

# JooYoung Seo

RSTUDIO INTERN FOR SUMMER 2020; PH.D. CANDIDATE (ABD)

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

## 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.

## Working Experience

### RStudio

SUMMER INTERN

Redmond, WA

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

## 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.** (in press-). 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*. 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). 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.

## Presentations

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### PEER-REVIEWED CONFERENCE PRESENTATIONS

- Seo, J., & Richard, G. T.** (2020, June). *Coding through touch: exploring and re-designing tactile making activities with learners with visual dis/abilities*. Paper will be presented at the 14th International Conference of the Learning Sciences (ICLS), Nashville, TN.
- Seo, J., & Richard, G. T.** (2020, April). *Maker inclusivity = maker accessibility: further interrogations for diverse participation*. Poster will be presented at the annual meeting of the American Educational Research Association (AERA), San Francisco, CA.
- Seo, J.** (2019, October). *Discovering informal learning cultures of blind individuals pursuing STEM disciplines: a quantitative ethnography using listserv archives*. Poster presented at the Doctoral Consortium of the first International Conference on Quantitative Ethnography (ICQE), Madison, WI. *Awarded the best doctoral proposal fellowship*.
- Seo, J., & McCurry, S.** (2019, March). *LaTeX is NOT easy: creating accessible scientific documents with R markdown*. Paper presented at the annual meeting of the CSUN Assistive Technology Conference, Northridge, CA.

- Seo, J.** (2018, October). *Accessibility and inclusivity in making: engaging learners with all abilities in making activities*. Paper presented at the annual meeting of the Learning Sciences Graduate Student Conference (LSGSC), Nashville, TN.
- Seo, J., & Richard, G. T.** (2018, June). *Accessibility, making and tactile robotics: facilitating collaborative learning and computational thinking for learners with visual impairments*. Poster presented at the 13th International Conference of the Learning Sciences (ICLS), London, UK.
- 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.
- Seo, J., AlQahtani, M., Ouyang, X., & Borge, M.** (2017, June). *Embracing learners with visual impairments in CSCL*. Paper presented at the 12th International Conference on Computer Supported Collaborative Learning (CSCL), Philadelphia, PA.
- 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

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### 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). *Jlardown: Writing a reproducible article for journal of learning analytics in r markdown*. <https://github.com/jooyoungseo/jlardown>
- 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 18 GitHub pull requests have been peer-reviewed and merged for active data science R packages:

### 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: AUTHORIZING 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

## Awards and Honors

### AccessComputing, University of Washington

ACCESSSTEM RESUME CONTEST WINNERS AWARD

- Sponsored by The National Science Foundation (NSF).

Seattle, WA

Dec. 2019

### The First International Conference on Quantitative Ethnography

BEST DOCTORAL PROPOSAL FELLOWSHIP

- Sponsored by Cengage.

Madison, WI

Oct. 2019

### The PDK Educational Foundation

ANDREW V. KOZAK MEMORIAL FELLOWSHIP

- 1500

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

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

Atlanta, GA

Sep. 2017

### Microsoft Research

ACM STUDENT RESEARCH COMPETITION TRAVEL AWARD

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

Atlanta, GA

Sep. 2017

## AccessComputing, University of Washington

CSUN CONFERENCE TRAVEL AWARD

- Sponsored by The National Science Foundation (NSF).

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

## Grants

### College of Education, The Pennsylvania State University

DISSERTATION RESEARCH INITIATION GRANT

University Park, PA

Feb. 2020 - Dec. 2020

- Selected as one of the 10 outstanding dissertation research proposals in 2019-2020 academic year.
- Funding amount: \$600.

### Center for Online Innovation in Learning, The Pennsylvania State University

PROVIDING TOUCHABLE KNOWLEDGE STRUCTURE GRAPHIC FEEDBACK FOR BLIND ONLINE LEARNERS: TABLET-BASED HAPTIC

FEEDBACK AND PAPER-BASED TACTILE FEEDBACK

University Park, PA

Mar. 2016 - Aug. 2017

- Co-led (Co-PI) a development project funded by Penn State to provide blind online learners with accessible network graphs that measure students' knowledge structure.
- Developed a prototype website and mobile app for accessible knowledge structure.
- Funding amount: \$33,060.

### Seed Funding for Start-Up Company for the Youth, City of Seoul

ICE SOFT: I SEE EVERYTHING THROUGH ASSISTIVE TECHNOLOGY

Seoul, South Korea

Jul. 2010 - Jun. 2011

- Co-Founded and Project-Managed ICE Soft.
- Worked with a team and developed an gps app for the blind.
- Funding amount: \$30,000 USD.

## INVITED GUEST LECTURES

### EIT Accessibility Group, The Pennsylvania State University

BLOCKERS FOR USERS ON A SCREEN READER

University Park, PA

Oct. 2019

- Invited guest talk to a webinar to train Penn State instructional designers for key WCAG 2.1 guidelines to make content more accessible including: image alt text, clear link text and heading structure, proper table structure, form and button labels, the need for keyboard functionality and how to convey information regardless of visual formatting.

### Chonnam National University

A SMALL STEP TO TAKE YOUR DATA ANALYSIS TO ANOTHER LEVEL

Gwangju, South Korea

Jul. 2019

- Invited guest talk to CNU to teach nursing faculty and students for basic concept of machine learning, computer-assisted text mining, and topic modelling to improve their qualitative data reliability.

### Sungkyunkwan University

BEING A REASONABLE REALIST: WISE NEGOTIATION BETWEEN GIVE AND TAKE

Seoul, South Korea

Jun. 2019

- Invited guest talk to SKKU "Student Success Center" as one of the successful role models to inspire undergraduate students for future planning.

### The MathML Meeting, The Pennsylvania State University

ACCESSIBILITY OF MATH, STATISTICS, AND SOCIAL SCIENCES

University Park, PA

May. 2019

- Invited guest talk to Penn State MathML group to present assistive technology and accessibility for STEM content.

## **BBVS Summer Academy STEM Extension**

*University Park, PA*

### **KEY-NOTE SPEECH FOR STEM EXTENSION**

*Jul. 2018*

- Invited key-note speaker to the STEM (Science, Technology, Engineering, and Mathematics) week of “The Summer Academy for Students who are Blind or Visually Impaired.”
- Hosted by the Pennsylvania Department of Labor and Industry, Office of Vocational Rehabilitation’s Bureau of Blindness and Visual Services, in partnership with the Pennsylvania Department of Education, Bureau Of Special Education’s Pennsylvania Training and Technical Assistance Network and Pennsylvania State University’s College of Education and College of Health and Human Development.

## **LDT 100 - “World Technologies and Learning”, The Pennsylvania State University**

*University Park, PA*

### **ADAPTIVE TECHNOLOGY LESSON**

*Apr. 2018*

- Two times invited guest talk to Dr. Joshua Kirby’s class for the week of “The Cost of 21st Century Education.”

## **LDT First Friday Speaking Series, The Pennsylvania State University**

*University Park, PA*

### **UNIVERSAL DESIGN 101: THREE FUNDAMENTAL FRAMEWORKS FOR AN EQUITABLE WORLD**

*Apr. 2017*

- Invited guest talk to the Learning, Design, and Technology (LDT) program of Penn State to introduce theoretical and practical background of Universal Design for Learning.

## **Northwestern University**

*Evanston, IL*

### **INCLUSIVE MAKING**

*Oct. 2017*

- Invited guest talk to Dr. Marcelo Worsley’s “Inclusive Making” class for Learning Sciences Program.

## **The Accessibility Users Group, The Pennsylvania State University**

*University Park, PA*

### **ACCESSIBILITY TESTING USING NVDA**

*Jul. 2017*

- Invited guest talk to the Penn State online learning Accessibility User Group to train web accessibility testing with open-source screen reader NVDA.

## **Canvas Day 17**

*University Park, PA*

### **NON-VISUAL ACCESS TO CANVAS WITH ASSISTIVE TECHNOLOGY**

*Mar. 2017*

- Invited guest to a showcase of Canvas, a learning management tool, to demonstrate how to interact with the online system using assistive technology for students with disabilities.

## **Ed-ICT International Network: Disabled students, ICT, post-compulsory education & employment**

*Seattle, WA*

### **STUDENT PANEL DISCUSSION: STUDENT ISSUES**

*Mar. 2017*

- Invited student panel to the first Ed-ICT International Network symposium.

## **Korea Employment Promotion Agency for the Disabled**

*Gyeonggi, South Korea*

### **ACCESSIBILITY: THE FIRST STEP TOWARDS ABILITY**

*Jul. 2016*

- Invited guest talk to KEAD to train the employees in concept of accessibility and universal design.