# Iris Howley

iris@cs.williams.edu

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

## ACADEMIC POSITIONS

**Assistant Professor of Computer Science**        July 2017 – Present
Williams College        Williamstown, MA

## EDUCATION AND TRAINING

**Stanford University**        October 2015 – July 2017
Postdoctoral Research Fellow in Education        Stanford, CA
Adviser: Candace Thille (Stanford University) & George Siemens (University of Texas Arlington)

**Carnegie Mellon University**        Graduated: September 2015
Ph.D. in Human-Computer Interaction        Pittsburgh, PA
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 Aleven, Stuart Karabenick, Bob Kraut, & Marsha Lovett

**Drexel University**        Graduated: June 2008
Bachelor of Science in Computer Science        Philadelphia, PA
Minor in Arabic Language        Cumulative GPA: 3.90

## AWARDS

| | |
|---|---|
| International Conference of the Learning Sciences Early Career Workshop Travel Award ($1,700) | 2018 |
| "Adaptable Learning Feedback for Instructors" Stanford University VPTL Innovation Grant ($9,993) | 2017 |
| Human-Robot Interaction Conference Pioneer Travel Award ($2,320) | 2014 |
| Program in Interdisciplinary Education Research Fellow Fellowship ($210,000 over 5 years) | 2008 - 2013 |
| Computer-Supported Collaborative Learning Conference Travel Award ($847) | 2013 |
| Intelligent Tutoring Systems Conference Young Researchers' Track Travel Award ($350) | 2010 |
| NSF Graduate Research Fellowship Honorable Mention | 2008 |
| Computing Research Association Outstanding Undergraduate Finalist | 2008 |
| Drexel University Merit Scholarship Scholarship ($85,000 over 5 years) | 2003 - 2008 |
| Drexel University College of Engineering Undergraduate Research Award | 2008 |
| Harry E. Muchnic Scholarship from Drexel College of Engineering Scholarship ($1,000) | 2006 |
| Students Tackling Advanced Research Program at Drexel University | 2004 |
| Girl Scout Gold Award | 2002 |

## REFEREED JOURNAL PAPERS

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

C.14.    **Howley, I.** & Rosé, C.P. (2018). Empirical Evidence for Evaluation Anxiety and Expectancy-Value Theory for Help Sources. In *Proceedings of the 13$^{th}$ 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$^{th}$ 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$^{nd}$ 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 11th 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$^{th}$ 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 15th 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 10th 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 11th 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 9th 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 14th 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

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.

## REFEREED ABSTRACTS & SHORT PAPERS

S13.    Cho, Y., Mazzarella, G., Tejeda, K., Zhou, T., & **Howley, I**. (2018). "What is Bayesian Knowledge Tracing?" In *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? *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., Mayfiled, 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 14th International Conference on Artificial Intelligence in Education (AIED 2009)*, 743-754.

S.1    Santos, G., **Howley, I.**, Copenhaver, B., & Aleven, V. (2009). Integrating conceptual and procedural knowledge for middle-school math – A cognitive tutoring approach. In *Proceedings of the 14th International Conference on Artificial Intelligence in Education (AIED 2009)*, 534-574.

RESEARCH EXPERIENCE

| | |
|---|---|
| **Stanford University** | 2015 - 2017 |
| Postdoctoral Researcher | Stanford, CA |

Graduate School of Education
Mentors: Candace Thille, George Siemens
- Conducted interviews to investigate teacher interpretation of learning analytics dashboards
- Co-developed a coding manual to identify evidence of student critical reading in log data from a digital annotation tool
- Initiated cross-institutional research projects investigating data-driven teacher and student feedback tools
- Mentored students, collaborating on various projects from idea inception to meeting with stakeholders, data gathering, analysis, and publication

| | |
|---|---|
| **Carnegie Mellon University** | 2008 - 2015 |
| Graduate Research Assistant | Pittsburgh, PA |

Human-Computer Interaction Institute, School of Computer Science

Mentor: Carolyn Penstein Rosé
- Implemented experiments exploring the impact of reputation systems on help seeking in massive open online course discussion forum and evaluated results
- Coordinated team of software engineers to create infrastructure for logging user actions in a MOOC discussion forum to perform necessary analyses
- Applied computer programming ability to support research learning interventions, resolve logistical constraints of performing experiments, and prepare data for analysis
- Analyzed data with a variety of methods including: statistical analyses, discourse analysis, and qualitative storytelling
- Developed rapport with teachers, creating foundation for research cooperation
- Ran experimental studies in school computer lab, utilizing classroom management skills
- Examined learning domains of: fractions for sixth graders, semi-permeable membranes for ninth grade biology, power plant design for undergraduate mechanical engineering, and wrench design for middle school children.
- First-authored 2 refereed full conference papers, 7 refereed short conference papers, 3 invited book chapters and contributed to 9 other publications

**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
- Applied help-seeking theory from multiple disciplines to a novel domain
- Worked within an international technical team, representing the learning science perspective
- Researched and compiled a children's dispositional questionnaire for 5th graders interacting with a robot in a science classroom
- Internship culminated in a full paper in proceedings of Human-Robot Interaction 2014

**Microsoft Research**                                              Summer 2012
Research Intern                                                     Seattle, WA
Future Social Experiences (FUSE) Labs
Mentor: Todd Newman
- Worked within a product-oriented engineering industry research lab
- Constructed internal infrastructure for gathering and organizing data for analysis
- Applied discourse analysis methods to analyze interest-sharing network data
- Performed log analyses to better understand user behavior in an online community
- Experimented with automated topic modeling and clustering techniques
- 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**                                          Summer 2007
Undergraduate Research Intern                                       Edinburgh, UK
Manufacturing Engineering Department
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
Manufacturing Engineering Lab
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**                                          2004 - 2007
Undergraduate Research Assistant                              Camden, NJ
Secure Wireless Agent Testbed
Mentor: William Regli
- Performed extensive work with Semantic Web services on a MANET
- Integrated existing software with a larger, external project

## TEACHING & MENTORING EXPERIENCE

**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 011: eTextiles (new course developed)
- CSCI 376: Human-Computer Interaction (new course developed)
- Advising of 2-4 undergraduate research assistants

**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

**Three Class Sequence 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
- Adapted lesson plans to accommodate student feedback, assessments

**Guest Lecturer**                              Carnegie Mellon & Stanford University
Supervisors: Carolyn Rosé, Anind Dey, Candace Thille   2013, 2015, 2016
- Engineering Education and Online Learning Lecture on rational cognitive task analyses
- Computational Models of Discourse Lecture on Systemic Functional Linguistics and the
- Heteroglossia Framework
- Usability Engineering Design Lecture on prototyping

**Undergraduate Independent Study Co-Advisor**              Carnegie Mellon University
Parallel Computing (Computer Science Education)              2015
Supervisor: Professor Kayvon Fatahlian
- Collaborated with an undergraduate and university professor to shape a semester-long program of research for independent study student
- Assisted in the design of online courseware and teaching interventions

**Lab Instructor**                                           Carnegie Mellon University
Programming User Interfaces: Prototyping                      2013
Supervisor: Professor Anind Dey
- Designed weekly 1.5-hour classroom lectures and activities for twenty students
- Customized syllabus, homeworks, and grading rubrics

**Lab Instructor**                                           Carnegie Mellon University
User-Centered Research & Evaluation                          2011
Supervisor: Professor Matt Kam
- Lead 1.5-hour lecture and small group work of fifteen students once per week
- Co-developed grading rubrics for homework and projects with fellow instructors

**Mentor**                                            Carnegie Mellon University
Pittsburgh Science of Learning Center Summer School    2010, 2011, & 2013
Supervisor: Professor Carolyn Rosé
- 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

**Attendee**                                          Carnegie Mellon University
Eberly Center for Teaching Excellence                 2011 & 2012
- Attended 10 seminars focusing on pedagogical principles and approaches
- Reviewed by Eberly staff while teaching in a classroom and a microteaching workshop

*Teaching references from the Eberly Center for Teaching Excellence available upon request.*

## SERVICE

**Program Committee Member for L@S**                   2017, 2018
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

**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

**Article Reviewer**                                  Ongoing
- ACM Learning @ Scale, 2016-17; SOLAR Journal of Learning Analytics, 2016, 2017; IEEE
Transactions on Learning Technologies, 2015-2016; International Journal of Artificial
Intelligence in Education, 2015-17; CHI, 2013, 2017; SIGCSE 2017

**Onsite Assistance for L@S Program Committee Meeting** 2015
ACM Conference on Learning at Scale
- Recorded program committee members' notes and decisions on article acceptance
- Assisted with affinity diagramming to organize accepted article genre groupings

**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

**Creative Technology Nights Volunteer**              2008-2010
Carnegie Mellon University, Women@School of Computer Science
- Designed and delivered a lesson on vector graphics to middle school girl after school program
- Assisted in weekly programs designed to introduce girls to computer science concepts

**Founding Officer of Drexel's WiCS**                 2004-2008
Drexel University, Women in Computing Society
- Co-authored the founding constitution for the WiCS student organization
- Served as treasurer and president, developing monthly programming and get-togethers