

JooYoung Seo

PH.D.

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I am a learning scientist, data-science/software developer, and internationally certified accessibility professional.

Education

The Pennsylvania State University

University Park, PA

PH.D. IN LEARNING, DESIGN, AND TECHNOLOGY

2021

- Dissertation Title: “Discovering Informal Learning Cultures of Blind Individuals Pursuing STEM Disciplines: A Computational Ethnography Using Public Listserv Archives.”
- Committee members: Drs. Gabriela T. Richard (adviser; dissertation chair), Roy B. Clariana, ChanMin Kim, and Mary Beth Rosson.

The Pennsylvania State University

University Park, PA

M.ED. IN LEARNING, DESIGN, AND TECHNOLOGY

2016

Sungkyunkwan University

Seoul, South Korea

DOUBLE B.A. IN EDUCATION, ENGLISH LITERATURE

2014

Professional Appointment

School of Information Sciences

University of Illinois at

Urbana-Champaign

ASSISTANT PROFESSOR

Sep. 2021 - Present

Department of Computer Science

University of Illinois at

Urbana-Champaign

FACULTY AFFILIATE

Apr. 2024 - Present

Illinois Informatics Institute

University of Illinois at

Urbana-Champaign

FACULTY AFFILIATE

Sep. 2021 - Present

National Center for Supercomputing Applications

University of Illinois at

Urbana-Champaign

FACULTY AFFILIATE

Dec. 2021 - Present

Beckman Institute for Advanced Science and Technology

University of Illinois at

Urbana-Champaign

FACULTY AFFILIATE

Dec. 2023 - Present

IDEA (Inclusion, Diversity, Equity, and Access) Institute

University of Illinois at

Urbana-Champaign

FACULTY AFFILIATE

Jan. 2022 - Present

Rehabilitation Engineering Research Center (RERC) on Blindness and Low Vision

Smith-Kettlewell Eye Research

Institute

AFFILIATE SCIENTIST

Jul. 2023 - Present

AccessComputing

University of Washington

ACCESSCOMPUTING PARTNER

Feb. 2024 - Present

RStudio

Boston, MA

SOFTWARE ENGINEER INTERN

May. 2020 - Aug. 2020

Grants

AWARDED GRANTS

- “Beyond Visuals: Improving Accessibility of Data Curation and Multi-Modal Representations for People of all Abilities through Reproducible Workflows,” PI, Institute of Museum and Library Services (IMLS) Laura Bush

21st Century Librarian Program, Grant #RE-254891-OLS-23, \$649,921, Aug 2023 - July 2026 (ongoing).

- “Promoting Computational Thinking Skills for Blind and Visually Impaired Teens through Accessible Library Makerspaces,” PI, Institute of Museum and Library Services (IMLS) National Leadership Grants, Grant #LG-252360-OLS-22, \$498,638, Aug 2022 - May 2025 (ongoing).
- “Inclusive Data Science: Fostering Accessibility and Reproducibility with Multimodal Learning Strategies,” PI, Teach Access Faculty Grants, Tier 3, \$5,000, May 2023 - May 2024 (ongoing).
- “Improving Accessible Reproducibility for Data Science Publishing System,” PI, Posit PBC (unrestricted gift), \$54,327, May 2022 - Present (ongoing).
- “Co-designing an Alexa-Based Conversational mHealth System with Visually Impaired People to Promote Physical Activities,” Co-PI, Center on Health, Aging, and Disability’s (CHAD) Pilot Grant Program at the University of Illinois at Urbana-Champaign, \$29,866, 2023-2024 (ongoing).
- “Category I: Crossing the Divide Between Today’s Practice and Tomorrow’s Science,” Senior Personnel, National Science Foundation (NSF), Grant #2005572, \$10,000,000.00, Oct 2021 - Sept 30, 2026 (.5 FTE academic year) (ongoing).
- “Insight without Sight: Enhancing Data Literacy through Multimodal Data Science Education - Smith-Kettlewell Summer Institute,” Subaward PI, Rehabilitation Engineering Research Centers (RERC) Program: RERC on Blindness and Low Vision, National Institute on Disability, Independent Living, and Rehabilitation Research (NI-DILRR), Grant #90REGE0018-01-00, \$11,975, July 17, 2023 - August 11, 2023 (completed).
- “Data Accessibilization: Making Data Science Education Accessible for Blind Learners,” PI, Wallace Foundation, Emerging Scholars Program, International Society of the Learning Sciences, \$10,000, Jan 2022 - Dec 2022 (completed).

UNDER-REVIEW GRANTS

- “Collaborative Research: SpatioTemporal Representations for Information and Data Equity: An Interactive AudioTactile System for BVI Data Scientists,” PI (at UIUC), National Science Foundation (NSF), Workplace Equity for Persons with Disabilities in STEM and STEM Education (nsf23593), \$573,548 (for UIUC) out of \$1,499,917 total, July 2024 - June 2028 (under review).

Publications

- The following notations only apply to September 2021 and after.

#: derived from the candidate’s thesis.

*: publication that has undergone stringent editorial review by peers.

+: publication that was invited and carries special prestige and recognition.

REFEREED JOURNAL PAPERS

1. * Choi, S., **Seo, J.**, Hernandez, M., & Kitsiou, S. (2024). Conversational agents in mHealth: Use patterns, challenges, and design opportunities for individuals with visual impairments. *Journal of Technology in Behavioral Science*. <https://doi.org/10.1007/s41347-024-00409-7>
2. * Lee, J. G. W., Lee, K., Lee, B., Choi, S., **Seo, J.**, & Choe, E. K. (2023). Personal Health Data Tracking by Blind and Low-Vision People: Survey Study. *Journal of Medical Internet Research*, 25(1), e43917. <https://doi.org/10.2196/43917>
3. * Moon, J., Choi, G. W., & **Seo, J. Y.** (2023). Revisiting multimedia learning design principles in virtual reality-based learning environments for autistic individuals. *Virtual Reality*. <https://doi.org/10.1007/s10055-023-00856-2>
4. * Moon, J., Lee, D., Choi, G. W., **Seo, J.**, Do, J., & Lim, T. (2023). Learning analytics in seamless learning environments: A systematic review. *Interactive Learning Environments*, 0(0), 1–18. <https://doi.org/10.1080/10494820.2023.2170422>
5. * **Seo, J.**, & Dogucu, M. (2023). Teaching Visual Accessibility in Introductory Data Science Classes with Multi-Modal Data Representations. *Journal of Data Science*, 1–14. <https://doi.org/10.6339/23-JDS1095>

6. * **Seo, J.**, & Choi, S. (2022). Are blind people considered a part of scientific knowledge producers?: Accessibility report on top-10 SCIE journal systems using a tripartite evaluation approach. *Journal on Technology and Persons with Disabilities*.
7. * **Seo, J.**, Moon, J., Choi, G. W., & Do, J. (2022). A Scoping Review of Three Computational Approaches to Ethnographic Research in Digital Learning Environments. *TechTrends*, 66(1), 102–111. <https://doi.org/10.1007/s11528-021-00689-3>
8. Choi, S., & **Seo, J.** (2021). Trends in healthcare research on visual impairment and blindness: Use of bibliometrics and hierarchical cluster analysis. *Ophthalmic Epidemiology*, 28(4), 277–284. <https://doi.org/10.1080/09286586.2020.1863993>
9. * **Seo, J.**, & Richard, G. T. (2021). SCAFFOLDing All Abilities into Makerspaces: A Design Framework for Universal, Accessible and Intersectionally Inclusive Making and Learning. *Information and Learning Sciences*, 122(11/12), 795–815. <https://doi.org/10.1108/ILS-10-2020-0230>
10. **Seo, J.** (2019). Is the maker movement inclusive of ANYONE?: Three accessibility considerations to invite blind makers to the making world. *TechTrends*, 63(5), 514–520. <https://doi.org/10.1007/s11528-019-00377-3>
11. **Seo, J.**, & McCurry, S. (2019). LaTeX is NOT easy: Creating accessible scientific documents with r markdown. *Journal on Technology and Persons with Disabilities*, 7, 157–171.

PAPERS IN REFEREED CONFERENCE PROCEEDINGS

1. * Lee, J. G. W., Lee, B., Choi, S., **Seo, J.**, & Choe, E. K. (2024). Identify, Adapt, Persist: The Journey of Blind Individuals with Personal Health Technologies. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*, 8(2), 51:1–51:21. <https://doi.org/10.1145/3659585>
2. * **Seo, J.**, O'Modhrain, S., Xia, Y., Kamath, S., Lee, B., & Coughlan, J. M. (2024). Designing born-accessible courses in data science and visualization: Challenges and opportunities of a remote curriculum taught by blind instructors to blind students. *Proceedings of the EuroVis*.
3. * **Seo, J.**, Xia, Y., Lee, B., McCurry, S., & Yam, Y. J. (2024). MAIDR: Making Statistical Visualizations Accessible with Multimodal Data Representation. *Proceedings of the CHI Conference on Human Factors in Computing Systems*, 1–22. <https://doi.org/10.1145/3613904.3642730>
4. * Kaushik, S., Barbosa, N. M., Yu, Y., Sharma, T., Kilhoffer, Z., **Seo, J.**, Das, S., & Wang, Y. (2023). GuardLens: Supporting safer online browsing for people with visual impairments. *Nineteenth Symposium on Usable Privacy and Security (SOUPS 2023)*, 361–380. <https://www.usenix.org/conference/soups2023/presentation/kaushik>
5. * Kim, S. H., Yoon, A., & **Seo, J.** (2023). Trend of Collaboration in STEM Education in Informal Learning Institutions Based on IMLS-funded Projects. *Proceedings of the Association for Information Science and Technology*, 60(1), 625–629. <https://doi.org/10.1002/pra2.828>
6. * Park, J., **Seo, J.**, & Lee, J. Y. (2023). Exploring an Online Community of Blind Programmers by Using Topic Modeling and Network Analysis. *Proceedings of the Association for Information Science and Technology*, 60(1), 1096–1098. <https://doi.org/10.1002/pra2.956>
7. * **Seo, J.**, & Rogge, M. (2023). Coding Non-Visually in Visual Studio Code: Collaboration Towards Accessible Development Environment for Blind Programmers. *Proceedings of the 25th International ACM SIGACCESS Conference on Computers and Accessibility*, 1–9. <https://doi.org/10.1145/3597638.3614550>
8. * **Seo, J.**, Xia, Y., Yam, Y. J., & McCurry, S. (2023). MAIDR: Multimodal Access and Interactive Data Representation System for Inclusive Data Science Education. *Proceedings of the 3rd Annual Meeting of the International Society of the Learning Sciences*, 51–54.
9. * Zhang, Z. (Jerry)., Kaushik, S., **Seo, J.**, Yuan, H., Das, S., Findlater, L., Gurari, D., Stangl, A., & Wang, Y. (2023). ImageAlly: A Human-AI hybrid approach to support blind people in detecting and redacting private image content. *Nineteenth Symposium on Usable Privacy and Security (SOUPS 2023)*, 417–436. <https://www.usenix.org/conference/soups2023/presentation/zhang>
10. * Huh, M., & **Seo, J.** (2022). A duoethnographic study of a mixed-ability team in a collaborative group programming project. In A. Weinberger, W. Chen, D. Hernández-Leo, & B. Chen (Eds.), *Proceedings of the 15th international conference on computer-supported collaborative learning - CSCL 2022* (pp. 471–474). International Society of the Learning Sciences.
11. * Lee, C. Y. P., Zhang, Z., Herskovitz, J., **Seo, J.**, & Guo, A. (2022). CollabAlly: Accessible Collaboration Awareness in Document Editing. *CHI Conference on Human Factors in Computing Systems*, 1–17. <https://doi.org/10.1145/3491102.3517635>. Honorable mention award.
12. * **Seo, J.**, & Dogucu, M. (2022). Teaching visual accessibility in the introductory data science classes: Why, what, when, and how. *The 2022 Symposium on Data Science & Statistics*.

13. * Lee, C. Y. P., Zhang, Z., Herskovitz, J., **Seo, J.**, & Guo, A. (2021). CollabAlly: Accessible collaboration awareness in document editing. *The 23rd International ACM SIGACCESS Conference on Computers and Accessibility*, 1–4. <https://doi.org/10.1145/3441852.3476562>
14. **Seo, J.**, & Richard, G. T. (2020). Coding through touch: Exploring and re-designing tactile making activities with learners with visual dis/abilities. In M. Gresalfi & I. Horn (Eds.), *Interdisciplinarity in the learning sciences, 14th international conference of the learning sciences (ICLS) 2020* (Vol. 3, pp. 1373–1380). International Society of the Learning Sciences (ISLS).
15. **Seo, J.** (2019). Discovering informal learning cultures of blind individuals pursuing STEM disciplines: A quantitative ethnography using listserv archives. *The First International Conference on Quantitative Ethnography: Doctoral Consortium*, S66–S67. *Awarded the best Doctoral Consortium Proposal Cengage fellowship.*
16. **Seo, J.** (2018). Accessibility and inclusivity in making: Engaging learners with all abilities in making activities. In *Proceedings of the 3rd learning sciences graduate student conference* (pp. 141–142). LSGSC Planning Team.
17. **Seo, J.**, & Richard, G. T. (2018). Accessibility, making and tactile robotics: Facilitating collaborative learning and computational thinking for learners with visual impairments. In J. Kay & R. Luckin (Eds.), *Rethinking learning in the digital age: Making the learning sciences count, 13th international conference of the learning sciences (ICLS) 2018* (Vol. 3, pp. 1755–1757). International Society of the Learning Sciences (ISLS).
18. Konecki, M., Lovrenčić, S., **Seo, J.**, & LaPierre, C. (2017). The role of ICT in aiding visually impaired students and professionals. *Proceedings of the 11th Multidisciplinary Academic Conference*, 148.
19. **Seo, J.**, AlQahtani, M., Ouyang, X., & Borge, M. (2017). Embracing learners with visual impairments in CSCL. In B. K. Smith, M. Borge, E. Mercier, & K. Y. Lim (Eds.), *Making a difference: Prioritizing equity and access in CSCL, 12th international conference on computer supported collaborative learning (CSCL) 2017* (Vol. 2, pp. 573–576). International Society of the Learning Sciences (ISLS).

BOOK CHAPTERS

1. * **Seo, J.**, & Dogucu, M. (2024). Data science and accessibility. In A. Ko, R. Ladner, & A. Oleso (Eds.), *Teaching accessible computing*. University of Washington.

PUBLICATIONS IN HEALTHCARE

1. Choi, S., & **Seo, J.** (2020). An exploratory study of the research on caregiver depression: Using bibliometrics and LDA topic modeling. *Issues in Mental Health Nursing*, 1–10. <https://doi.org/10.1080/01612840.2019.1705944>
2. Choi, S., & **Seo, J.** (2019). Analysis of caregiver burden in palliative care: An integrated review. *Nursing Forum*, 54(2), 280–290. <https://doi.org/10.1111/nuf.12328>
3. Choi, S., & **Seo, J.** (2019). Heart failure research using text mining: A systematic review. *NURSING RESEARCH*, 68(2), E119–E120.
4. Choi, S., & **Seo, J.** (2019). Trends in self-management among adults with heart failure from 2011 to 2016 using the national health and nutrition examination surveys. *Journal of Cardiac Failure*, 25(8), S4. <https://doi.org/10.1016/j.cardfail.2019.07.540>
5. Choi, S., **Seo, J.**, & Kitko, L. (2019). Exploring the lived experience of a family member with advanced heart failure: Using a text mining approach. *The First International Conference on Quantitative Ethnography: Poster Session*, S8–S9.
6. Choi, S., & **Seo, J.** (2018). Effects of nonpharmacological interventions for fatigue in patients with heart failure: A systematic review and meta-analysis. *Journal of Cardiac Failure*, 24(8), S73–S74.

Conference Presentations and Invited Talks

Seo, J. (2024, March). *Unseen Insights: Empowering Autonomous Data Science by, with, and for Blind People*. Invited talk at the UC Irvine Donald Bren School of Information & Computer Sciences, Irvine, CA.

Seo, J. (2023, November). *Insight Over Eyesight: My Journey as a Blind Data Scientist*. Invited talk at the Chicago Lighthouse Career Fair, Chicago, IL (virtual).

Seo, J. (2023, November). *Beyond Sight: Envisioning Data Science Through Multimodal Access*. Invited as a keynote speaker at the 2023 UIUC iSchool's Research Showcase, Champaign, IL.

Seo, J. (2023, November). *Understanding Multi-Modality of Blind People Towards Inclusive STEM Learning*. Invited talk at the UIUC CI590 DELTA Seminar, Champaign, IL.

Seo, J. (2023, July). *Screen Reader User Experience Deep Dive*. Invited talk at the Microsoft Visual Studio Code Team, virtual.

Seo, J. (2023, June). *Perceiving Beyond Vision: My Journey Through Dreamscapes, Numerical Cognition, and a Blind Critique of Inclusive Data Visualization*. Invited talk at the Dagstuhl Inclusive Data Visualization Workshop, Dagstuhl, Germany.

Seo, J. (2023, May). *Enhancing Accessibility in Programming and Fostering Inclusive Data Science via Multimodal Strategies*. Invited talk at the Campus Research Computing Consortium, virtual.

Invited panel (2023, May): *Human Computer Relationships **Work?**: Embodiment, Inclusive Design, Accessibility, and Emerging Technologies for Learning*, hosted by PhET Interactive Simulations at University of Colorado Boulder.

Invited demo by Microsoft (2023, April): *VSCode Accessibility*. VS Code Day 2023: <https://m.youtube.com/watch?v=X3qUf0B3x8Q>

Invited panel (2022, December): *Integrating Accessibility into a Computing Career*, hosted by Associate Professor Stacy Branham at Informatics of the University of California, Irvine. (virtual).

Seo, J. (2022, November). *Accessible Library Makerspaces*. Invited talk at the UIUC iSchool IS571: Accessibility in Library Resources, Champaign, IL (virtual).

Seo, J. (2022, September). *Digital Accessibility*. Invited panel at the INFOcon 2022, virtual.

Seo, J. (2022, April). *Accessible Data Visualization in a Reproducible Way*. Invited talk at Champaign-Urbana Data Science User Group, Champaign, IL (virtual).

Seo, J. (2022, March). *Understanding Multi-Modality of Blind People Towards Inclusive STEM Learning*. Invited talk at the UIUC iSchool Proseminar, Champaign, IL (virtual).

Seo, J. (2022, March). *Universal Design = Usability * Accessibility (With Practical Examples Beyond Conceptual Frameworks)*. Invited talk at INTE 535 Analysis, Implementation, and Evaluation of Assistive Technology. Instructional Technology program of the University of Alabama, Tuscaloosa, AL (virtual).

Seo, J. (2022, March). *Your Condition is Not Your Conclusion*. Invited talk at HTM4311: Hotel Professional Development at the Hong Kong Polytechnic University (virtual).

Seo, J. (2021, November). *SCAFFOLDing All Abilities into Makerspaces*. Invited talk at the UIUC iSchool IS582: Make, Design, & Learn in Libraries, Champaign, IL (virtual).

Seo, J. (2021, October). *Non-Visual Strategies for Making Statistical-Computing Accessible*. Lightening talk at the National Center for Supercomputing Applications, Champaign, IL.

Seo, J. (2021, September). *Accessibility of Science Beyond Content Accessibility*. Talk presented at the Argonne National Laboratory (Maths and Computer Science Division): <https://www.anl.gov/event/accessibility-of-science-beyond-content-accessibility>.

Invited panel (2021, August). DO-IT Neuroscience for Neurodiverse Learners Faculty panel at the University of Washington, virtual.

Seo, J. (2021, June). *How to Learn to Code*. Invited Talk presented at the Nature, Webcast: <https://doi.org/10.1038/d41586-021-01638-z>.

Seo, J., & Richard, G. T. (2021, February). *Uncovering latent topics of blind people in computer science: structural topic modeling for an email corpus*. Poster presented at the 2nd International Conference on Quantitative Ethnography (ICQE), Malibu, CA.

Donegan, S. R., Porter, C., Fogel, A., **Seo, J.**, Choi, S., & Eagan, B. (2021, February). *U.S. media coverage during COVID-19: an epistemic network analysis of bias, topic, and trajectory*. Poster presented at the 2nd International Conference on Quantitative Ethnography (ICQE), Malibu, CA.

Seo, J. (2021, January). *Accessible data science beyond visual models*. Talk presented at the rstudio::global(2021), Virtual: <https://global.rstudio.com/student/page/40617>.

Seo, J. (2020, September). *Discovering knowledge sharing patterns of blind people pursuing STEM disciplines: data science and computational linguistics on large-scale email corpora*. Poster presented at the Doctoral Consortium of

the annual meeting of the ACM Richard Tapia Celebration of Diversity in Computing, virtual. *Awarded the Qualcomm scholarship.*

Seo, J., & Richard, G. T. (2020, April). *Maker inclusivity = maker accessibility: further interrogations for diverse participation.* Poster presented at the annual meeting of the American Educational Research Association (AERA), Virtual.

Seo, J., & Richard, G. T. (2018, April). *Furthering inclusivity in making: a framework for accessible design of makerspaces for learners with disabilities.* Poster presented at the annual meeting of the American Educational Research Association (AERA), New York City, NY.

Bunag, T., Aniela, L., Nielsen, M. C., & **Seo, J.** (2017, November). *The rapidly changing world of accessible online learning.* Presented at the Panel Discussion: DDL - Accessible Online Learning In Concurrent Presentation of the Association for Educational Communications and Technology (AECT), Jacksonville, FL.

Seo, J. (2017, September). *Tactile access to visualized statistical data using R.* Poster presented at the annual meeting of the ACM Richard Tapia Celebration of Diversity in Computing, Atlanta, GA.

Liao, J., Patcyk, M., **Seo, J.,** & Hooper, S. (2016, October). *Using hierarchical linear modeling to measure growth rate in a gamified CBM environment.* Paper presented at the annual meeting of the Northeastern Educational Research Association (NERA), Trumbull, CT.

Seo, J. (2016, March). *Engaging blind learners in statistics study using R.* Presented at the annual meeting of the Teaching and Learning with Technology (TLT) Symposium, University Park, PA.

Kim, K., **Seo, J.,** & Clariana, R. B. (2016, March). *Automatic knowledge structure measure in online courses.* Presented at the annual meeting of the Teaching and Learning with Technology (TLT) Symposium, University Park, PA.

Seo, J. (2015, November). *Assistive technologies for equal access in general education.* Presented at the annual meeting of the Association for Educational Communications and Technology (AECT), Indianapolis, IN.

Seo, J., & Park, E. (2015, October). *The more accessible, the more potential: simple tips for online accessibility.* Presented at the Technology and Learning Conference, Blue Bell, PA.

Media Coverage

1. McCallen, B. (2023, November 3). *Data visualization for the blind.* <https://speakingoutfortheblind.weebly.com/list-of-episodes-and-show-news/for-more-information-episode-329-data-visualization-tool-for-the-blind>
2. Heckel, J. (2023, September 29). *Information sciences professor developing tool to make data visualizations accessible to blind researchers, students.* News Bureau University of Illinois Urbana-Champaign. <https://news.illinois.edu/view/6367/107909242>
3. Katsnelson, A. (2023). These tools help visually impaired scientists read data and journals. *Nature*, 615(7951, 7951), 362–363. <https://doi.org/10.1038/d41586-023-00645-6>

Software Developments and Publications

DATA SCIENCE PACKAGES IN COMPREHENSIVE R ARCHIVE NETWORK (CRAN)

1. Iannone, R., Cheng, J., Schloerke, B., Hughes, E., Lauer, A., & **Seo, J.** (2023). *gt: Easily Create Presentation-Ready Display Tables* (Version 0.9.0) [Computer software]. <https://CRAN.R-project.org/package=gt>. Over 1.5M download.
2. **Seo, J.,** & Choi, S. (2020). *Youtubecaption: Downloading YouTube subtitle transcription in a tidy tibble data frame* [Computer software]. <https://CRAN.R-project.org/package=youtubecaption>. Over 18K download.
3. **Seo, J.,** & Choi, S. (2019). *Ezpickr: Easy data import using GUI file picker and seamless communication between an excel and r* [Computer software]. <https://CRAN.R-project.org/package=ezpickr>. Over 31K download.
4. **Seo, J.,** & Choi, S. (2019). *Mboxr: Reading, extracting, and converting an mbox file into a tibble* [Computer software]. <https://CRAN.R-project.org/package=mboxr>. Over 25K download.

OPEN-SOURCE PROJECT ON GITHUB

1. **Seo, J.** (2020). *Edmdown: Writing a reproducible article for journal of educational DataMining in r markdown*. <https://github.com/jooyoungseo/edmdown>. R package version 0.0.0.9000.
2. **Seo, J., Chan, T., Michaelis, J. E., & Rosenberg, J. M.** (2020). *Islsdown: Writing a reproducible conference paper for the international society of the learning sciences annual meeting in r markdown*. <https://github.com/jooyoungseo/islsdown>. R package version 0.0.0.9000.
3. **Seo, J., & Rosenberg, J. M.** (2020). *Jlardown: Writing a reproducible article for journal of learning analytics in r markdown*. <https://github.com/jooyoungseo/jlardown>. R package version 0.0.0.9000.
4. **Seo, J.** (2019). *Ezviewr: View tidy data in preferable spreadsheet*. <https://github.com/jooyoungseo/ezviewr>. R package version 0.1.0.
5. **Seo, J.** (2019). *tactileR: Converting r graphics into a braille ready-to-print PDF*. <https://github.com/jooyoungseo/tactileR>. R package version 0.1.0.
6. **Seo, J., & McCurry, S.** (2019). *AROW: Accessible RMarkdown online writer*. <http://www.arowtool.com>

OFFICIALLY CODE CONTRIBUTING R PACKAGES

- My GitHub pull requests have been peer-reviewed and merged for active data science R packages:

Chang, W., Cheng, J., Allaire, J., Xie, Y., & McPherson, J.

SHINY: WEB APPLICATION FRAMEWORK FOR R

- Contributed to improving keyboard and TTS accessibility for input widgets.

<https://cran.r-project.org/web/packages/shiny/>
2020

O'Hara-Wild, M., & Hyndman, R.

VITAE: CURRICULUM VITAE FOR R MARKDOWN

- Contributed to enabling LaTeX engine customization.
- Contributed to displaying multiple bibliographies based on lua filter.

<https://cran.r-project.org/web/packages/vitae/>
2020

Allaire, J., Xie, Y., et al.

RMARKDOWN: DYNAMIC DOCUMENTS FOR R

- Contributed to improving ioslides_presentation accessibility for screen reading software.

<https://cran.r-project.org/web/packages/rmarkdown/>
2019

Xie, Y.

BOOKDOWN: AUTHORING BOOKS AND TECHNICAL DOCUMENTS WITH R MARKDOWN

- Developed `context_document2`, `github_document2`, `beamer_presentation2`, `html_fragment2`, `html_notebook2`, `html_vignette2`, `ioslides_presentation2`, `slidy_presentation2` and `rtf_document2` functions to enable R markdown users to utilize cross-references for figures and tables through bookdown package.

<https://cran.r-project.org/web/packages/bookdown/>
2019

Allaire, J., Iannone, R., & Xie, Y.

DISTILL: 'R MARKDOWN' FORMAT FOR SCIENTIFIC AND TECHNICAL WRITING

- Contributed to displaying more metadata for journal article bib_entries.
- Improved screen reader accessibility for navigation bar.
- Added missing Google Scholar meta tags for conference, technical report, and dissertation types.

<https://cran.r-project.org/web/packages/distill/>
2019

Marwick, B.

WORDCOUNADDIN: WORD COUNTS AND READABILITY STATISTICS IN R MARKDOWN DOCUMENTS

- Contributed to `text_stats()` function for R markdown users to Get a word count and some other stats for selected text (excluding code chunks and inline code).

<https://git.io/JkJca>
2019

Godfrey, A. J. R., Warren, D., Murrell, P., Bilton, T., & Sorge, V.

BRAILLER: IMPROVED ACCESS FOR BLIND USERS

- Contributed to `BRLThis()` function to enable blind R users to convert a graph into a pdf ready for embossing in Braille.

<https://cran.r-project.org/web/packages/BrailleR/>
2019

Teaching Experience

- IS 407: Introduction to Data Science (spring 2022-present).
- IS 569: Internship (spring 2022). *Advised Ankita Khiratkar (MS IM)*.

- IS 589: Independent Study (spring 2022). *Advised Chetna Beri (MS IM)*.
- INFO 399: Individual Study (spring 2022). *Advised Leo Zhang (CS undergrad → Currently, Master's student at UCLA Data Science dept)*.
- IS 389: Independent Study (spring 2022). *Advised Miso Kim (BS IS)*.
- IS 226: Introduction to Human-Computer Interaction (fall 2021). *Co-teaching with Dr. Yang Wang*.
- Served as an annual review committee member for iSchool Ph.D. student Smirity Kaushik (advisor Dr. Yang Wang) (spring 2022).
- Served as a field exam committee member for iSchool Ph.D. candidate Jaihyun Park (advisor Dr. Ryan Cordell) (spring 2022).

Awards and Honors

ACM Richard Tapia Celebration of Diversity in Computing Conference

QUALCOMM SCHOLARSHIP

Virtual

Sep. 2020

- Selected as one of the outstanding doctoral consortium proposals.

Disability:IN

2020 NEXTGEN LEADERS

Alexandria, VA

Feb. 2020 - Jul. 2020

- Selected as one of the leaders in the U.S. for diversity.

AccessComputing, University of Washington

ACCESSSTEM RESUME CONTEST WINNERS AWARD

Seattle, WA

Dec. 2019

- Sponsored by The National Science Foundation (NSF).

The First International Conference on Quantitative Ethnography

BEST DOCTORAL PROPOSAL FELLOWSHIP

Madison, WI

Oct. 2019

- Sponsored by Cengage.

The PDK Educational Foundation

ANDREW V. KOZAK MEMORIAL FELLOWSHIP

University Park, PA

2019

- Awarded \$1,500 for research contribution to public education.

The Spencer Foundation

AERA PRE-CONFERENCE TRAVEL AWARD

Toronto, ON, Canada

Apr. 2019

The Pennsylvania State University

DELTA GAMMA GOLDEN ANCHOR AWARD

University Park, PA

2015, 2017

The National Science Foundation (NSF)

ACM RICHARD TAPIA CELEBRATION OF DIVERSITY IN COMPUTING CONFERENCE SCHOLARSHIP

Atlanta, GA

Sep. 2017

- Included free conference registration, shared hotel accommodations and a \$500 travel stipend.

Microsoft Research

ACM STUDENT RESEARCH COMPETITION TRAVEL AWARD

Atlanta, GA

Sep. 2017

- \$500 travel stipend was awarded for ACM TAPIA 2017 Student Research Competition (SRC).

AccessComputing, University of Washington

CSUN CONFERENCE TRAVEL AWARD

Seattle, WA

Mar. 2017

- Sponsored by The National Science Foundation (NSF).

College of Education

SUMMER TUITION ASSISTANCE FUNDING

University Park, PA

2017

College of Education

GRADUATE STUDENT TRAVEL GRANT

University Park, PA

Aug. 2016 - Present

Teaching and Learning with Technology

GRADUATE ASSISTANTSHIP

University Park, PA

Aug. 2016 - Present

Hyomyoung Scholarship

OUTSTANDING ACADEMIC AWARD

Seoul, South Korea

2014 - 2019

ANC Scholarship Foundation

ALL NATIONS CHURCH GRADUATE SCHOLARSHIP

Lake View Terrace, CA

2016

Service

School of Information Sciences at the University of Illinois at Urbana-Champaign

SEARCH COMMITTEE FOR DIRECTOR/ASSISTANT DEAN, DIVERSITY, EQUITY, INCLUSION, AND ACCESSIBILITY (DEIA)

Champaign, IL

April 2022 - Present

School of Information Sciences at the University of Illinois at Urbana-Champaign

DIVERSITY COMMITTEE

Champaign, IL

Sep. 2021 - Apr. 2022

International Web for All Conference (W4A) 2022

PROGRAM COMMITTEE MEMBER

Virtual

Dec. 2021 - Feb. 2022

15th International Conference on Educational Data Mining

ACCESSIBILITY CHAIR

Durham

Oct. 2021 - Jul. 2022

Special issue on ethnography and learning design

JOURNAL REVIEWER

TechTrends

Sep. 2021

The Network of Academic Programs in the Learning Sciences (NAPLeS)

REVIEWER

- Reviewed abstracts on equity and disability.

International Society of the Learning
Sciences

2020

The Pennsylvania State University

COLLEGE OF EDUCATION TECHNOLOGY COMMITTEE

University Park, PA

Aug. 2019 - May. 2020

- Worked as a student committee member to support understanding of educational technology for College of Education.

The Pennsylvania State University

LIBRARIES' ACCESSIBILITY STUDENT ADVISORY GROUP

University Park, PA

Aug. 2019 - May. 2020

The 14th International Conference of the Learning Sciences (ICLS)

REVIEWER

Nashville, TN

2019

The ACM CHI Conference on Human Factors in Computing Systems (CHI 2020, 2021)

REVIEWER

Honolulu, HI, Yokohama, Japan

2019, 2020

The 1st International Conference on Quantitative Ethnography (ICQE)

REVIEWER

Madison, WI

2019

The 3rd Learning Sciences Graduate Student Conference (LSGSC)

REVIEWER

Nashville, TN

2018

The 2nd Learning Sciences Graduate Student Conference (LSGSC)

REVIEWER

Bloomington, IN

2017

Center for Online Innovation in Learning (COIL), The Pennsylvania State University

FUNDING REVIEWER

University Park, PA

2016

Current Memberships

- International Society of the Learning Sciences (ISLS)
- Association for Computing Machinery (ACM)
- American Statistical Association (ASA)
- International Society for Quantitative Ethnography (ISQE)
- International Association of Accessibility Professionals (IAAP)
- International Educational Data Mining Society (IEDMS)

Education

The Pennsylvania State University

PH.D. IN LEARNING, DESIGN, AND TECHNOLOGY

University Park, PA

2021

- Dissertation Title: "Discovering Informal Learning Cultures of Blind Individuals Pursuing STEM Disciplines: A Computational Ethnography Using Public Listserv Archives."
- Committee members: Drs. Gabriela T. Richard (adviser; dissertation chair), Roy B. Clariana, ChanMin Kim, and Mary Beth Rosson.

The Pennsylvania State University

M.ED. IN LEARNING, DESIGN, AND TECHNOLOGY

University Park, PA

2016

Professional Appointment

School of Information Sciences

ASSISTANT PROFESSOR

University of Illinois at
Urbana-Champaign
Sep. 2021 - Present

Department of Computer Science

FACULTY AFFILIATE

University of Illinois at
Urbana-Champaign
Apr. 2024 - Present

Illinois Informatics Institute

FACULTY AFFILIATE

University of Illinois at
Urbana-Champaign
Sep. 2021 - Present

National Center for Supercomputing Applications

FACULTY AFFILIATE

University of Illinois at
Urbana-Champaign
Dec. 2021 - Present

Beckman Institute for Advanced Science and Technology

FACULTY AFFILIATE

University of Illinois at
Urbana-Champaign
Dec. 2023 - Present

IDEA (Inclusion, Diversity, Equity, and Access) Institute

FACULTY AFFILIATE

University of Illinois at
Urbana-Champaign
Jan. 2022 - Present

Rehabilitation Engineering Research Center (RERC) on Blindness and Low Vision

AFFILIATE SCIENTIST

Smith-Kettlewell Eye Research
Institute
Jul. 2023 - Present

AccessComputing

ACCESSCOMPUTING PARTNER

University of Washington
Feb. 2024 - Present

RStudio

SOFTWARE ENGINEER INTERN

Boston, MA
May. 2020 - Aug. 2020

Grants

AWARDED GRANTS

- “Beyond Visuals: Improving Accessibility of Data Curation and Multi-Modal Representations for People of all Abilities through Reproducible Workflows,” PI, Institute of Museum and Library Services (IMLS) Laura Bush 21st Century Librarian Program, Grant #RE-254891-OLS-23, \$649,921, Aug 2023 - July 2026 (ongoing).
- “Promoting Computational Thinking Skills for Blind and Visually Impaired Teens through Accessible Library Makerspaces,” PI, Institute of Museum and Library Services (IMLS) National Leadership Grants, Grant #LG-252360-OLS-22, \$498,638, Aug 2022 - May 2025 (ongoing).
- “Inclusive Data Science: Fostering Accessibility and Reproducibility with Multimodal Learning Strategies,” PI, Teach Access Faculty Grants, Tier 3, \$5,000, May 2023 - May 2024 (ongoing).
- “Improving Accessible Reproducibility for Data Science Publishing System,” PI, Posit PBC (unrestricted gift), \$54,327, May 2022 - Present (ongoing).
- “Co-designing an Alexa-Based Conversational mHealth System with Visually Impaired People to Promote Physical Activities,” Co-PI, Center on Health, Aging, and Disability’s (CHAD) Pilot Grant Program at the University of Illinois at Urbana-Champaign, \$29,866, 2023-2024 (ongoing).
- “Category I: Crossing the Divide Between Today’s Practice and Tomorrow’s Science,” Senior Personnel, National Science Foundation (NSF), Grant #2005572, \$10,000,000.00, Oct 2021 - Sept 30, 2026 (.5 FTE academic year) (ongoing).

- “Insight without Sight: Enhancing Data Literacy through Multimodal Data Science Education - Smith-Kettlewell Summer Institute,” Subaward PI, Rehabilitation Engineering Research Centers (RERC) Program: RERC on Blindness and Low Vision, National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR), Grant #90REGE0018-01-00, \$11,975, July 17, 2023 - August 11, 2023 (completed).
- “Data Accessibilization: Making Data Science Education Accessible for Blind Learners,” PI, Wallace Foundation, Emerging Scholars Program, International Society of the Learning Sciences, \$10,000, Jan 2022 - Dec 2022 (completed).

UNDER-REVIEW GRANTS

- “Collaborative Research: SpatioTemporal Representations for Information and Data Equity: An Interactive AudioTactile System for BVI Data Scientists,” PI (at UIUC), National Science Foundation (NSF), Workplace Equity for Persons with Disabilities in STEM and STEM Education (nsf23593), \$573,548 (for UIUC) out of \$1,499,917 total, July 2024 - June 2028 (under review).

Publications

- The following notations only apply to September 2021 and after.

#: derived from the candidate’s thesis.

*: publication that has undergone stringent editorial review by peers.

+: publication that was invited and carries special prestige and recognition.

REFEREED JOURNAL PAPERS

1. * Choi, S., **Seo, J.**, Hernandez, M., & Kitsiou, S. (2024). Conversational agents in mHealth: Use patterns, challenges, and design opportunities for individuals with visual impairments. *Journal of Technology in Behavioral Science*. <https://doi.org/10.1007/s41347-024-00409-7>
2. * Lee, J. G. W., Lee, K., Lee, B., Choi, S., **Seo, J.**, & Choe, E. K. (2023). Personal Health Data Tracking by Blind and Low-Vision People: Survey Study. *Journal of Medical Internet Research*, 25(1), e43917. <https://doi.org/10.2196/43917>
3. * Moon, J., Choi, G. W., & **Seo, J. Y.** (2023). Revisiting multimedia learning design principles in virtual reality-based learning environments for autistic individuals. *Virtual Reality*. <https://doi.org/10.1007/s10055-023-00856-2>
4. * Moon, J., Lee, D., Choi, G. W., **Seo, J.**, Do, J., & Lim, T. (2023). Learning analytics in seamless learning environments: A systematic review. *Interactive Learning Environments*, 0(0), 1–18. <https://doi.org/10.1080/10494820.2023.2170422>
5. * **Seo, J.**, & Dogucu, M. (2023). Teaching Visual Accessibility in Introductory Data Science Classes with Multi-Modal Data Representations. *Journal of Data Science*, 1–14. <https://doi.org/10.6339/23-JDS1095>
6. * **Seo, J.**, & Choi, S. (2022). Are blind people considered a part of scientific knowledge producers?: Accessibility report on top-10 SCIE journal systems using a tripartite evaluation approach. *Journal on Technology and Persons with Disabilities*.
7. * **Seo, J.**, Moon, J., Choi, G. W., & Do, J. (2022). A Scoping Review of Three Computational Approaches to Ethnographic Research in Digital Learning Environments. *TechTrends*, 66(1), 102–111. <https://doi.org/10.1007/s11528-021-00689-3>
8. Choi, S., & **Seo, J.** (2021). Trends in healthcare research on visual impairment and blindness: Use of bibliometrics and hierarchical cluster analysis. *Ophthalmic Epidemiology*, 28(4), 277–284. <https://doi.org/10.1080/09286586.2020.1863993>
9. * **Seo, J.**, & Richard, G. T. (2021). SCAFFOLDing All Abilities into Makerspaces: A Design Framework for Universal, Accessible and Intersectionally Inclusive Making and Learning. *Information and Learning Sciences*, 122(11/12), 795–815. <https://doi.org/10.1108/ILS-10-2020-0230>
10. **Seo, J.** (2019). Is the maker movement inclusive of ANYONE?: Three accessibility considerations to invite blind makers to the making world. *TechTrends*, 63(5), 514–520. <https://doi.org/10.1007/s11528-019-00377-3>
11. **Seo, J.**, & McCurry, S. (2019). LaTeX is NOT easy: Creating accessible scientific documents with r markdown. *Journal on Technology and Persons with Disabilities*, 7, 157–171.

PAPERS IN REFEREED CONFERENCE PROCEEDINGS

1. * Lee, J. G. W., Lee, B., Choi, S., **Seo, J.**, & Choe, E. K. (2024). Identify, Adapt, Persist: The Journey of Blind Individuals with Personal Health Technologies. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*, 8(2), 51:1–51:21. <https://doi.org/10.1145/3659585>
2. * **Seo, J.**, O'Modhrain, S., Xia, Y., Kamath, S., Lee, B., & Coughlan, J. M. (2024). Designing born-accessible courses in data science and visualization: Challenges and opportunities of a remote curriculum taught by blind instructors to blind students. *Proceedings of the EuroVis*.
3. * **Seo, J.**, Xia, Y., Lee, B., McCurry, S., & Yam, Y. J. (2024). MAIDR: Making Statistical Visualizations Accessible with Multimodal Data Representation. *Proceedings of the CHI Conference on Human Factors in Computing Systems*, 1–22. <https://doi.org/10.1145/3613904.3642730>
4. * Kaushik, S., Barbosa, N. M., Yu, Y., Sharma, T., Kilhoffer, Z., **Seo, J.**, Das, S., & Wang, Y. (2023). GuardLens: Supporting safer online browsing for people with visual impairments. *Nineteenth Symposium on Usable Privacy and Security (SOUPS 2023)*, 361–380. <https://www.usenix.org/conference/soups2023/presentation/kaushik>
5. * Kim, S. H., Yoon, A., & **Seo, J.** (2023). Trend of Collaboration in STEM Education in Informal Learning Institutions Based on IMLS-funded Projects. *Proceedings of the Association for Information Science and Technology*, 60(1), 625–629. <https://doi.org/10.1002/pra2.828>
6. * Park, J., **Seo, J.**, & Lee, J. Y. (2023). Exploring an Online Community of Blind Programmers by Using Topic Modeling and Network Analysis. *Proceedings of the Association for Information Science and Technology*, 60(1), 1096–1098. <https://doi.org/10.1002/pra2.956>
7. * **Seo, J.**, & Rogge, M. (2023). Coding Non-Visually in Visual Studio Code: Collaboration Towards Accessible Development Environment for Blind Programmers. *Proceedings of the 25th International ACM SIGACCESS Conference on Computers and Accessibility*, 1–9. <https://doi.org/10.1145/3597638.3614550>
8. * **Seo, J.**, Xia, Y., Yam, Y. J., & McCurry, S. (2023). MAIDR: Multimodal Access and Interactive Data Representation System for Inclusive Data Science Education. *Proceedings of the 3rd Annual Meeting of the International Society of the Learning Sciences*, 51–54.
9. * Zhang, Z. (Jerry)., Kaushik, S., **Seo, J.**, Yuan, H., Das, S., Findlater, L., Gurari, D., Stangl, A., & Wang, Y. (2023). ImageAlly: A Human-AI hybrid approach to support blind people in detecting and redacting private image content. *Nineteenth Symposium on Usable Privacy and Security (SOUPS 2023)*, 417–436. <https://www.usenix.org/conference/soups2023/presentation/zhang>
10. * Huh, M., & **Seo, J.** (2022). A duoethnographic study of a mixed-ability team in a collaborative group programming project. In A. Weinberger, W. Chen, D. Hernández-Leo, & B. Chen (Eds.), *Proceedings of the 15th international conference on computer-supported collaborative learning - CSCL 2022* (pp. 471–474). International Society of the Learning Sciences.
11. * Lee, C. Y. P., Zhang, Z., Herskovitz, J., **Seo, J.**, & Guo, A. (2022). CollabAlly: Accessible Collaboration Awareness in Document Editing. *CHI Conference on Human Factors in Computing Systems*, 1–17. <https://doi.org/10.1145/3491102.3517635>. Honorable mention award.
12. * **Seo, J.**, & Dogucu, M. (2022). Teaching visual accessibility in the introductory data science classes: Why, what, when, and how. *The 2022 Symposium on Data Science & Statistics*.
13. * Lee, C. Y. P., Zhang, Z., Herskovitz, J., **Seo, J.**, & Guo, A. (2021). CollabAlly: Accessible collaboration awareness in document editing. *The 23rd International ACM SIGACCESS Conference on Computers and Accessibility*, 1–4. <https://doi.org/10.1145/3441852.3476562>
14. **Seo, J.**, & Richard, G. T. (2020). Coding through touch: Exploring and re-designing tactile making activities with learners with visual dis/abilities. In M. Gresalfi & I. Horn (Eds.), *Interdisciplinarity in the learning sciences, 14th international conference of the learning sciences (ICLS) 2020* (Vol. 3, pp. 1373–1380). International Society of the Learning Sciences (ISLS).
15. **Seo, J.** (2019). Discovering informal learning cultures of blind individuals pursuing STEM disciplines: A quantitative ethnography using listserv archives. *The First International Conference on Quantitative Ethnography: Doctoral Consortium*, S66–S67. Awarded the best Doctoral Consortium Proposal Cengage fellowship.
16. **Seo, J.** (2018). Accessibility and inclusivity in making: Engaging learners with all abilities in making activities. In *Proceedings of the 3rd learning sciences graduate student conference* (pp. 141–142). LSGSC Planning Team.
17. **Seo, J.**, & Richard, G. T. (2018). Accessibility, making and tactile robotics: Facilitating collaborative learning and computational thinking for learners with visual impairments. In J. Kay & R. Luckin (Eds.), *Rethinking learning in the digital age: Making the learning sciences count, 13th international conference of the learning sciences (ICLS) 2018* (Vol. 3, pp. 1755–1757). International Society of the Learning Sciences (ISLS).
18. Konecki, M., Lovrenčić, S., **Seo, J.**, & LaPierre, C. (2017). The role of ICT in aiding visually impaired students and professionals. *Proceedings of the 11th Multidisciplinary Academic Conference*, 148.

19. **Seo, J.**, AlQahtani, M., Ouyang, X., & Borge, M. (2017). Embracing learners with visual impairments in CSCL. In B. K. Smith, M. Borge, E. Mercier, & K. Y. Lim (Eds.), *Making a difference: Prioritizing equity and access in CSCL, 12th international conference on computer supported collaborative learning (CSCL) 2017* (Vol. 2, pp. 573–576). International Society of the Learning Sciences (ISLS).

BOOK CHAPTERS

1. * **Seo, J.**, & Dogucu, M. (2024). Data science and accessibility. In A. Ko, R. Ladner, & A. Oleso (Eds.), *Teaching accessible computing*. University of Washington.

PUBLICATIONS IN HEALTHCARE

- Choi, S., & **Seo, J.** (2020). An exploratory study of the research on caregiver depression: Using bibliometrics and LDA topic modeling. *Issues in Mental Health Nursing*, 1–10. <https://doi.org/10.1080/01612840.2019.1705944>
- Choi, S., & **Seo, J.** (2019). Analysis of caregiver burden in palliative care: An integrated review. *Nursing Forum*, 54(2), 280–290. <https://doi.org/10.1111/nuf.12328>
- Choi, S., & **Seo, J.** (2019). Heart failure research using text mining: A systematic review. *NURSING RESEARCH*, 68(2), E119–E120.
- Choi, S., & **Seo, J.** (2019). Trends in self-management among adults with heart failure from 2011 to 2016 using the national health and nutrition examination surveys. *Journal of Cardiac Failure*, 25(8), S4. <https://doi.org/10.1016/j.cardfail.2019.07.540>
- Choi, S., **Seo, J.**, & Kitko, L. (2019). Exploring the lived experience of a family member with advanced heart failure: Using a text mining approach. *The First International Conference on Quantitative Ethnography: Poster Session*, S8–S9.
- Choi, S., & **Seo, J.** (2018). Effects of nonpharmacological interventions for fatigue in patients with heart failure: A systematic review and meta-analysis. *Journal of Cardiac Failure*, 24(8), S73–S74.

Conference Presentations and Invited Talks

Seo, J. (2024, March). *Unseen Insights: Empowering Autonomous Data Science by, with, and for Blind People*. Invited talk at the UC Irvine Donald Bren School of Information & Computer Sciences, Irvine, CA.

Seo, J. (2023, November). *Insight Over Eyesight: My Journey as a Blind Data Scientist*. Invited talk at the Chicago Lighthouse Career Fair, Chicago, IL (virtual).

Seo, J. (2023, November). *Beyond Sight: Envisioning Data Science Through Multimodal Access*. Invited as a keynote speaker at the 2023 UIUC iSchool's Research Showcase, Champaign, IL.

Seo, J. (2023, November). *Understanding Multi-Modality of Blind People Towards Inclusive STEM Learning*. Invited talk at the UIUC CI590 DELTA Seminar, Champaign, IL.

Seo, J. (2023, July). *Screen Reader User Experience Deep Dive*. Invited talk at the Microsoft Visual Studio Code Team, virtual.

Seo, J. (2023, June). *Perceiving Beyond Vision: My Journey Through Dreamscapes, Numerical Cognition, and a Blind Critique of Inclusive Data Visualization*. Invited talk at the Dagstuhl Inclusive Data Visualization Workshop, Dagstuhl, Germany.

Seo, J. (2023, May). *Enhancing Accessibility in Programming and Fostering Inclusive Data Science via Multimodal Strategies*. Invited talk at the Campus Research Computing Consortium, virtual.

Invited panel (2023, May): *Human Computer Relationships Work?: Embodiment, Inclusive Design, Accessibility, and Emerging Technologies for Learning*, hosted by PhET Interactive Simulations at University of Colorado Boulder.

Invited demo by Microsoft (2023, April): *VSCode Accessibility*. VS Code Day 2023: <https://m.youtube.com/watch?v=X3qUf0B3x8Q>

Invited panel (2022, December): *Integrating Accessibility into a Computing Career*, hosted by Associate Professor Stacy Branham at Informatics of the University of California, Irvine. (virtual).

Seo, J. (2022, November). *Accessible Library Makerspaces*. Invited talk at the UIUC iSchool IS571: Accessibility in Library Resources, Champaign, IL (virtual).

Seo, J. (2022, September). *Digital Accessibility*. Invited panel at the INFOcon 2022, virtual.

Seo, J. (2022, April). *Accessible Data Visualization in a Reproducible Way*. Invited talk at Champaign-Urbana Data Science User Group, Champaign, IL (virtual).

Seo, J. (2022, March). *Understanding Multi-Modality of Blind People Towards Inclusive STEM Learning*. Invited talk at the UIUC iSchool Proseminar, Champaign, IL (virtual).

Seo, J. (2022, March). *Universal Design = Usability * Accessibility (With Practical Examples Beyond Conceptual Frameworks)*. Invited talk at INTE 535 Analysis, Implementation, and Evaluation of Assistive Technology. Instructional Technology program of the University of Alabama, Tuscaloosa, AL (virtual).

Seo, J. (2022, March). *Your Condition is Not Your Conclusion*. Invited talk at HTM4311: Hotel Professional Development at the Hong Kong Polytechnic University (virtual).

Seo, J. (2021, November). *SCAFFOLDing All Abilities into Makerspaces*. Invited talk at the UIUC iSchool IS582: Make, Design, & Learn in Libraries, Champaign, IL (virtual).

Seo, J. (2021, October). *Non-Visual Strategies for Making Statistical-Computing Accessible*. Lightening talk at the National Center for Supercomputing Applications, Champaign, IL.

Seo, J. (2021, September). *Accessibility of Science Beyond Content Accessibility*. Talk presented at the Argonne National Laboratory (Maths and Computer Science Division): <https://www.anl.gov/event/accessibility-of-science-beyond-content-accessibility>.

Invited panel (2021, August). DO-IT Neuroscience for Neurodiverse Learners Faculty panel at the University of Washington, virtual.

Seo, J. (2021, June). *How to Learn to Code*. Invited Talk presented at the Nature, Webcast: <https://doi.org/10.1038/d41586-021-01638-z>.

Seo, J., & Richard, G. T. (2021, February). *Uncovering latent topics of blind people in computer science: structural topic modeling for an email corpus*. Poster presented at the 2nd International Conference on Quantitative Ethnography (ICQE), Malibu, CA.

Donegan, S. R., Porter, C., Fogel, A., **Seo, J.**, Choi, S., & Eagan, B. (2021, February). *U.S. media coverage during COVID-19: an epistemic network analysis of bias, topic, and trajectory*. Poster presented at the 2nd International Conference on Quantitative Ethnography (ICQE), Malibu, CA.

Seo, J. (2021, January). *Accessible data science beyond visual models*. Talk presented at the rstudio::global(2021), Virtual: <https://global.rstudio.com/student/page/40617>.

Seo, J. (2020, September). *Discovering knowledge sharing patterns of blind people pursuing STEM disciplines: data science and computational linguistics on large-scale email corpora*. Poster presented at the Doctoral Consortium of the annual meeting of the ACM Richard Tapia Celebration of Diversity in Computing, virtual. *Awarded the Qualcomm scholarship*.

Seo, J., & Richard, G. T. (2020, April). *Maker inclusivity = maker accessibility: further interrogations for diverse participation*. Poster presented at the annual meeting of the American Educational Research Association (AERA), Virtual.

Seo, J., & Richard, G. T. (2018, April). *Furthering inclusivity in making: a framework for accessible design of makerspaces for learners with disabilities*. Poster presented at the annual meeting of the American Educational Research Association (AERA), New York City, NY.

Bunag, T., Aniela, L., Nielsen, M. C., & **Seo, J.** (2017, November). *The rapidly changing world of accessible online learning*. Presented at the Panel Discussion: DDL - Accessible Online Learning In Concurrent Presentation of the Association for Educational Communications and Technology (AECT), Jacksonville, FL.

Seo, J. (2017, September). *Tactile access to visualized statistical data using R*. Poster presented at the annual meeting of the ACM Richard Tapia Celebration of Diversity in Computing, Atlanta, GA.

Liao, J., Patcyk, M., **Seo, J.**, & Hooper, S. (2016, October). *Using hierarchical linear modeling to measure growth rate in a gamified CBM environment*. Paper presented at the annual meeting of the Northeastern Educational Research Association (NERA), Trumbull, CT.

Seo, J. (2016, March). *Engaging blind learners in statistics study using R*. Presented at the annual meeting of the Teaching and Learning with Technology (TLT) Symposium, University Park, PA.

Kim, K., **Seo, J.**, & Clariana, R. B. (2016, March). *Automatic knowledge structure measure in online courses*. Presented at the annual meeting of the Teaching and Learning with Technology (TLT) Symposium, University Park, PA.

Seo, J. (2015, November). *Assistive technologies for equal access in general education*. Presented at the annual meeting of the Association for Educational Communications and Technology (AECT), Indianapolis, IN.

Seo, J., & Park, E. (2015, October). *The more accessible, the more potential: simple tips for online accessibility*. Presented at the Technology and Learning Conference, Blue Bell, PA.

Media Coverage

1. McCallen, B. (2023, November 3). *Data visualization for the blind*. <https://speakingoutfortheblind.weebly.com/list-of-episodes-and-show-news/for-more-information-episode-329-data-visualization-tool-for-the-blind>
2. Heckel, J. (2023, September 29). *Information sciences professor developing tool to make data visualizations accessible to blind researchers, students*. News Bureau University of Illinois Urbana-Champaign. <https://news.illinois.edu/view/6367/107909242>
3. Katsnelson, A. (2023). These tools help visually impaired scientists read data and journals. *Nature*, 615(7951, 7951), 362–363. <https://doi.org/10.1038/d41586-023-00645-6>

Software Developments and Publications

DATA SCIENCE PACKAGES IN COMPREHENSIVE R ARCHIVE NETWORK (CRAN)

1. Iannone, R., Cheng, J., Schloerke, B., Hughes, E., Lauer, A., & **Seo, J.** (2023). *gt: Easily Create Presentation-Ready Display Tables* (Version 0.9.0) [Computer software]. <https://CRAN.R-project.org/package=gt>. Over 1.5M download.
2. **Seo, J.**, & Choi, S. (2020). *Youtubecaption: Downloading YouTube subtitle transcription in a tidy tibble data frame* [Computer software]. <https://CRAN.R-project.org/package=youtubecaption>. Over 18K download.
3. **Seo, J.**, & Choi, S. (2019). *Ezpickr: Easy data import using GUI file picker and seamless communication between an excel and r* [Computer software]. <https://CRAN.R-project.org/package=ezpickr>. Over 31K download.
4. **Seo, J.**, & Choi, S. (2019). *Mboxr: Reading, extracting, and converting an mbox file into a tibble* [Computer software]. <https://CRAN.R-project.org/package=mboxr>. Over 25K download.

OPEN-SOURCE PROJECT ON GITHUB

1. **Seo, J.** (2020). *Edmdown: Writing a reproducible article for journal of educational DataMining in r markdown*. <https://github.com/jooyoungseo/edmdown>. R package version 0.0.0.9000.
2. **Seo, J.**, Chan, T., Michaelis, J. E., & Rosenberg, J. M. (2020). *Isldown: Writing a reproducible conference paper for the international society of the learning sciences annual meeting in r markdown*. <https://github.com/jooyoungseo/isldown>. R package version 0.0.0.9000.
3. **Seo, J.**, & Rosenberg, J. M. (2020). *Jlardown: Writing a reproducible article for journal of learning analytics in r markdown*. <https://github.com/jooyoungseo/jlardown>. R package version 0.0.0.9000.
4. **Seo, J.** (2019). *Ezviewr: View tidy data in preferable spreadsheet*. <https://github.com/jooyoungseo/ezviewr>. R package version 0.1.0.
5. **Seo, J.** (2019). *tactileR: Converting r graphics into a braille ready-to-print PDF*. <https://github.com/jooyoungseo/tactileR>. R package version 0.1.0.
6. **Seo, J.**, & McCurry, S. (2019). *AROW: Accessible RMarkdown online writer*. <http://www.arowtool.com>

OFFICIALLY CODE CONTRIBUTING R PACKAGES

- My GitHub pull requests have been peer-reviewed and merged for active data science R packages:

Chang, W., Cheng, J., Allaire, J., Xie, Y., & McPherson, J.

SHINY: WEB APPLICATION FRAMEWORK FOR R

- Contributed to improving keyboard and TTS accessibility for input widgets.

<https://cran.r-project.org/web/packages/shiny/>
2020

O'Hara-Wild, M., & Hyndman, R.

VITAE: CURRICULUM VITAE FOR R MARKDOWN

- Contributed to enabling LaTeX engine customization.
- Contributed to displaying multiple bibliographies based on lua filter.

<https://cran.r-project.org/web/packages/vitae/>
2020

Allaire, J., Xie, Y., et al.

RMARKDOWN: DYNAMIC DOCUMENTS FOR R

- Contributed to improving ioslides_presentation accessibility for screen reading software.

<https://cran.r-project.org/web/packages/rmarkdown/>
2019

Xie, Y.

BOOKDOWN: AUTHORING BOOKS AND TECHNICAL DOCUMENTS WITH R MARKDOWN

- Developed context_document2, github_document2, beamer_presentation2, html_fragment2, html_notebook2, html_vignette2, ioslides_presentation2, slidy_presentation2 and rtf_document2 functions to enable R markdown users to utilize cross-references for figures and tables through bookdown package.

<https://cran.r-project.org/web/packages/bookdown/>
2019

Allaire, J., Iannone, R., & Xie, Y.

DISTILL: 'R MARKDOWN' FORMAT FOR SCIENTIFIC AND TECHNICAL WRITING

- Contributed to displaying more metadata for journal article bib_entries.
- Improved screen reader accessibility for navigation bar.
- Added missing Google Scholar meta tags for conference, technical report, and dissertation types.

<https://cran.r-project.org/web/packages/distill/>
2019

Marwick, B.

WORDCOUNADDIN: WORD COUNTS AND READABILITY STATISTICS IN R MARKDOWN DOCUMENTS

- Contributed to text_stats() function for R markdown users to Get a word count and some other stats for selected text (excluding code chunks and inline code).

<https://git.io/JkJca>
2019

Godfrey, A. J. R., Warren, D., Murrell, P., Bilton, T., & Sorge, V.

BRAILLER: IMPROVED ACCESS FOR BLIND USERS

- Contributed to BRLThis() function to enable blind R users to convert a graph into a pdf ready for embossing in Braille.

<https://cran.r-project.org/web/packages/BrailleR/>
2019

Teaching Experience

- IS 407: Introduction to Data Science (spring 2022-present).
- IS 569: Internship (spring 2022). *Advised Ankita Khiratkar (MS IM)*.

- IS 589: Independent Study (spring 2022). *Advised Chetna Beri (MS IM)*.
- INFO 399: Individual Study (spring 2022). *Advised Leo Zhang (CS undergrad → Currently, Master's student at UCLA Data Science dept)*.
- IS 389: Independent Study (spring 2022). *Advised Miso Kim (BS IS)*.
- IS 226: Introduction to Human-Computer Interaction (fall 2021). *Co-teaching with Dr. Yang Wang*.
- Served as an annual review committee member for iSchool Ph.d. student Smirity Kaushik (advisor Dr. Yang Wang) (spring 2022).
- Served as a field exam committee member for iSchool Ph.D. candidate Jaihyun Park (advisor Dr. Ryan Cordell) (spring 2022).

Awards and Honors

ACM Richard Tapia Celebration of Diversity in Computing Conference

QUALCOMM SCHOLARSHIP

Virtual

Sep. 2020

- Selected as one of the outstanding doctoral consortium proposals.

Disability:IN

2020 NEXTGEN LEADERS

Alexandria, VA

Feb. 2020 - Jul. 2020

- Selected as one of the leaders in the U.S. for diversity.

AccessComputing, University of Washington

ACCESSSTEM RESUME CONTEST WINNERS AWARD

Seattle, WA

Dec. 2019

- Sponsored by The National Science Foundation (NSF).

The First International Conference on Quantitative Ethnography

BEST DOCTORAL PROPOSAL FELLOWSHIP

Madison, WI

Oct. 2019

- Sponsored by Cengage.

The PDK Educational Foundation

ANDREW V. KOZAK MEMORIAL FELLOWSHIP

University Park, PA

2019

- Awarded \$1,500 for research contribution to public education.

The Spencer Foundation

AERA PRE-CONFERENCE TRAVEL AWARD

Toronto, ON, Canada

Apr. 2019

The Pennsylvania State University

DELTA GAMMA GOLDEN ANCHOR AWARD

University Park, PA

2015, 2017

The National Science Foundation (NSF)

ACM RICHARD TAPIA CELEBRATION OF DIVERSITY IN COMPUTING CONFERENCE SCHOLARSHIP

Atlanta, GA

Sep. 2017

- Included free conference registration, shared hotel accommodations and a \$500 travel stipend.

Microsoft Research

ACM STUDENT RESEARCH COMPETITION TRAVEL AWARD

Atlanta, GA

Sep. 2017

- \$500 travel stipend was awarded for ACM TAPIA 2017 Student Research Competition (SRC).

AccessComputing, University of Washington

CSUN CONFERENCE TRAVEL AWARD

Seattle, WA

Mar. 2017

- Sponsored by The National Science Foundation (NSF).

College of Education

SUMMER TUITION ASSISTANCE FUNDING

University Park, PA

2017

College of Education

GRADUATE STUDENT TRAVEL GRANT

University Park, PA

Aug. 2016 - Present

Teaching and Learning with Technology

GRADUATE ASSISTANTSHIP

University Park, PA

Aug. 2016 - Present

Hyomyoung Scholarship

OUTSTANDING ACADEMIC AWARD

Seoul, South Korea

2014 - 2019

ANC Scholarship Foundation

ALL NATIONS CHURCH GRADUATE SCHOLARSHIP

Lake View Terrace, CA

2016

Service

School of Information Sciences at the University of Illinois at Urbana-Champaign

SEARCH COMMITTEE FOR DIRECTOR/ASSISTANT DEAN, DIVERSITY, EQUITY, INCLUSION, AND ACCESSIBILITY (DEIA)

Champaign, IL

April 2022 - Present

School of Information Sciences at the University of Illinois at Urbana-Champaign

DIVERSITY COMMITTEE

Champaign, IL

Sep. 2021 - Apr. 2022

International Web for All Conference (W4A) 2022

PROGRAM COMMITTEE MEMBER

Virtual

Dec. 2021 - Feb. 2022

15th International Conference on Educational Data Mining

ACCESSIBILITY CHAIR

Durham

Oct. 2021 - Jul. 2022

Special issue on ethnography and learning design

JOURNAL REVIEWER

TechTrends

Sep. 2021

The Network of Academic Programs in the Learning Sciences (NAPLeS)

REVIEWER

- Reviewed abstracts on equity and disability.

International Society of the Learning
Sciences

2020

The Pennsylvania State University

COLLEGE OF EDUCATION TECHNOLOGY COMMITTEE

University Park, PA

Aug. 2019 - May. 2020

- Worked as a student committee member to support understanding of educational technology for College of Education.

The Pennsylvania State University

LIBRARIES' ACCESSIBILITY STUDENT ADVISORY GROUP

University Park, PA

Aug. 2019 - May. 2020

The 14th International Conference of the Learning Sciences (ICLS)

REVIEWER

Nashville, TN

2019

The ACM CHI Conference on Human Factors in Computing Systems (CHI 2020, 2021)

REVIEWER

Honolulu, HI, Yokohama, Japan

2019, 2020

The 1st International Conference on Quantitative Ethnography (ICQE)

REVIEWER

Madison, WI

2019

The 3rd Learning Sciences Graduate Student Conference (LSGSC)

REVIEWER

Nashville, TN

2018

The 2nd Learning Sciences Graduate Student Conference (LSGSC)

REVIEWER

Bloomington, IN

2017

Center for Online Innovation in Learning (COIL), The Pennsylvania State University

FUNDING REVIEWER

University Park, PA

2016

Current Memberships

- International Society of the Learning Sciences (ISLS)
- Association for Computing Machinery (ACM)
- American Statistical Association (ASA)
- International Society for Quantitative Ethnography (ISQE)
- International Association of Accessibility Professionals (IAAP)
- International Educational Data Mining Society (IEDMS)