

# JooYoung Seo

PH.D. CANDIDATE (ABD); RSTUDIO TRUSTED DATA SCIENCE INSTRUCTOR

Learning, Design, and Technology, 301 Keller Building, University Park, PA 16802, USA

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

## Skills

<b>Braille</b>	UEB (Unified English Braille), Nemeth (Math), Korean, Japanese Brailles
<b>Data Science</b>	R (highly advanced: published 3 packages in CRAN), Python (advanced: tensorflow/keras/scikit-learn), SQL
<b>Reproducible Report</b>	Markdown/Rmarkdown, R shiny apps, Jupyter Notebook, LaTeX, Pandoc, lua
<b>DevOps</b>	Git, Docker, AWS, Travis CI, Cygwin
<b>Front-End</b>	HTML/CSS/JS/PHP/ARIA (advanced level to design according to WCAG 2.0/2.1), WordPress, Drupal, Hugo
<b>Back-End</b>	Unix/Linux Shell scripts, LAMP, Django, REST API
<b>Compile Programming Languages</b>	C/C++/C#, Java, Quorum (as basic level to review source codes and develop simple modules)
<b>Quantitative Research</b>	t-test, within-/between-subjects/Repeated Measures ANOVAs/ANCOVAs/MANOVAs/MANCOVAs, Regressions, HLM, Factor Analysis, Network Analysis, SEM, PCA, Unsupervised/Supervised Machine Learning
<b>Qualitative Research</b>	Virtual Ethnography, Content Analysis, Grounded Theory, Phenomenology, Case Studies, Interaction Analysis
<b>Mixed Research</b>	Text Mining, Quantitative Ethnography, Explanatory/Exploratory Sequential Mixed Methods
<b>Languages</b>	English/Korean (bilingual)

## Working Experience

### Rstudio PBC

SOFTWARE ENGINEER INTERN

*Boston, MA*

*May. 2020 - Aug. 2020*

### ICE Soft

CO-FOUNDER AND PROJECT MANAGER

*Seoul, South Korea*

*Jul. 2010 - Jun. 2011*

### National Human Rights Commission of Korea

INTERN

*Seoul, South Korea*

*May. 2010 - Nov. 2010*

## Research Experience

### IT Accessibility Team, Teaching and Learning with Technology (TLT)

GRADUATE ASSISTANT

*University Park, PA*

*Aug. 2016 - Present*

### Playful Learning and Inclusive Design Research Group

GRADUATE RESEARCHER

*University Park, PA*

*Aug. 2016 - Present*

### Online Interactions of the Blind Research Project

PRINCIPAL INVESTIGATOR

*University Park, PA*

*May. 2019 - Present*

### Accessible RMarkdown Online Writer (AROW) Project, Teaching and Learning with Technology (TLT)

PROJECT MANAGER

*University Park, PA*

*May. 2018 - Present*

### Accessibility of Maker Toolkits Research Project

PRINCIPAL INVESTIGATOR

*University Park, PA*

*Jun. 2017 - Present*

### Learning2CC Project

SITE MANAGER

*University Park, PA*

*Feb. 2015 - Dec. 2015*

### Avenue PM Research Group

GRADUATE RESEARCHER

*University Park, PA*

*Sep. 2014 - May. 2016*

## Certificates

### RStudio PBC

CERTIFIED SHINY/INTERACTIVE DATA SCIENCE INSTRUCTOR

*Find me in the Rstudio's trusted  
trainer list*

Aug. 2020 - Present

### RStudio PBC

CERTIFIED TIDYVERSE INSTRUCTOR/DATA SCIENTIST

*Find me in the Rstudio's trusted  
trainer list*

Jun. 2020 - Present

### NV Access

CERTIFIED EXPERT WITH NVDA (NON-VISUAL DESKTOP ACCESS) SCREEN READER

*Lucia South, QLD, Australia*

Dec. 2019 - Present

### International Association of Accessibility Professional

CERTIFIED PROFESSIONAL IN ACCESSIBILITY CORE COMPETENCIES

*Atlanta, GA*

Apr. 2017 - Present

### Korean Ministry of Education

CERTIFIED ENGLISH TEACHER (SECONDARY EDUCATION)

*Sejong, South Korea*

Feb. 2014 - Present

### Korean Ministry of Education

CERTIFIED GENERAL EDUCATION TEACHER (SECONDARY EDUCATION)

*Sejong, South Korea*

Feb. 2014 - Present

### IBM

PYTHON FOR DATA SCIENCE AND AI

*Coursera*

Apr. 2020 - Present

### IBM

DATA ANALYSIS WITH PYTHON

*Coursera*

Apr. 2020 - Present

### IBM

DATABASES AND SQL FOR DATA SCIENCE

*Coursera*

Apr. 2020 - Present

### IBM

DATA SCIENCE METHODOLOGY

*Coursera*

Mar. 2020 - Present

### IBM

OPEN SOURCE TOOLS FOR DATA SCIENCE

*Coursera*

Mar. 2020 - Present

## Education

### The Pennsylvania State University

PH.D. IN LEARNING, DESIGN, AND TECHNOLOGY

*University Park, PA*

Aug. 2016 - Present

- Expected graduation: May 2021.
- Dissertation Title: "Discovering Informal Learning Cultures of Blind Individuals Pursuing STEM Disciplines: A Quantitative 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*

Aug. 2014 - May. 2016

- GPA 3.97/4.0.

### Sungkyunkwan University

B.A. IN EDUCATION

*Seoul, South Korea*

Mar. 2009 - Feb. 2014

- GPA 4.08/4.50.

### Sungkyunkwan University

B.A. IN ENGLISH LITERATURE

*Seoul, South Korea*

Mar. 2009 - Feb. 2014

- GPA 4.08/4.50.

## 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.*  
<https://CRAN.R-project.org/package=youtubecaption>

**Seo, J., & Choi, S. (2019).** *Ezpickr: Easy data import using gui file picker and seamless communication between an excel and r*. <https://CRAN.R-project.org/package=ezpickr>

**Seo, J., & Choi, S. (2019).** *Mboxr: Reading, extracting, and converting an mbox file into a tibble*. <https://CRAN.R-project.org/package=mboxr>

## OPEN-SOURCE PROJECT ON GITHUB

**Seo, J. (2019).** *Edmdown: Writing a reproducible article for journal of educational datamining in r markdown*. <https://github.com/jooyoungseo/edmdown>

**Seo, J. (2019).** *Ezviewr: View tidy data in preferable spreadsheet*. <https://github.com/jooyoungseo/ezviewr>

**Seo, J. (2019).** *Jladow: Writing a reproducible article for journal of learning analytics in r markdown*. <https://github.com/jooyoungseo/jladow>

**Seo, J. (2019).** *TactileR: Converting r graphics into a braille ready-to-print pdf*. <https://github.com/jooyoungseo/tactileR>

**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.**

WORDCOUNTADDIN: WORD COUNTS AND READABILITY STATISTICS IN R MARKDOWN DOCUMENTS

- Contributed `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://github.com/benmarwick/wordcountaddin>

2019

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

BRAILLER: IMPROVED ACCESS FOR BLIND USERS

- Contributed `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

## Publications

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### REFEREED JOURNAL PAPERS

- 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.

### PAPERS IN REFEREED CONFERENCE PROCEEDINGS

- 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).
- 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.
- 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).
- 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). 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.

### PUBLICATIONS IN HEALTHCARE

- I have contributed to the following publications for their methods and research designs.

- 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*, 0(0), 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.** (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.
- 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.

## Presentations

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### PEER-REVIEWED CONFERENCE PRESENTATIONS

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

## Awards and Honors

### ACM Richard Tapia Celebration of Diversity in Computing Conference

QUALCOMM SCHOLARSHIP

Virtual

Sep. 2020

### Disability:IN

2020 NEXTGEN LEADERS

Alexandria, VA

Feb. 2020 - Jul. 2020

### AccessComputing, University of Washington

ACCESSSTEM RESUME CONTEST WINNERS AWARD

Seattle, WA

Dec. 2019

### The First International Conference on Quantitative Ethnography

BEST DOCTORAL PROPOSAL FELLOWSHIP

Madison, WI

Oct. 2019

### The PDK Educational Foundation

ANDREW V. KOZAK MEMORIAL FELLOWSHIP

University Park, PA

2019

### 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

2017

### The Pennsylvania State University

DELTA GAMMA GOLDEN ANCHOR AWARD

University Park, PA

2015

## **The National Science Foundation (NSF)**

ACM RICHARD TAPIA CELEBRATION OF DIVERSITY IN COMPUTING CONFERENCE SCHOLARSHIP

Atlanta, GA

Sep. 2017

## **Microsoft Research**

ACM STUDENT RESEARCH COMPETITION TRAVEL AWARD

Atlanta, GA

Sep. 2017

## **AccessComputing, University of Washington**

CSUN CONFERENCE TRAVEL AWARD

Seattle, WA

Mar. 2017

## **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

## **ChungInwook Scholarship Foundation**

ACADEMIC SCHOLARSHIP FOR DOCTORAL RESEARCH

Seoul, South Korea

2016 - 2018

## **ANC Scholarship Foundation**

ALL NATIONS CHURCH GRADUATE SCHOLARSHIP

Lake View Terrace, CA

2016

## **National Institute for International Education, Korean Government**

FUTURE INTERDISCIPLINARY STUDY OF GLOBAL KOREA SCHOLARSHIP FOR MASTER'S RESEARCH

Seoul, South Korea

2014 - 2016

## **Sungkyunkwan University**

ACADEMIC ACHIEVEMENT SCHOLARSHIP

Seoul, South Korea

2009 - 2013

## **Notes**

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- This CV is reproducible; all the source code behind this CV is available at this GitHub repo.
- More comprehensive CV is also available if you click this link.

SEO