psychological Science*, 30(5), 1168–1182. <https://doi.org/10.3724/SP.J.1042.2022.01168>

Ren, H., Xu, N., Lin, Y., Zhang, S., & Yang, T. (2021). Remedial teaching and learning from a cognitive diagnostic model perspective: Taking the data distribution characteristics as an example. *Frontiers in Psychology*, 12, Article 628607. <http://doi.org/10.3389/fpsyg.2021.628607>

Ren, H., & Chen, P. (2021). Two new termination rules for multidimensional computerized classification testing (in Chinese). *Acta Psychologica Sinica*, 53(9), 1044–1058. <https://doi.org/10.3724/SP.J.1041.2021.01044>

PRESENTATIONS

CONFERENCE PRESENTATION

Ren, H., Lyu, W., Wang, C., & Xu, G. (2024, July). *Regularized Gaussian variational estimation for detecting intersectional differential item functioning*. Presented at the 2024 International Meeting of the Psychometric Society (IMPS), Prague, Czech Republic.

Ren, H., & Wang, C. (2024, April). *Variable selection and binary prediction with incomplete data: Balance between fairness and precision*. Presented at the Annual Meeting of the American Educational Research Association (AERA), Philadelphia, PA.

Ren, H., Wang, C., Li, M., & Parker, M. (2024, April). *Detecting intersectional differential item functioning: A comparison of two methods*. Presented at the Annual Meeting of the American Educational Research Association (AERA), Philadelphia, PA.

Ren, H., Wang, C., & Sanders, E.A. (2024, April). *Modeling between- and within-person response time-response dependency: A comparison between two approaches*. Presented at the Annual Meeting of the National Council on Measurement in Education (NCME), Philadelphia, PA.

Huang, Y., **Ren, H.,** & Chen, P. (2022, April). *New item selection designs for computerized classification test*. Poster presented at the Annual Meeting of the National Council on Measurement in Education (NCME), San Diego, CA (Online).

Ren, H., & Chen, P. (2020, April). *Research on termination rules of multidimensional computerized classification testing*. Poster presented at the Annual Meeting of the National Council on Measurement in Education (NCME), Online.

WORKSHOP

Ren, H. (2024, March). *Introduction to Pytorch*. Workshop at Measurement & Statistics Seminar, University of Washington, Seattle, WA.

Ren, H. (2024, January). *Introduction to R using R Studio*. Workshop at Center for Social Science Computation and Research, University of Washington, Seattle, WA.

FUNDED GRANTS

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|-------------------------------|---|----------|
| 2019 – 2020 | 2019 Independent Project grant (Grant No. BJZK-2019A2-19003) | ~\$1,000 |
| <i>Principal Investigator</i> | Funded by Collaborative Innovation Center of Assessment for Basic Education Quality, Beijing Normal University <i>Project: Computerized classification test: Personalized classification test in the era of big data</i> | |
| 2017 – 2018 | 2017 Beijing College Students' Innovation Training Program grant. | ~1,500 |
| <i>Principal Investigator</i> | Funded by School of Statistics, Beijing Normal University <i>Project: Analysis and intervention on the mastery of data distribution characteristics of eighth graders based on cognitive diagnosis model</i> | |

SELECTED AWARDS/HONORS

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| 2024 | Psychometric Society Travel Award |
| 2024 | UW Center for Statistics and Social Sciences (CSSS) Travel Award |
| 2024 | UW Graduate and Professional Student Senate (GPSS) Travel Grant |
| 2024 | UW College of Education Travel Grant |
| 2022 | Outstanding Graduate of Beijing |
| 2021 | China National Scholarship |
| 2020 | The First Prize Scholarship of Beijing Normal University |
| 2020 | Meritorious Winner in the Interdisciplinary Contest in Modeling (ICM; As Student Advisor) |
| 2019 | Outstanding Graduate of Beijing |
| 2017 | Honorable Mention in the Interdisciplinary Contest in Modeling (ICM; As Team Member) |

COMPUTING SKILLS

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| Proficient | R, SPSS |
| Good | Python, SQL, MATLAB, SAS, Stata |

SERVICE

Reviewer

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| 2022 – Now | Journal of Educational Measurement |
| 2023, 2024 | National Council on Measurement in Education (NCME) Annual Meeting |
| 2023, 2024 | American Educational Research Association (AERA) Annual Meeting |
| 2023, 2024 | ACM Technical Symposium on Computer Science Education (SIGCSE) |

Committee Member

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| 2023 – Now | Committee of NCME Brenda Loyd Outstanding Dissertation Award (Student Member) |
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Volunteer

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| 2022 | Press-Tribune Assistant at Beijing 2022 Olympic Winter Games |
| 2019 | Voluntary support education in No. 2 Middle School of Fenggang (a remote county in southwest China) |