JooYoung **Seo**

Ph.D.

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I am a learning scientist, data-science/software engineer, 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*

National Center for Supercomputing Applications   *University of Illinois at Urbana-Champaign*

Faculty Affiliate   *Dec. 2021 - Present*

Illinois Informatics Institute   *University of Illinois at Urbana-Champaign*

Faculty Affiliate   *Sep. 2021 - Present*

IDEA (Inclusion, Diversity, Equity, and Access) Institute   *University of Illinois at Urbana-Champaign*

Faculty Affiliate   *Jan. 2022 - Present*

RStudio   *Boston, MA*

Software Engineer Intern   *May. 2020 - Aug. 2020*

Certificates

RStudio PBC

Double-Certified Data Science Instructor for Tidyverse and Shiny   *Jun. 2020 - Present*

NV Access

Certified Expert with NVDA (Non-Visual Desktop Access) Screen Reader   *Dec. 2019 - Present*

International Association of Accessibility Professional

Certified Professional in Accessibility Core Competencies   *Apr. 2017 - Present*

Korean Ministry of Education

Licensed English Teacher (Secondary Education)   *Feb. 2014 - Present*

Korean Ministry of Education

Licensed General Education Teacher (Secondary Education)   *Feb. 2014 - Present*

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

∗ **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-` ∗

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`

∗ **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` ∗

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`

∗ **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. ∗

∗ **Seo, J.**, & Choi, S. (in press). 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*. ∗

Papers in Refereed Conference Proceedings

∗ 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*.

∗ 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` ∗

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). Nashville, TN: International Society of the Learning Sciences (ISLS).

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. Madison, WI. *Awarded the best Doctoral Consortium Proposal Cengage fellowship*.

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). Nashville, TN: LSGSC Planning Team.

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). London, UK: International Society of the Learning Sciences (ISLS).

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.

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). Philadelphia, PA: International Society of the Learning Sciences (ISLS).

[*] Huh, M., & **Seo, J.** (in press). A duoethnographic study of a mixed-ability team in a collaborative group programming project. In *Proceedings of the 15th international conference on computer supported collaborative learning (CSCL), 2022*. International Society of the Learning Sciences (ISLS). *

[*] **Seo, J.**, & Dogucu, M. (accepted). Teaching visual accessibility in the introductory data science classes: Why, what, when, and how. *The 2022 symposium on data science & statistics*. Pittsburgh, PA, USA: American Statistical Association. *

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. Madison, WI.

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.

Working Papers under Revision or Review

Moon, J., Lee, D., Choi, G. W., **Seo, J.**, Do, J., & Lim, T. (in preparation). *Learning analytics in seamless learning environments: A systematic review*.

Zhang, Z., Kaushik, S., **Seo, J.**, Yuan, H., Das, S., Findlater, L., … Wang, Y. (resubmission preparation). *ImageAlly: A Human-AI Hybrid Approach to Support Blind People*.

Conference Presentations and Invited Talks

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-i`

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), Jacsonville, 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.

Software Developments and Publications

Data Science Packages in Comprehensive R Archive Network (CRAN)

Seo, J., & Choi, S. (2020). *Youtubecaption: Downloading YouTube subtitle transcription in a tidy tibble data frame*. Retrieved from `https://CRAN.R-project.org/package=youtubecaption`. *Over 9543 download*.

Seo, J., & Choi, S. (2019). *Ezpickr: Easy data import using GUI file picker and seamless communication between an excel and r*. Retrieved from `https://CRAN.R-project.org/package=ezpickr`. *Over 19K download*.

Seo, J., & Choi, S. (2019). *Mboxr: Reading, extracting, and converting an mbox file into a tibble*. Retrieved from `https://CRAN.R-project.org/package=mboxr`. *Over 15K download*.

Open-Source Project on GitHub

Seo, J. (2020). *Edmdown: Writing a reproducible article for journal of educational DataMining in r markdown*. Retrieved from `https://github.com/jooyoungseo/edmdown`. *R package version 0.0.0.9000*.

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*. Retrieved from `https://github.com/jooyoungseo/islsdown`. *R package version 0.0.0.9000*.

Seo, J., & Rosenberg, J. M. (2020). *Jladown: Writing a reproducible article for journal of learning analytics in r markdown*. Retrieved from `https://github.com/jooyoungseo/jladown`. *R package version 0.0.0.9000*.

Seo, J. (2019). *Ezviewr: View tidy data in preferable spreadsheet*. Retrieved from `https://github.com/jooyoungseo/ezviewr`. *R package version 0.1.0*.

Seo, J. (2019). *tactileR: Converting r graphics into a braille ready-to-print PDF*. Retrieved from `https://github.com/jooyoungseo/tactileR`. *R package version 0.1.0*.

Seo, J., & McCurry, S. (2019). *AROW: Accessible RMarkdown online writer*. Retrieved from `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.

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

SHINY: WEB APPLICATION FRAMEWORK FOR R *2020*

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

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

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

VITAE: CURRICULUM VITAE FOR R MARKDOWN *2020*

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

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

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

RMARKDOWN: DYNAMIC DOCUMENTS FOR R *2019*

- Contributed to improving ioslides_presentation accessibility for screen reading software.

Xie, Y.

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

BOOKDOWN: AUTHORING BOOKS AND TECHNICAL DOCUMENTS WITH R MARKDOWN *2019*

- 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.

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

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

DISTILL: 'R MARKDOWN' FORMAT FOR SCIENTIFIC AND TECHNICAL WRITING *2019*

- 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.

Marwick, B.

https://git.io/JkJca

WORDCOUNTADDIN: WORD COUNTS AND READABILITY STATISTICS IN R MARKDOWN DOCUMENTS *2019*

- 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).

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

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

BRAILLER: IMPROVED ACCESS FOR BLIND USERS *2019*

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

Teaching Experience

- IS 407: Introduction to Data Science (spring 2022).
- 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).

Grants

Seo, J. (PI) (submitted for May 2022 - May 2023). Improving Accessible Reproducibility for Data Science Publishing System. *RStudio PBC*. Requested funding amount: $54,327.

Ludäscher, B. (PI), **Seo, J.** (Co-PI), & Vilhuber, L. (Co-PI) (submitted for Aug 2022 - Aug 2023). Whole Tale Accessibility Project. *The Sloan Foundation*. Requested funding amount: $225,000.

Choi, S. (PI), **Seo, J.** (Co-PI), Mahoney, M. (Co-PI), Davies, C. (Co-PI) (submitted for July 2022 - December 2023). Understanding the Sleep Patterns of Blind Populations Using Self-Tracking Technologies - What is It Like and How can We Support It?. *The Center on Health, Aging, and Disability, College of Applied Health Sciences*. Requested funding amount: $30,000.

Seo, J. (PI), & Koh, K. (Co-PI) (submitted for Aug 2022 - May 2025). Promoting Computational Thinking Skills for Blind and Visually Impaired Teens through Accessible Library Makerspaces. *IMLS (Institute of Museum and Library Services) National Leadership Grants for Libraries*. Requested funding amount: $498,638.

Seo, J. (PI) (awarded: unrestricted beyond Jan 2022 - December 2022). Data Accessibilization: Making Data Science Education Accessible for Blind Learners. *Wallace Foundation grant, Emerging Scholars Program of the International Society of the Learning Sciences (ISLS)*. Awarded funding amount: $10,000.

Awards and Honors

ACM Richard Tapia Celebration of Diversity in Computing Conference   *Virtual*
QUALCOMM SCHOLARSHIP   *Sep. 2020*
- Selected as one of the outstanding doctoral consortium proposals.

Disability:IN   *Alexandria, VA*
2020 NEXTGEN LEADERS   *Feb. 2020 - Jul. 2020*
- Selected as one of the leaders in the U.S. for diversity.

AccessComputing, University of Washington   *Seattle, WA*
ACCESSSTEM RESUME CONTEST WINNERS AWARD   *Dec. 2019*
- Sponsored by The National Science Foundation (NSF).

The First International Conference on Quantitative Ethnography   *Madison, WI*
BEST DOCTORAL PROPOSAL FELLOWSHIP   *Oct. 2019*
- Sponsored by Cengage.

The PDK Educational Foundation   *University Park, PA*
ANDREW V. KOZAK MEMORIAL FELLOWSHIP   *2019*
- Awarded $1,500 for research contribution to public education.

The Spencer Foundation   *Toronto, ON, Canada*
AERA PRE-CONFERENCE TRAVEL AWARD   *Apr. 2019*

The Pennsylvania State University — *University Park, PA*

Delta Gamma Golden Anchor Award — *2015, 2017*

The National Science Foundation (NSF) — *Atlanta, GA*

ACM Richard Tapia Celebration of Diversity in Computing Conference Scholarship — *Sep. 2017*

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

Microsoft Research — *Atlanta, GA*

ACM Student Research Competition Travel Award — *Sep. 2017*

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

AccessComputing, University of Washington — *Seattle, WA*

CSUN Conference Travel Award — *Mar. 2017*

- Sponsored by The National Science Foundation (NSF).

College of Education — *University Park, PA*

Summer Tuition Assistance Funding — *2017*

College of Education — *University Park, PA*

Graduate Student Travel Grant — *Aug. 2016 - Present*

Teaching and Learning with Technology — *University Park, PA*

Graduate Assistantship — *Aug. 2016 - Present*

Hyomyoung Scholarship — *Seoul, South Korea*

Outstanding Academic Award — *2014 - 2019*

ANC Scholarship Foundation — *Lake View Terrace, CA*

All Nations Church Graduate Scholarship — *2016*

Service

School of Information Sciences at the University of Illinois at Urbana-Champaign — *Champaign, IL*

Search Committee for Director/Assistant Dean, Diversity, Equity, Inclusion, and Accessibility (DEIA) — *April 2022 - Present*

School of Information Sciences at the University of Illinois at Urbana-Champaign — *Champaign, IL*

Diversity Committee — *Sep. 2021 - Apr. 2022*

International Web for All Conference (W4A) 2022 — *Virtual*

Program Committee Member — *Dec. 2021 - Feb. 2022*

15th International Conference on Educational Data Mining — *Durham*

Accessibility Chair — *Oct. 2021 - Jul. 2022*

Special issue on ethnography and learning design — *TechTrends*

Journal Reviewer — *Sep. 2021*

The Network of Academic Programs in the Learning Sciences (NAPLeS) — *International Society of the Learning Sciences*

Reviewer — *2020*

- Reviewed abstracts on equity and disability.

The Pennsylvania State University — *University Park, PA*

College of Education Technology Committee — *Aug. 2019 - May. 2020*

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

The Pennsylvania State University — *University Park, PA*

Libraries' Accessibility Student Advisory Group — *Aug. 2019 - May. 2020*

The 14th International Conference of the Learning Sciences (ICLS) — *Nashville, TN*

Reviewer — *2019*

The ACM CHI Conference on Human Factors in Computing Systems (CHI 2020, 2021) — *Honolulu, HI, Yokohama, Japan*

Reviewer — *2019, 2020*

The 1st International Conference on Quantitative Ethnography (ICQE) — *Madison, WI*

Reviewer — *2019*

The 3rd Learning Sciences Graduate Student Conference (LSGSC) — *Nashville, TN*

Reviewer — *2018*

The 2nd Learning Sciences Graduate Student Conference (LSGSC)   *Bloomington, IN*
Reviewer   *2017*

Center for Online Innovation in Learning (COIL), The Pennsylvania State University   *University Park, PA*
Funding Reviewer   *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)