

# Iris Howley

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Computer Science Department  
Williams College  
47 Lab Campus Drive  
Williamstown, MA  
01267

## ACADEMIC APPOINTMENTS

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<b>Assistant Professor</b> Williams College, Department of Computer Science	2017 – Present Williamstown, MA
<b>Postdoctoral Research Fellow</b> Stanford University, Graduate School of Education Adviser: Candace Thille (Stanford University) & George Siemens (University of Texas Arlington)	2015 – 2017 Stanford, CA

## EDUCATION

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<b>Carnegie Mellon University</b> Ph.D. in Human-Computer Interaction Primary Adviser: Carolyn Penstein Rosé Concurrent M.S. in Human-Computer Interaction, 2012 Dissertation: Leveraging Educational Technology to Overcome Social Obstacles to Help-seeking Committee: Carolyn Rosé, Vincent Alevan, Stuart Karabenick, Bob Kraut, & Marsha Lovett	Graduated: 2015 Pittsburgh, PA
<b>Drexel University</b> Bachelor of Science in Computer Science Minor in Arabic Language	Graduated: 2008 Philadelphia, PA Cumulative GPA: 3.90

## AWARDS

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- “Understanding Learning Analytics Algorithms in Teacher and Student Decision-Making”  
NSF CRII: IIS: RUI Grant (\$150,000 over 2 years) 2019 - 2022  
[https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=1849984](https://www.nsf.gov/awardsearch/showAward?AWD_ID=1849984)
- Consortium for the Science of Sociotech. Systems Summer Research Institute Travel Award (\$500) 2019
- Workshop for New Computer Science Faculty at Teaching-focused Institutions Travel Award (\$700) 2018
- International Conference of the Learning Sciences Early Career Workshop Travel Award (\$1,700) 2018
- “Adaptable Learning Feedback for Instructors”  
Stanford University VPTL Innovation Grant (\$10,000) 2017
- Human-Robot Interaction Conference Pioneer Travel Award (\$2,300) 2014
- Program in Interdisciplinary Education Research Fellow Fellowship (\$210,000 over 5 years) 2008 - 2013
- Drexel University Merit Scholarship Scholarship (\$85,000 over 5 years) 2003 - 2008
- Girl Scout Gold Award 2002

## REFEREED JOURNAL PAPERS

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- J.6 **Howley, I.** (2020). Adapting Guided Inquiry Learning Worksheets for Emergency Remote Learning. *Journal of Information and Learning Sciences*.
- J.5 **Howley, I.** & Rosé, C. P. (2016). Towards careful practices for automated linguistic analysis of group learning. *Journal of Learning Analytics*.
- J.4 Clarke, S. N., **Howley, I.**, Resnick, L., & Rosé, C. P. (2016). Student agency to participate in dialogic science discussions. *Learning, Culture and Social Interaction*, 10, 27-39.
- J.3 Shiomi, M., Kanda, T., **Howley, I.**, Hayashi, K., & Hagita, N. (2015). Can a social robot stimulate science curiosity in classrooms? *International Journal of Social Robotics*, 7(5), 641-652.
- J.2 Dyke, G., Adamson, D., **Howley, I.**, & Rosé, C. P. (2013). Enhancing scientific reasoning and discussion with conversational agents. *IEEE Transactions on Learning Technologies*, 6(3), 240-247.
- J.1 Kopena, J.B., Sultanik, E., Naik, G., **Howley, I.K.**, Peysakhov, M., Cicerello, V.A., Kam, M., & Regli, W.C. (2005). Service-Based Computing on Manets: Enabling Dynamic Interoperability of First Responders. In *IEEE Intelligent Systems*, 20(5),17-25.

## REFEREED FULL CONFERENCE PAPERS

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- C16. Zhou, T., Sheng, H, & **Howley, I.** (2020). Assessing Post-hoc Explainability of the BKT Algorithm. In *Proceedings of the Third Annual ACM/AAAI Conference on Artificial Intelligence, Ethics, and Society (AIES 2020)*.
- C15. Do, Q., Campbell, K., Hine, E., Pham, D., Taylor, A., **Howley, I.**, & Barowy, D. W. (2019, October). Evaluating ProDirect manipulation in hour of code. In *Proceedings of the 2019 ACM SIGPLAN Symposium on SPLASH-E* (pp. 25-35).
- C14. **Howley, I.** & Rosé, C.P. (2018). Empirical Evidence for Evaluation Anxiety and Expectancy-Value Theory for Help Sources. In *Proceedings of the 13<sup>th</sup> International Conference of the Learning Sciences (ICLS 2018)*.
- C.13 Bassen, J., **Howley, I.**, Fast, E., Mitchell, J., & Thille, C. (2018). OARS: exploring instructor analytics for online learning. In *Proceedings of the 5<sup>th</sup> ACM Conference on Learning at Scale (L@S 2018)*.
- C.12 Yang, D., Wen, M., **Howley, I.**, Kraut, R. & Rosé, C. P. (2015). Exploring the Effect of Confusion in Discussion Forums of Massive Open Online Courses. In *Proceedings of the 2<sup>nd</sup> ACM Conference on Learning at Scale (L@S 2015)*, 121-130.
- C.11 Ferschke, O., **Howley, I.**, Tomar, G., Yang, D., & Rosé, C. P. (2015). Fostering Discussion across Communication Media in Massive Open Online Courses. In *Proceedings of the 11<sup>th</sup> International Conference on Computer Supported Collaborative Learning (CSCL 2015)*.
- C.10 **Howley, I.**, Kanda, T., Hayashi, K., & Rosé, C. (2014). Effects of Social Presence and Social Role on Help-Seeking and Learning. In *Proceedings of the 9<sup>th</sup> ACM/IEEE International Conference on Human-Robot Interaction (HRI 2014)*.
- C.9 Clarke, S., **Howley, I.**, Rosé, C., & Resnick, L. (2013). Understanding student engagement in classroom dialogue. In *Proceedings of the 15<sup>th</sup> Biennial Conference of the European Association for Research on Learning and Instruction (EARLI 2013)*.

- C.8 Clarke, S. N., Chen, G., Stainton, C., Katz, S., Greeno, J.G., Resnick, L.B., Dyke, G., **Howley, I.**, Adamson, D., & Rosé, C.P. (2013). The impact of CSCL beyond the online environment. In *Proceedings of the 10<sup>th</sup> International Computer Supported Collaborative Learning Conference (CSCL 2013)*.
- C.7 Dyke, G., **Howley, I.**, Adamson, D., Rosé, C.P. (2012). Towards academically productive talk supported by conversational agents. In *Proceedings of the 11<sup>th</sup> International Conference on Intelligent Tutoring Systems (ITS 2012)*, Lecture Notes in Computer Science, 531-540.
- C.6 **Howley, I.**, Mayfield, E., Rosé, C.P. (2011). Missing something? Authority in collaborative Learning. In *Proceedings of the 9<sup>th</sup> International Computer Supported Collaborative Learning Conference (CSCL 2011)*, 336-373.
- C.5 Kuznetsov, S., Trutoiu, L., Kute, C., **Howley, I.**, Siewiorek, D., & Paulos, E. (2011). Breaking boundaries: Mentoring with wearable computing. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI 2011)*, 2957-2966.
- C.4 Chaudhuri, S., Kumar, R., **Howley, I.**, Rosé, C.P. (2009). Engaging collaborative learners with helping agents. In *Proceedings of the 14<sup>th</sup> International Conference on Artificial Intelligence in Education (AIED 2009)*, 365-372.
- C.3 Ritchie, J.M., Sung, R.C.W., Rea, H., Lim, T., Corney, J.R. & **Howley, I.** (2008). The use of non-intrusive user logging to capture engineering rationale, knowledge and intent during the product life cycle. In *Proceedings of the Portland International Conference on Management of Engineering & Technology (PICMET 2008)*, 981-989.
- C.2 Rea, H.J., **Howley, I.K.**, Corney, J.R., Ritchie, J.M., Sung, R., & Salamon, C. (2007). CBBC BAMZOOKi as a tool for engineering design research. In *Proceedings of the Learning with Games Conference*.
- C.1 Grauer, M.J., **Howley, I.K.**, Kopena, J.B., & Regli, W.C. (2007). Towards a format registry for engineering data. In *Proceedings of the American Society of Mechanical Engineers International Design Engineering Technical Conference (IDETC 2007)*.

#### BOOK CHAPTERS & INVITED PAPERS

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- B.7 **Howley, I.**, Peck, E., & Mir, D. (to appear). Integrating AI Ethics Across the Computing Curriculum. *Ethics of AIED: Who Cares? Data, Algorithms, Equity and Biases in Educational Contexts*.
- B.6 Rosé, C. P., **Howley, I.**, Wen, M., & Ferschke, O. (2017). Assessment of Discussion in Learning Contexts. *Innovative Assessment of Collaboration*, 81-94.
- B.5 **Howley, I.**, Mayfield, E., & Rosé, C.P. (2013). A Multivocal process analysis of social positioning in study groups. In D. Suthers, K. Lund, C.P. Rosé, C. Teplovs, & N. Law (Eds.), *Productive Multivocality in the Analysis of Group Interactions*, Springer-Verlag Berlin, Heidelberg.
- B.4 **Howley, I.**, Kumar, R., Mayfield, E., Dyke, G., & Rosé, C.P. (2013) Gaining insights from sociolinguistic style analysis for redesign of conversational agent based support for collaborative learning. In D. Suthers, K. Lund, C.P. Rosé, C. Teplovs, & N. Law (Eds.), *Productive Multivocality in the Analysis of Group Interactions*, Springer-Verlag Berlin, Heidelberg.
- B.3 Dyke, G., **Howley, I.**, Kumar, R., & Rosé, C.P. (2013) Towards academically productive talk supported by conversational agents. In D. Suthers, K. Lund, C.P. Rosé, C. Teplovs, & N. Law (Eds.), *Productive Multivocality in the Analysis of Group Interactions*, Springer-Verlag Berlin, Heidelberg.

- B.2 **Howley, I.**, Mayfield, E. & Rosé, C.P. (2013). Linguistic analysis methods for studying small groups. In C. Hmelo-Silver, A. O'Donnell, C. Chan, & C. Chin (Eds.) *International Handbook of Collaborative Learning*, Taylor and Francis, Inc, 184-202.
- B.1 **Howley, I.** & Rosé, C.P. (2011). Modeling the rhetoric of human-computer interaction. *Proceedings of the 14th International Conference on Human-Computer Interaction*, 341-350.

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#### REFEREED ABSTRACTS & SHORT PAPERS

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- S.13 Cowit, N., Yeh, C., & **Howley, I.** (2019). Tests, Memory, and Artificial Intelligence: How can we know what people know? Presentation at *IEEE VIS Workshop on Visualization for AI Explainability*.
- S.13 Cho, Y., Mazzarella, G., Tejada, K., Zhou, T., & **Howley, I.** (2018). What is Bayesian Knowledge Tracing? Poster presentation at *IEEE VIS Workshop on Visualization for AI Explainability*.
- S.12 **Howley, I.** (2018). If an algorithm is openly accessible, and no one can understand it, is it actually open? Presentation at *Artificial Intelligence in Education Workshop on Ethics in AIED 2018*.
- S.11 **Howley, I.**, Tomar, G., Yang, D., Ferschke, O., & Rosé, C. (2015). Alleviating the negative effect of up and downvoting on help seeking in MOOC discussion forums. In *Proceedings of Artificial Intelligence in Education 2015*.
- S.10 Yang, D., Piergallini, M., **Howley, I.**, & Rosé, C.P. (2014). Forum Thread Recommendation for Massive Open Online Courses. In *Proceedings of the 7th International Conference of Educational Data Mining*.
- S.9 **Howley, I.** & Rosé, C.P. (2014). Undergraduate Attitudes Toward Help-seeking. *The International Conference of the Learning Sciences (ICLS)*.
- S.8 **Howley, I.**, & Newman, T. (2013). Factors impacting community response in an interest-sharing network. In *Proceedings of SIGCHI Conference on Human Factors in Computing Systems (CHI 2013)*, 2283-2286.
- S.7 **Howley, I.** & Rosé, C.P. (2013). Social obstacles to seeking help and the technological affordances that alleviate them. In *Proceedings of the 11th International Conference on Computer Supported Collaborative Learning (CSCL 2013)*, 472-473.
- S.6 **Howley, I.**, Adamson, D., Dyke, G., Mayfield, E., Beuth, J., & Rosé, C.P. (2012). Group composition and intelligent dialogue tutors for impacting students' self-efficacy. In *Proceedings of the 11th International Conference on Intelligent Tutoring Systems (ITS 2012)*, 551-556.
- S.5 **Howley, I.** & Rosé, C.P. (2010). Student dispositions and help-seeking in collaborative learning. In *Proceedings of the 10th International Intelligent Tutoring Systems (ITS 2010)*, 230-232.
- S.4 **Howley, I.**, Chaudhuri, S., Kumar, R., Rosé, C.P. (2009). Motivation and collaborative behavior: An exploratory analysis. In *Proceedings of the 9th International Conference on Computer Supported Collaborative Learning*, 59-61.
- S.3 Kumar, R., Chaudhuri, S., **Howley, I.**, Rosé, C.P. (2009). VMT-Basilica: An environment for rapid prototyping of collaborative learning environments with dynamic support. In *Proceedings of the 9th International Conference on Computer Supported Collaborative Learning (CSCL 2009)*, 192-194. (Best technical design award nominee)

- S.2 **Howley, I.**, Chaudhuri, S., Kumar, R., Rosé, C.P. (2009). Motivation and collaboration on-line. In *Proceedings of the 14<sup>th</sup> International Conference on Artificial Intelligence in Education (AIED 2009)*, 743-754.
- S.1 Santos, G., **Howley, I.**, Copenhaver, B., & Alevan, V. (2009). Integrating conceptual and procedural knowledge for middle-school math – A cognitive tutoring approach. In *Proceedings of the 14<sup>th</sup> International Conference on Artificial Intelligence in Education (AIED 2009)*, 534-574.

## INVITED TALKS

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| <p><b>Invited Speaker</b><br/>         Union College Seminar Series<br/> <i>Explaining AI: What we don't know, won't hurt us?</i></p>   | <p>May 2021</p>    |
| <p><b>Invited Speaker</b><br/>         Williams College Staff Lunch Seminar Series<br/> <i>Electronic Textiles: Course offered fall 2019</i></p>  | <p>March 2020</p>  |
| <p><b>Invited Speaker</b><br/>         Williams College Office of Information Technology Staff Meeting<br/> <i>Artificial Intelligence for the Public: What we don't know, won't hurt us?</i></p> | <p>August 2019</p> |

## RESEARCH EXPERIENCE

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| <p><b>Williams College</b><br/>         Assistant Professor<br/>         Department of Computer Science</p> <ul style="list-style-type: none"> <li>▪ Recruited, trained, and lead a team of undergraduate research assistants in the user-centered design of interactive tutoring software</li> <li>▪ Guided an undergraduate research team in the design of survey measures and experimental design for a Mechanical Turk study investigating algorithmic fairness and comprehension.</li> <li>▪ Advised undergraduate honors theses developing machine learning models for classifying digital annotation log data and studying user perceptions of the model.</li> <li>▪ Advised independent study projects with students and the Williams College Museum of Art exploring alternative ways to explore the collection through information visualization.</li> </ul> | <p>2017 - Present<br/>         Williamstown, MA</p> |
| <p><b>Stanford University</b><br/>         Postdoctoral Researcher<br/>         Graduate School of Education<br/>         Mentors: Candace Thille, George Siemens</p> <ul style="list-style-type: none"> <li>▪ Conducted interviews to investigate teacher interpretation of learning analytics dashboards</li> <li>▪ Initiated cross-institutional research projects investigating data-driven teacher and student feedback tools</li> <li>▪ Mentored students, collaborating on various projects from idea inception to meeting with stakeholders, data gathering, analysis, and publication</li> </ul>  | <p>2015 - 2017<br/>         Stanford, CA</p>        |
| <p><b>Carnegie Mellon University</b><br/>         Graduate Research Assistant<br/>         Human-Computer Interaction Institute, School of Computer Science<br/>         Mentor: Carolyn Penstein Rosé</p> <ul style="list-style-type: none"> <li>▪ Implemented experiments exploring the impact of reputation systems on help seeking in massive open online course discussion forum and evaluated results</li> <li>▪ Applied computer programming ability to support research learning interventions, resolve logistical constraints of performing experiments, and prepare data for analysis</li> <li>▪ Analyzed data with a variety of methods including: statistical analyses, discourse analysis, and qualitative storytelling</li> </ul>  | <p>2008 - 2015<br/>         Pittsburgh, PA</p>      |

- Advanced Telecommunications Research Institute International** Winter 2013  
 Research Intern Kyoto, Japan  
 Artificial Intelligence Department, Intelligent Robotics and Communication Laboratories  
 Mentor: Takayuki Kanda
- Examined how perceived and presented social status of human and robotic tutors affect student help-seeking and learning on a biology task
  - Designed user studies examining how robot tutors affect help seeking and learning in biology
  - Internship culminated in a full paper in proceedings of Human-Robot Interaction 2014
- Microsoft Research, Future Social Experiences (FUSE) Labs** Summer 2012  
 Research Intern Seattle, WA  
 Mentor: Todd Newman
- Performed log analyses to investigate user behavior in an interest-sharing social network
  - Coordinated with an interdisciplinary team of engineers, designers, and social researchers.
  - Published a short paper in proceedings of Human Factors in Computing Systems 2013
- Heriot Watt University, Manufacturing Engineering Department** Summer 2007  
 Undergraduate Research Intern Edinburgh, UK  
 Mentor: Jonathan Corney
- Developed Java software to parse and organize large quantities of generated log files
  - Prototyped a data visualization program, displaying information as directed graphs
- National Institute of Standards and Technology** Summer 2006  
 Undergraduate Research Fellow Gaithersburg, MD  
 Mentor: Craig Schlenoff
- Expanded upon a large OWL ontology classifying Urban Search and Rescue robots
  - Created an engine using JESS to reason over parameters of an ontology
- Drexel University, Secure Wireless Agent Testbed** 2004 - 2007  
 Undergraduate Research Assistant Camden, NJ  
 Mentor: William Regli
- Performed extensive work with Semantic Web services on a Mobile Ad-hoc Network
  - Integrated existing software with a larger, external project

## TEACHING EXPERIENCE

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- Assistant Professor of Computer Science** Williams College  
 Various courses in the Department of Computer Science 2017 - Present
- CSCI 134: Introduction to Computer Science: Objects, Events, and Graphics (Java)
  - CSCI 134: Diving into the Deluge of Data (Python)
  - CSCI 11: Electronic Textiles (new course developed as winter study)
  - CSCI 103: Electronic Textiles (new course expanded into full semester)
  - CSCI 376: Human-Computer Interaction (new course developed)
  - CSCI 378: Human-Artificial Intelligence Interaction (new course developed)
  - Supervising of 2 independent studies on information visualization and art museums
- Postdoc Teaching Certificate** Stanford University  
 Office of Postdoctoral Affairs 2017
- 70 hours of teaching training, including core requirements and electives
  - 5 hours teaching practice with 15 hours teaching preparation
  - More details can be found here: [www.irishowley.com/website/tTeachingCertificate.html](http://www.irishowley.com/website/tTeachingCertificate.html)
- Guest Instructor** Stanford University  
 Text Mining for Education Majors 2016  
 Supervisor: Professor Candace Thille
- Designed three 1.5-hour classroom lectures, discussions, and activities for fifteen students

- Created curricula to introduce machine learning and text mining to education students

**Human-Computer Interaction Lab Instructor** Carnegie Mellon University

Various instructor positions involving designing recitation sessions

- Programming User Interfaces: Prototyping (2013). Supervised by Prof. Anind Dey.
- User-Centered Research & Evaluation (2011). Supervised by Prof. Matt Kam.

## RESEARCH STUDENTS

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- Josephine Chai '23 (Summer 2021-Fall 2021)
- Hannah Ahn '23 (Summer 2020, Fall 2020, Summer 2021)
- Minh Phan '23 (Summer 2020)
- Mira Sneirson '22 (Summer 2021-Fall 2021)
- Catherine Yeh '22 (Summer 2019-Spring 2020, Fall 2020-Spring 2021, Fall 2021-Spring 2022)  
– Honors thesis advisor
- Amelia Chen '22 (Fall 2019, Spring 2020)
- Kelsie Hao '22 (Summer 2020)
- Nyla Thompson '20 (Spring 2020)
- Noah Cowit '20 (Summer 2019, Fall 2019, Spring 2020)
- Tongyu Zhou '20 (Summer 2018-Winter 2019, Fall 2019-Spring 2020) – Honors thesis advisor
- Haoyu Sheng '20 (Fall 2018, Winter 2019, Winter 2020)
- Kelvin Tejada '20 (Summer 2018)
- Alyssa Wang '20 (Fall 2019, Spring 2020)
- Nam Nguyen '19 (Fall 2018-Spring 2019) – Honors thesis advisor
- Grace Mazzarella '19 (Summer 2018, Spring 2019)
- Young Cho '19 (Spring 2018, Summer 2018)

## PROFESSIONAL SERVICE

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**Research Proposal Panel Reviewer** 2020  
National Science Foundation

**Article Reviewing** Ongoing

- ACM Learning @ Scale, 2016-20; IEEE Transactions on Learning Technologies, 2015-2019; International Journal of Artificial Intelligence in Education, 2015-2020; CHI, 2013, 2017; SIGCSE 2017-2020; IEEE VIS VISxAI Workshop, 2018-2020; SOLAR Journal of Learning Analytics, 2016, 2017; International Conference of the Learning Sciences, 2018-2019.

**Program Committee Member for L@S** 2018-2020  
ACM Conference on Learning at Scale

- Participated in conversations shaping the future directions of the research community
- Reviewed submitted articles to inform decisions on acceptance to the conference

**Workshop Organizer for ACM SIG on Computer Science Education** 2019

- Collaborated with peers at primarily undergraduate institutions on a peer-reviewed workshop proposal
- Mir, D., **Howley, I.**, Peck, E., Tatar, D. & Davis, J. (2019). "Make and Take an Ethics Module: Ethics Across the CS Curriculum" In *SIGCSE 2019: Workshops*.

**Organizing Committee Member for aWear Conference** 2016  
Conference on Wearable Technology in Education

- Framed call for participation and website details for conference promotional materials
- Served as on-the-ground planning for attendee housing, catering, and venue preparation

**OurCS Science Organizing Committee** 2011, 2013  
Conference on Opportunities for Undergraduate Research in Computer Science

- Served on poster review committee and produced poster of accepted poster titles & authors
- Participated in a panel on personal experience researching as an undergraduate

**Pittsburgh Science of Learning Center Summer School Mentor** 2010, 2011, & 2013  
Carnegie Mellon University

- Supervised small group projects using dialogue tutors and applied machine learning
- Guided research projects and presentations over one-week workshop

**Mentoring with the Lilypad Wearable Computer** 2010

Gwen's Girls, Carnegie Mellon University

- Lead sessions on using textile Arduino computing with middle school girls in foster care camp

#### INSTITUTIONAL SERVICE

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- RITE (Race, Image, Technology, and Equity) Organizing Committee, 2019-2020
- Committee for Office of Informational Technology, 2018-2020
- Academic Advisor, 2018-present

#### DEPARTMENTAL SERVICE

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- Computer Science Teaching Assistants Co-chair, 2020-2021
- Computer Science Colloquia Co-chair, 2018-2020
- Women in Computer Science Co-Advisor, 2017-2020
- Clare Boothe Luce Fellowship Representative, 2018-2019