

Erin Walker

CV

School of Computing and Information
Learning Research and Development Center

University of Pittsburgh
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Research Interests

Intelligent tutoring systems, computer-supported collaboration, tangible and embodied learning environments, human-robot interaction, technology for the developing world, personalized learning environments, learning technologies, human-computer interaction

Professional Experience

Associate Professor. School of Computing and Information & Learning Research and Development Center. University of Pittsburgh. 2019-present.

Assistant Professor. School of Computing, Informatics, and Decision Systems Engineering. Arizona State University. 2013-2018.

Research Consultant. Worcester Polytechnic University. 2010-2011.

Research Intern, Institute for Creative Technologies, Summer 2007.

Professional Preparation

Computing Innovations Postdoctoral Fellow. School of Computing, Informatics, and Decision Systems Engineering. Arizona State University. 2011-2012.
Mentor: Winslow Burleson.

Ph.D. Human-Computer Interaction. Carnegie Mellon University. 2010.
Committee: Kenneth R. Koedinger (co-chair), Nikol Rummel (co-chair), Carolyn Rosé, Robert Kraut.

M.Sc. Human-Computer Interaction. Carnegie Mellon University. 2008.

B.Sc. (Honours). Computer Science & Psychology. University of Manitoba. 2004.

Honors and Awards

Best Paper Award. 2019 Conference on Creativity and Cognition. 2019.

40 under 40. Phoenix Magazine. 2018.

Best Junior Faculty Researcher Award. School of Computing, Informatics, and Decision Systems Engineering. 2018.

Ira A. Fulton Top 5% Teaching Award. Arizona State University. 2016. 2017. 2018.

Best Student Poster Nominee. 19th International Conference on Artificial Intelligence in Education (AIED 2018).

Best Paper Nominee. 18th International Conference on Artificial Intelligence in Education (AIED 2017).

Best Technology Design Nominee. 10th International Conference on Computer-Supported Collaborative Learning (CSCL 2011).

Best Paper Nominee. 9th International Conference on Intelligent Tutoring Systems (ITS 2009).

Best Young Researcher Track Paper. 12th International Conference on Artificial Intelligence in Education (AIED 2005).

Certificate of Academic Excellence. Laureates of the Canadian Psychological Association. 2004.

Research Grants

CISE-IIS-2024645 NRI: INT: Designing Effective Dialogue, Gaze, and Gesture Behaviors in a Social Robot that Supports Collaborative Learning in Middle School Mathematics

National Science Foundation. 2020-2023.

Erin Walker (PI), Diane Litman, Timothy Nokes-Malach, Adriana Kovashka
\$900,000.00

CISE-IIS-2021159 Center for Integrative Research on Computing and Learning Sciences

National Science Foundation. 2020-2023.

Jeremy Roschelle (PI), Judith Fusco, Sarita Nair-Pillai, Erin Walker, Shari Gardner
\$2,468,777.00

CISE-IIS-2016982 From Data Literacy to Collective Data Stewardship: Technology-Supported Community-Driven Solutions for Urban Youth

National Science Foundation. 2020-2022.

Rosta Farzan (PI), Erin Walker, Jamie Booth
\$593,580.00

CISE-IIS-1917625 Parent-EMBRACE: An Embodied ITS for Improving Comprehension during Parent-Child Shared Reading

National Science Foundation. 2019-2021.

Arthur Glenberg (PI), Erin Walker, M. Adelaida Restrepo, Christopher Blais
\$749,925.00

DRL-1811610 A Social Programmable Robot: Fostering Rapport to Improve Computer

Erin Walker

Science Skills and Attitudes

National Science Foundation. 2018-2022.
Erin Walker (PI), Amy Ogan, Kimberly Scott.
\$1,559,382.00

DGE-1835251 Integrating Non-Invasive Neuroimaging and Educational Data Mining to Improve Understanding of Robust Learning Processes.

National Science Foundation. 2018-2021.
Erin Solovey (PI), Erin Walker, Kate Arrington.
\$999,616.00

CISE-IIS-1736103 Improving Student Help-Giving with Ubiquitous Collaboration Support Technology.

National Science Foundation. 2017-2020.
Erin Walker (PI)
\$575,223.00

CISE-IIS-1637809 Understanding the Influence of a Teachable Robot on STEM Skills and Attitudes.

National Science Foundation. 2016-2018.
Heather Pon-Barry (PI), Erin Walker, Amy Ogan.
\$249,243.00

CISE-IIS-1451431 EAGER: Towards Knowledge Curation and Community Building within a Postdigital Textbook.

National Science Foundation. 2014-2016.
Erin Walker (PI), Ruth Wylie, Ed Finn.
\$299,034.00

CISE-IIS-1324807 DIP: EMBRACEing English Language Learning with Technology.

National Science Foundation. 2013-2017.
Arthur Glenberg (PI), Erin Walker, M. Adelaida Restrepo.
\$1,349,915.00

CISE-IIS-1249406 EAGER: A Teachable Robot for Mathematics Learning in Middle School Classrooms.

National Science Foundation. 2012-2014.
Winslow Burlison (PI), Erin Walker.
\$265,998.00

Future of the Book.

Intel Corporation. 2013-2014.
Edward Finn (PI), Erin Walker.
\$102,500.00

Computing Innovation Fellowship.

Computing Research Association. 2011-2012.
Erin Walker.
\$200,000

Collaborative Extensions to the Cognitive Tutor Algebra: Adaptive Assistance for Peer Tutoring.

Pittsburgh Science of Learning Center. 2007-2009.
Erin Walker, Nikol Rummel, Kenneth R. Koedinger.
\$150,000

Publications

Refereed Journal Articles

- [J.13] Lubold, N., **Walker, E.**, & Pon-Barry, H. (2021). Effects of adapting to user pitch on rapport perception, behavior, and state with a social robotic learning companion. *User Modeling and User-Adapted Interaction*, 31(1), 35-73.
- [J.12] Liu, R., **Walker, E.**, Friedman, L., Arrington, C. M., & Solovey, E. T. (2020). fNIRS-based classification of mind-wandering with personalized window selection for multimodal learning interfaces. *Journal on Multimodal User Interfaces*, 1-16.
- [J.11] Baker, R.S., Ogan, A.E., Madaio, M., **Walker, E.** (2019) Culture in Computer-Based Learning Systems: Challenges and Opportunities. *Computer-Based Learning in Context*, 1(1), 1-13.
- [J.10] **Walker, E.**, Adams, A., Restrepo, M. A., Fialko, S., & Glenberg, A. (2017). When (and how) interacting with technology-enhanced storybooks helps dual language learners. *Translational Issues in Psychological Science*, 3(1), 66-79.
- [J.9] **Walker, E.**, & Ogan, A. (2016). We're in this Together: Intentional Design of Social Relationships with AIED Systems. *International Journal of Artificial Intelligence in Education*, 26(2), 713-729.
- [J.8] Rummel, N., **Walker, E.**, & Alevin, V. (2016). Different futures of adaptive collaborative learning support. *International Journal of Artificial Intelligence in Education*, 26(2), 784-795.
- [J.7] Ogan, A., **Walker, E.**, Baker, R., Rodrigo, M. M. T., Soriano, J. C., & Castro, M. J. (2014). Towards understanding how to assess help-seeking behavior across cultures. *International Journal of Artificial Intelligence in Education*, 25(2), 229-248.
- [J.6] **Walker, E.**, Rummel, N., & Koedinger, K. R. (2014). Adaptive Intelligent Support to Improve Peer Tutoring in Algebra. *International Journal of Artificial Intelligence in Education*, 24(1), 33-61.
- [J.5] **Walker, E.**, Rummel, N., & Koedinger, K. R. (2011). Designing automated adaptive support to improve student helping behaviors in a peer tutoring activity. *International Journal of Computer-Supported Collaborative Learning*, 6(2), 279-306. IF: 1.841
- [J.4] Diziol, D., **Walker, E.**, Rummel, N., & Koedinger, K. R. (2010). Using Intelligent Tutor Technology to Implement Adaptive Support for Student Collaboration. *Educational Psychology Review*, 22(1), 89-102. IF: 2.565
- [J.3] **Walker, E.**, Rummel, N., & Koedinger, K. R. (2009). Integrating collaboration and intelligent tutoring data in the evaluation of a reciprocal peer tutoring environment. *Research and Practice in Technology Enhanced Learning*, 4(3), 221-251.
- [J.2] **Walker, E.**, Rummel, N., & Koedinger, K. R. (2009). CTRL: A research framework for providing adaptive collaborative learning support. *User Modeling and User-Adapted Interaction*, 19(5), 387-431. IF: 3.037

- [J.1] Harrer, A., McLaren, B. M., **Walker, E.**, Bollen, L., and Sewall, J. (2006). Creating Cognitive Tutors for Collaborative Learning: Steps Toward Realization. *User Modeling and User-Adapted Interaction*, 16(3-4), 175-209. IF: 3.037

Refereed Conference Full Papers

- [C.32] Sonmez Unal, D., Arrington, C. M., Solovey, E., & **Walker, E.** (2020). Using Thinkalouds to Understand Rule Learning and Cognitive Control Mechanisms within an Intelligent Tutoring System. In *Proceedings of the 2020 International Conference on Artificial Intelligence in Education* (pp. 500-511). Springer, Cham.
- [C.31] Mawasi, A., Ahmad, I., **Walker, E.**, Wang, S., Marasli, Z., Whitehurst, A., and Wylie, R. (2020). Using Design-Based Research to Improve Peer Help-Giving in a Middle School Math Classroom. *International Conference on the Learning Sciences*.
- [C.30] Giroto, V., **Walker, E.**, Burleson, W. (2019). CrowdMuse: Supporting Crowd Idea Generation through User Modeling and Adaptation. In *Proceedings of the 2019 Conference on Creativity and Cognition* (pp. 95-106). **Best Paper Award.**
- [C.29] Ahmed, I., Mawasi, A., Wang, S., Wylie R., Bergner, Y. Whitehurst, A., & **Walker, E.** (2019). Investigating Help-Giving Behavior in a Cross-Platform Learning Environment. In *Proceedings of the 2019 International Conference on Artificial Intelligence in Education* (pp. 14-25). Springer, Cham.
- [C.28] Lubold, N., **Walker, E.**, Pon-Barry, H., & Ogan, A. (2019). Comfort with Robots Influences Rapport with a Social, Entraining Teachable Robot. In *Proceedings of the 2019 International Conference on Artificial Intelligence in Education* (pp. 231-243). Springer, Cham.
- [C.27] Wang, S., Sonmez, D., & Walker, E. (2019). MindDot: Supporting Effective Cognitive Behaviors in Concept Map-Based Learning Environments. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems* (p.28). ACM.
- [C.26] Lubold, N., **Walker, E.**, Pon-Barry, H., Flores, Y., & Ogan, A. (2018). Using iterative design to create efficacy-building social experiences with a teachable robot. In *Proceedings of the International Conference for the Learning Sciences (ICLS 2018)*. AR: 32%
- [C.25] Frens, J., **Walker, E.**, & Hsieh, G. (2018). Supporting answerers with feedback in social Q&A. In *Proceedings of the Fifth Annual ACM Conference on Learning at Scale* (p. 10). ACM.
- [C.24] Lubold, N., **Walker, E.**, Pon-Barry, H., & Ogan, A. (2018). Automated Pitch Convergence Improves Learning in a Social, Teachable Robot for Middle School Mathematics. In *International Conference on Artificial Intelligence in Education* (pp. 282-296). Springer, Cham. AR: 25%
- [C.23] Wang, S., **Walker, E.**, & Wylie, R. (2017). What Matters in Concept Mapping? Maps Learners Create or How They Create Them. In *International Conference on Artificial Intelligence in Education* (pp. 406-417). Springer, Cham. AR: 30%. **Nominated for Best Paper.**

- [C.22] Giroto, V., **Walker, E.**, & Burleson, W. (2017). The Effect of Peripheral Micro-tasks on Crowd Ideation. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems* (pp. 1843-1854). ACM. AR: 25%
- [C.21] Lee, J., **Walker, E.**, Burleson, W., Kay, M., Buman, M., & Hekler, E. B. (2017). Self-experimentation for behavior change: Design and formative evaluation of two approaches. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems* (pp. 6837-6849). ACM. AR: 25%
- [C.20] **Walker, E.**, Giroto, V., Kim, Y., & Muldner, K. (2016). The Effects of Physical Form and Embodied Action in a Teachable Robot for Geometry Learning. In *Advanced Learning Technologies (ICALT), 2016 IEEE 16th International Conference on* (pp. 381-385). IEEE. AR: 28.4%
- [C.19] Giroto, V., Lozano, C., Muldner, K., Burleson, W., & **Walker, E.** (2016). Lessons Learned from In-School Use of rTAG: A Robo-Tangible Learning Environment. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems* (pp. 919-930). ACM. AR: 23%
- [C.18] Lubold, N., **Walker, E.**, & Pon-Barry, H. (2016). Effects of voice-adaptation and social dialogue on perceptions of a robotic learning companion. In the *11th ACM/IEEE International Conference on Human Robot Interaction* (pp. 255-262). IEEE Press. AR: 24.8%
- [C.17] Lubold, N., Pon-Barry, H., & **Walker, E.** (2015). Naturalness and rapport in a pitch adaptive learning companion. In *2015 IEEE Workshop on Automatic Speech Recognition and Understanding (ASRU)* (pp. 103-110). IEEE. AR: 47.8%
- [C.16] Giroto, V., Thomas, E., Lozano, C., Muldner, K., Burleson, W., & **Walker, E.** (2014). A Tool for Integrating Log and Video Data for Exploratory Analysis and Model Generation. In *Intelligent Tutoring Systems* (pp. 69-74). Springer International Publishing. AR: 43%
- [C.15] Muldner, K., Lozano, C., Giroto, V., Burleson, W., & **Walker, E.** (2014). The impact of a social robot's attributions for success or failure in a teachable agent framework. In *ICLS* (pp. 278-285). ISLS. AR: 30%
- [C.14] Lee, J., Garduño, L., **Walker, E.**, & Burleson, W. (2013). A tangible programming tool for creation of context-aware applications. In *Proceedings of the 2013 ACM International Joint Conference on Pervasive and Ubiquitous Computing* (pp. 391-400). ACM. AR: 23.4%
- [C.13] Muldner, K., Lozano, C., Giroto, V., Burleson, W., & **Walker, E.** (2013, January). Designing a Tangible Learning Environment with a Teachable Agent. In *Artificial Intelligence in Education* (pp. 299-308). Springer Berlin Heidelberg. AR: 32%
- [C.12] **Walker, E.**, Rummel, N., Walker, S., & Koedinger, K. R. (2012). Noticing Relevant Feedback Improves Learning in an Intelligent Tutoring System for Peer Tutoring. In S. Cerri, W. Clancey, G. Papadourakis, & K. Panourgia (Eds.), *Proceedings of the 11th International Conference on Intelligent Tutoring Systems* (pp. 222-232). Berlin: Springer. AR: 17.5%
- [C.11] **Walker, E.**, & Burleson, W. (2012). User-Centered Design of a Teachable Robot.

- In *Intelligent Tutoring Systems* (pp. 243-249). Springer Berlin: Heidelberg. AR: 44%
- [C.10] Ogan, A., Finkelstein, S., **Walker, E.**, Carlson, R., & Cassell, J. (2012). Rudeness and Rapport: Insults and Learning Gains in Peer Tutoring. In *Intelligent Tutoring Systems* (pp. 11-21). Springer Berlin: Heidelberg. AR: 17.5%
- [C.9] Ogan, A., **Walker, E.**, Baker, R.S.J.d., Robelleo-Mendez, G., Castro, M. J., Laurentino, T., de Carvalho, A. (2012). Collaboration in Cognitive Tutor Use in Latin America: Field Study and Design Recommendations. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 1381-1390). ACM. AR: 23%
- [C.8] **Walker, E.**, Rummel, N., & Koedinger, K. R. (2011). Using Automated Dialog Analysis to Assess Peer Tutoring and Trigger Effective Support. In G. Biswas, S. Bull, J. Kay, A. Mitrovic (Eds.), *Proceedings of the 10th International Conference on Artificial Intelligence in Education* (pp. 385-393). Berlin: Springer. AR: 25%
- [C.7] **Walker, E.**, Rummel, N., & Koedinger, K. R. (2011). Adaptive support for CSCL: Is it feedback relevance or increased accountability that matters? In N. Law (Ed.), *Proceedings of the 10th International Conference on Computer-Supported Collaborative Learning* (pp. 334-342). AR: 38%. **Nominated for Best Technology Design.**
- [C.6] **Walker, E.**, Walker, S., Rummel, N., & Koedinger, K. (2010). Using problem-solving context to assess help quality in computer-mediated peer tutoring. In V. Aleven, J. Kay & J. Mostow (Eds.), *Proceedings of the International Conference on Intelligent Tutoring Systems* (pp. 145-155). Berlin: Springer. AR: 38%
- [C.5] **Walker, E.**, Rummel, N. & Koedinger, K. (2009). Modeling helping behavior in an intelligent tutor for peer tutoring. In V. Dimitrova, R. Mizoguchi, B. du Boulay, & A. Graessar (Eds.), *Proceedings of the 14th International Conference on Artificial Intelligence in Education* (pp. 341-349). Amsterdam: IOS Press.
- [C.4] **Walker, E.**, Rummel, N., and Koedinger, K. R. To Tutor the Tutor: Adaptive Domain Support for Peer Tutoring (2008). In Woolf, B., Aimeur, E., Nkambou, R., & Lajoie, S., *Proceedings of the 9th International Conference on Intelligent Tutoring Systems* (pp. 626-635). Berlin: Springer. **Nominated for Best Paper.** AR: 30%
- [C.3] **Walker, E.**, McLaren, B. M., Rummel, N., and Koedinger, K. R. Who Says Three's a Crowd? Using a Cognitive Tutor to Support Peer Tutoring (2007). In Luckin, R., Koedinger, K.R., & Greer, J., *Proceedings of the 13th International Conference on Artificial Intelligence and Education* (pp. 399-406). Amsterdam: IOS Press. AR: 31%
- [C.2] **Walker, E.**, Koedinger, K. R., McLaren, B. M. and Rummel, N. Cognitive Tutors as Research Platforms: Extending an Established Tutoring System for Collaborative and Metacognitive Experimentation (2006). In Ikeda, M., Ashely, K. D., & Chan, T.-W. (Eds.), *Proceedings of the 8th International Conference on Intelligent Tutoring Systems* (pp. 207-216). Berlin: Springer. AR: 33%
- [C.1] Harrer, A., McLaren, B. M., **Walker, E.**, Bollen, L., and Sewall, J. (2005). Collaboration and Cognitive Tutoring: Integration, Empirical Results, and Future Directions. In Looi, C.-K., McCalla, G., Bredeweg, B., & Breuker, J. (Eds.), *Proceedings*

of the 12th International Conference on Artificial Intelligence In Education (pp. 266-273). Amsterdam: IOS Press. AR: 31%

Refereed Conference Short Papers and Symposium Papers

- [S.15] Aghajari, Z., Sonmez Unal, D., Unal, M. E., Gomez, L., Walker, E. (2020). Decomposition of Response Time to Give Better Prediction of Children's Reading Comprehension. *International Conference on Educational Data Mining*.
- [S.14] Tian, X., Lubold, N., Friedman, L., & Walker, E. (to appear). Understanding Rapport over Multiple Sessions with a Social, Teachable Robot. In the *International Conference on Artificial Intelligence in Education* (pp. 318-323). Springer, Cham.
- [S.13] Ahmed, I., Girotto, V., Mawasi, A., Whitehurst, A., Wylie, R., & Walker, E. (2019, January). Co-Design for Learner Help-Giving Across Physical and Digital Contexts. In *International Conference on Computer-Supported Collaborative Learning* (Vol. 2).
- [S.12] Ahmed, I., Lubold, N., & Walker, E. (2018). ROBIN: Using a Programmable Robot to Provide Feedback and Encouragement on Programming Tasks. In *International Conference on Artificial Intelligence in Education* (pp. 9-13). Springer, Cham.
Nominated for Best Student Poster.
- [S.11] Walker, E., Wong, A., Fialko, S., Restrepo, M. A., & Glenberg, A. M. (2017). EMBRACE: Applying Cognitive Tutor Principles to Reading Comprehension. In *International Conference on Artificial Intelligence in Education* (pp. 578-581). Springer.
- [S.10] Walker, E., Chakravarthi, R., Rodriguez, J., & Wylie, R. (2015). Promoting Interaction by Integrating a Question and Answer Forum with a Digital Textbook. In Proc. of the 12th International Conference on Computer-Supported Collaborative Learning.
- [S.9] Wang, S., Walker, E., Chaudhry, R., & Wylie, R. (2015). Personalized Expert Skeleton Scaffolding in Concept Map Construction. In *Artificial Intelligence in Education* (pp. 808-811). Springer International Publishing.
- [S.8] Walker, E., & Burseson, W. (2012). Using need validation to design an intelligent tangible learning environment. In *CHI'12 Extended Abstracts on Human Factors in Computing Systems* (pp. 2123-2128). ACM.
- [S.7] Walker, E., Ogan, A., Baker, R.S.J.d., de Carvalho, A., Laurentino, T., Robelledo-Mendez, G., & Castro, M. J. (2011). Observations of Collaboration in Cognitive Tutor Use in Latin America. In G. Biswas, S. Bull, J. Kay, & A. Mitrovic (Eds.), *Proceedings of the 10th International Conference on Artificial Intelligence in Education* (pp. 575-577). Berlin: Springer.
- [S.6] Walker, E., Rummel, N., & Koedinger, K. R. (2010). Automated Adaptive Support for Peer Tutoring in High-School Mathematics. In K. Gomez, L. Lyons, & J. Radinsky (Eds.), *Proceedings of the 9th International Conference of the Learning Sciences* (pp. 151-153).
- [S.5] Walker, E., Rummel, N., & Koedinger, K. R. (2009). Beyond Explicit Feedback: New Directions in Adaptive Collaborative Learning Support. In O'Malley, C., Suthers, D., Reimann, P., & Dimitracopoulou, A. (Eds.), *Proceedings of the 9th International*

Conference on Computer Supported Collaborative Learning (pp. 552-556). Mahwah, NJ: Lawrence Erlbaum Associates.

- [S.4] **Walker, E.**, Rummel, N., and Koedinger, K.R. (2008) Adaptive Domain Support for Computer-Mediated Peer Tutoring. In Kanselaar, G., Jonker, V., Kirschner, P.A., & Prins, F., *Proceedings of the 8th International Conference of the Learning Sciences* (pp. 341-343). Mahwah, NJ: Lawrence Erlbaum Associates.
- [S.3] Ogan, A., **Walker, E.**, Alevan, V., Jones, C. Towards Supporting Collaborative Discussion in an Ill-Defined Domain. In Woolf, B., Aimeur, E., Nkambou, R., & Lajoie, S., *Proceedings of the 9th International Conference on Intelligent Tutoring Systems* (pp. 825-827). Berlin: Springer.
- [S.2] **Walker, E.**, Rummel, N., McLaren, B. M. & Koedinger, K. R. (2007) The Student Becomes the Master: Integrating Peer Tutoring with Cognitive Tutoring. In Chinn, C., Erkins, G., Puntambekar, S. (Eds.), *Proceedings of the 8th International Conference on Computer Supported Collaborative Learning* (pp. 751-753). Mahwah, NJ: Lawrence Erlbaum Associates.
- [S.1] McLaren, B. M., Bollen, L., **Walker, E.**, Harrer, A., and Sewall, J. (2005). Cognitive Tutoring of Collaboration: Developmental and Empirical Steps Toward Realization. In Chan, T.-W., *Proceedings of the 7th International Conference on Computer Supported Collaborative Learning* (pp. 418-422). Mahwah, NJ: Lawrence Erlbaum Associates.

Refereed Workshop Papers, Posters, and Conference Abstracts

- [W.27] Buddemeyer, A., Tian, X., & **Walker, E.** (2020). Dominance as an Indicator of Rapport and Learning in Human-Agent Communication. *ACL 2020 Student Research Workshop*.
- [W.26] Friedman, L., Liu, R., **Walker, E.**, & Solovey, E. T. (2018, October). Integrating non-invasive neuroimaging and computer log data to improve understanding of cognitive processes. In Proceedings of the Workshop on Modeling Cognitive Processes from Multimodal Data (p. 10). ACM.
- [W.25] Giroto, V., **Walker, E.**, & Burleson, W. (2018, October). CrowdMuse: An adaptive crowd brainstorming system. In *The 31st Annual ACM Symposium on User Interface Software and Technology Adjunct Proceedings* (pp. 93-95). ACM.
- [W.24] Friedman, L., Liu, R., Kim, A., **Walker, E.**, & Solovey, E. (2018). Towards Neuroadaptive Personal Learning Environments: Using fNIRS to Detect Changes in Attentional State, *Proc. 2nd International Conference on Neuroergonomics*, Frontiers.
- [W.23] Giroto, V., **Walker, E.**, & Burleson, W. (2017). Scalable crowd ideation support through data visualization, mining, and structured workflows. In *2017 ACM Conference on Computer Supported Cooperative Work and Social Computing, CSCW 2017*. Association for Computing Machinery, Inc.
- [W.22] Liu, R., **Walker, E.**, & Solovey, E. (2017). TOWARD NEUROADAPTIVE PERSONAL LEARNING ENVIRONMENTS. In *The First Biannual Neuroadaptive Technology*

Conference (p. 59).

- [W.21] Keating, S., **Walker, E.**, Motupali, A., & Solovey, E. (2016). Toward Real-time Brain Sensing for Learning Assessment: Building a Rich Dataset. In *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems* (pp. 1698-1705). ACM.
- [W.20] Wang, S., **Walker, E.**, & Wylie, R. (2016). Analyzing Frequent Sequential Patterns of Learning Behavior in Concept Mapping. *Presented at the EDM 2016 Workshop on Educational Data Analysis Using LearnSphere*. Raleigh, USA.
- [W.19] Lubold, N., **Walker, E.**, & Pon-Barry, H. (2015). Relating Entrainment, Grounding, and Topic of Discussion in Collaborative Learning Dialogues. *12th International Conference on Computer-Supported Collaborative Learning*.
- [W.18] Lee, J., **Walker, E.**, Burlison, W., & Hekler, E. B. (2015). Understanding Users' Creation of Behavior Change Plans with Theory-Based Support. In *Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems* (pp. 2301-2306). ACM.
- [W.17] Lee, J., **Walker, E.**, Burlison, W., & Hekler, E. B. (2014). Programming tool of context-aware applications for behavior change. In *Proceedings of the 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing: Adjunct Publication* (pp. 91-94). ACM.
- [W.16] Lee, J., **Walker, E.**, Burlison, W., & Hekler, E. B. (2014). Exploring users' creation of personalized behavioral plans. In *Proceedings of the 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing: Adjunct Publication* (pp. 703-706). ACM.
- [W.15] **Walker, E.**, Giroto, V., Zhang, C., Fernandez, A., Chen, G., Hsieh, G. (2014). Understanding Peer Help in an Online Learning Community. *Presented at the CHI 2014 Workshop on Learning Innovations at Scale*. Toronto, Canada.
- [W.14] Adams, A., Restrepo, M. A., & Glenberg, A.M., **Walker, E.**, & Danielescu, L. (2014). An English-Only & Bilingual Version of the Moved by Reading Intervention in an ELL Population. Poster presented at the meeting of the *American Speech-Language-Hearing Association*, Chicago, IL.
- [W.13] Danielescu, L., **Walker, E.**, Glenberg, A., Restrepo, M. A., & Adams, A. (2014). Using Embodied Cognition to Teach Reading Comprehension to DLLs. *Presented at the CHI 2014 Workshop on Gesture-based Interaction Design: Communication and Cognition*. Toronto, Canada.
- [W.12] **Walker, E.**, Rummel, N., Koedinger, K. R. (2013) Using Intelligent Tutoring Technologies to Adaptively Support Collaborative Learning. Invited SIG: Trends in Support for and Analysis of Collaborative Learning, *EARLI 2013*.
- [W.11] Thomas, E., Giroto, V., Abreu, A., Lozano, C., Muldner, K., Burlison, W. & **Walker, E.** (2013). Exploring Adaptive Scaffolding in a Multifaceted Tangible Learning Environment. Workshop on Scaffolding in Open-Ended Learning Environments, *AIED 2013*.

- [W.10] Soriano, J. C. A., Rodrigo, M. M. T., Baker, R. S., Ogan, A., **Walker, E.**, Castro, M. J., & Belmontez, R. (2012). A cross-cultural comparison of effective help-seeking behavior among students using an ITS for math. In *Intelligent Tutoring Systems* (pp. 636-637). Springer Berlin Heidelberg.
- [W.9] Hallinen, N., **Walker, E.**, Wylie, R., Ogan, A., & Jones, C. (2009). I was playing when I learned: A narrative game for French aspectual distinctions. Workshop on Intelligent Educational Games, *AIED 2009*.
- [W.8] **Walker, E.**, Rummel, N., & Koedinger, K. R. The influence of correct and erroneous worked examples on learning from peer tutoring. In Vivo experimentation on worked examples across domains. *EARLI 2009*.
- [W.7] **Walker, E.**, Ogan, A., Jones, C., Aleven, V. Two Techniques for Providing Adaptive Support in an Ill-Defined Domain. Workshop on Ill-Defined Domains. *ITS 2008*.
- [W.6] Ogan, A., **Walker, E.**, Aleven, V., Jones, C. (2008), Using a Peer Moderator to Support Collaborative Cultural Discussion. Workshop on Culturally Aware Tutoring Systems Workshop. *ITS 2008*.
- [W.5] **Walker, E.**, and Ogan, A (2007). Peer Moderation in Cultural Discussion Forums. Presentation at *EUROCALL 2007*.
- [W.4] **Walker, E.**, Ogan, A., and Wylie, R (2006). A Tense Situation: Applying Cognitive Tutor Methodology to Ill-Defined Domains. Presentation at *EUROCALL 2006*.
- [W.3] Ogan, A., Wylie, R., and **Walker, E** (2006). Defining the ill-defined: Modeling student behavior in making aspectual distinctions. Accepted as a Student Track Paper at the 8th International Conference on *Intelligent Tutoring Systems*.
- [W.2] Ogan, A., Wylie, R., and **Walker, E.** (2006). The challenges in adapting traditional techniques for modeling student behaviors in ill-defined domains. In V. Aleven, K. Ashley, C. Lynch, & N. Pinkwart (Eds.), *Proceedings of the Workshop on Intelligent Tutoring Systems for Ill-Defined Domains at the 8th International Conference on Intelligent Tutoring Systems* (pp. 92-100). Jhongli (Taiwan), National Central University.
- [W.1] **Walker, E.** Mutual Peer Tutoring: A Collaborative Addition to the Cognitive Tutor Algebra-1 (2005). Accepted as a Young Researcher's Track paper at the *International Conference on Artificial Intelligence and Education (AIED-05)*. **Best Young Researcher Track Paper Award**.

Book Chapters

- [B.3] Roscoe, R. D., **Walker, E.**, & Patchan, M. M. (2018). Facilitating peer tutoring and assessment in intelligent learning systems. *Tutoring and Intelligent Tutoring Systems*, 41-68.
- [B.2] **Walker, E.**, Wylie, R., Danielescu, A., Rodriguez III, J. P., & Finn, E. (2018). Balancing Student Needs and Learning Theory in a Social Interactive Postdigital Textbook. In *End-User Considerations in Educational Technology Design* (pp. 141-159). IGI Global.
- [B.1] Bergner, Y., **Walker, E.**, & Ogan, A. (2017). Dynamic Bayesian Network models for Erin Walker

peer tutoring interactions. In *Innovative Assessment of Collaboration* (pp. 249-268). Springer, Cham.

Invited Talks

Expanding the Reach of AIED Systems: Adapting to Social Learning Processes.

April 2020. University of California, Irvine. Irvine, USA.

Social Personalized Learning Technologies. September 2019. Grand Challenges Speaker Series. Arizona State University. Tempe, USA.

Expanding the reach of AIED systems: Adapting to novel learning processes and outcomes. March 2018. Learning, Research, and Development Center. University of Pittsburgh. Pittsburgh, USA.

Expanding the reach of personalized learning technologies: Adapting to novel paradigms, activities, and outcomes. April 2017. Department of Human-Centered Design and Engineering. University of Washington, Seattle, USA.

Designing Social Interactions in Personalized Learning Environments. November 2016. School of Nutrition and Health Promotion Seminar. Arizona State University, Tempe, USA.

Designing Social Interactions in Teachable Agents. September 2016. IBM Cognitive Systems Speaker Series.

Designing Social Interactions in Learning by Teaching. November 2015. Program in Interdisciplinary Education Research (PIER) Speaker Series, Carnegie Mellon University, Pittsburgh, USA.

Learning by Teaching: Opportunities for Intelligent Tutoring Technology. March 2012. School of Computing, Informatics, and Decision Systems Engineering, Arizona State University, Tempe, USA.

Adaptive Support for Peer Tutoring in Mathematics. July 2009. Competence Center for E-Learning DFKI, Saarbrücken, Germany.

Student Mentoring

Academic Committee Chair (PhD)

Arun Narayanan. *Current Student.* School of Computing and Information. University of Pittsburgh.

Amanda Buddemeyer. *Current student.* School of Computing and Information. University of Pittsburgh.

Deniz Sonmez. *Current student.* School of Computing and Information. University of Pittsburgh.

Ishrat Ahmed. *Current student.* School of Computing and Information. University of Pittsburgh.

Shang Wang. *Defended Dissertation Fall 2019.* School of Computing, Informatics, and Decision Systems Engineering. Arizona State University. Title: "Providing Intelligent and Adaptive Support in Concept Map-Based Learning Environments."

Victor Giroto. *Defended Dissertation Fall 2018.* School of Computing, Informatics, and Decision Systems Engineering. Arizona State University. Title: "Advancing Large-Scale Creativity through Adaptive Inspirations and Research in Context."

Nichola Lubold. *Graduated Fall 2018.* School of Computing, Informatics, and Decision Systems Engineering. Arizona State University. Title: "Producing Acoustic-Prosodic Entrainment in a Robotic Learning Companion to Build Learner Rapport."

Academic Committee Member (PhD)

Tazin Afrin. School of Computing and Information. University of Pittsburgh.

Nannan Wen. School of Computing and Information. University of Pittsburgh.

Haoran Zhang. School of Computing and Information. University of Pittsburgh.

Jeong Min Lee. School of Computing and Information. University of Pittsburgh.

Nathan Ong. School of Computing and Information. University of Pittsburgh.

Mingzhi Yu. School of Computing and Information. University of Pittsburgh.

Luca Lugini. School of Computing and Information. University of Pittsburgh.

Sree Aurovindh Viswanathan. School of Computing, Informatics, and Decision Systems Engineering. Arizona State University.

Andreea Danieleescu. *Defended Dissertation Fall 2018.* School of Computing, Informatics, and Decision Systems Engineering. Arizona State University. Title: "Discoverable Free Space Gesture Sets for Walk-Up-and-Use Interactions."

Maria Elena Chavez-Echeagaray. *Graduated Spring 2018.* School of Computing, Informatics, and Decision Systems Engineering. Arizona State University. Title: "Real-Time Affective Support to Promote Learner's Engagement."

Jisoo Lee. *Graduated Fall 2016.* School of Arts, Media, and Engineering. Arizona State University. Title: "Supporting Self-Experimentation of Behavior Change Strategies."

Devi Archana Paladugu. *Graduated Summer 2016.* School of Computing, Informatics, and Decision Systems Engineering. Arizona State University. Title: "Towards Building Cyber Human Systems for Individuals with Visual Impairment."

Vijay Ravishankar. *Graduated Spring 2015.* School of Computing, Informatics, and Decision Systems Engineering. Arizona State University. Title: "Real World Strategies for User Centered Approach to Functional Assessment and Design of Age-In-Place Support for Older Adults."

Academic Committee Chair (Masters)

Matthew Dexheimer. 2016-2017. Arizona State University.

Audrey Wong. 2015-2016. Arizona State University.

Nicolette Furtado. 2015-2016. Arizona State University.

Abha Upadhyay. 2014-2016. Arizona State University.

Ritesh Reddy Samala. 2014-2015. Arizona State University.

Rishabh Chaudhry. 2014-2015. Arizona State University.

Undergraduate Research Advisor

Travon Brice. 2021. LRDC Intern.

Jennifer Nwogu. 2021. LRDC Intern.

Kaitlyn Wang. 2020. First Experiences in Research. NSF REU.

Jasmin Lizardo. 2020. First Experiences in Research.

Zeynep Marasli. 2019. NSF REU. LRDC Internship Program.

Jennifer Breunig. 2018. NSF REU.

Delany Krantz. 2018. NSF REU.

Billy Llamas. 2018. NSF REU.

Samantha Baker. 2017-2018. Fulton Undergraduate Research Initiative. NSF REU.

Michaela Foote. 2016-2017. Honors Creative Project. NSF REU.

Anisha Gupta. 2016-2017. Fulton Undergraduate Research Initiative & Honors Creative Project. NSF REU.

Baani Khurana. 2016-2017. NSF REU.

Nicholas Martinez. 2016. Fulton Undergraduate Research Initiative.

Lizsandra Zuniga. 2016. NSF DREU.

Rachana Rao. 2015-2016. NSF REU.

Tyler Robbins. 2015-2017. NSF REU.

Jonathan Yocky. 2015-2016. Fulton Undergraduate Research Initiative & Honors Thesis.

Audrey Wong. 2014-2015. Fulton Undergraduate Research Initiative.

Christine Lam. 2014-2015. Honors Thesis.

Sarah Van Horn. 2014-2015. Honors Thesis.

James Rodriguez. 2013-2014. Honors Thesis.

Nicholas Berk. 2011-2013. Fulton Undergraduate Research Initiative.

Teaching Experience

CS1571 Introduction to Artificial Intelligence. Instructor. Fall 2021. School of Computing and Information. University of Pittsburgh. Total Students: 41.

CS3790 Advanced Topics in Educational Technology. Instructor. Spring 2020. School of Computing and Information. University of Pittsburgh. Total Students: 9.

CS1571 Introduction to Artificial Intelligence. Instructor. Fall 2020. School of Computing and Information. University of Pittsburgh. Total Students: 50.

CS1699 Introduction to Human-Computer Interaction. Instructor. Spring 2019. School of Computing and Information. University of Pittsburgh. Total Students: 47.

CPI350 Evaluation of Informatics Systems. Instructor. Spring 2017, Spring 2018. School of Computing, Informatics, and Decision Systems Engineering. Arizona State University. Total Students: 87.

CSE463 Introduction to Human Computer Interaction. Instructor. Spring 2013, Spring 2014, Fall 2016. School of Computing, Informatics, and Decision Systems Engineering. Arizona State University. Total Students: 164.

CSE591 Technologies for Online Learning Communities. Instructor. Fall 2013, Fall 2014, Spring 2016, Fall 2017. School of Computing, Informatics, and Decision Systems Engineering. Arizona State University. Total Students: 185.

CPI220 Applied Data Structures and Algorithms, Instructor. Fall 2015. School of Computing, Informatics, and Decision Systems Engineering. Arizona State University. Total Students: 19.

Research Methods for the Learning Sciences, Teaching Assistant, Spring 2008. Human-Computer Interaction Institute. Carnegie Mellon University.

Software Architecture for User Interfaces. Teaching Assistant. Fall 2006. Human-Computer Interaction Institute. Carnegie Mellon University.

University and Department Service

CS Graduate Admissions Committee. University of Pittsburgh. 2020-2021.

SCI Technology for Learning and Social Change Faculty Hiring Committee. University of Pittsburgh. 2020-2021.

CS Diversity and Inclusion Committee. University of Pittsburgh. 2020-2021.

ISP Director Search Committee. University of Pittsburgh. 2020.

LRDC Diversity and Inclusion Committee. University of Pittsburgh. 2020-2021.

LRDC Move Committee. University of Pittsburgh. 2020.

Tenure Stream Faculty Hiring Committee. University of Pittsburgh. 2020.

New Faculty Advisory Council. Welcoming Subcommittee Co-Chair. Arizona State University. 2014-2016.

Informatics Undergraduate Program Committee. Arizona State University. 2013-2018.

Faculty Search Committee. Arizona State University. 2013-2016.

Scientific Community Involvement

External Affiliations

Affiliate Faculty. Center for Gender Equity in Science and Technology, Arizona State University. 2018-present.

Executive and Organizing Committees

CHI Learning, Education, and Families Subcommittee Chair. International Conference on Human Factors in Computing. 2020-2021.

Publicity Chair. International Society of Artificial Intelligence in Education. 2017-2019.

Executive Committee Member. International Society of Artificial Intelligence in Education. 2013-2018.

Editorial Board Member. International Journal of Artificial Intelligence in Education. 2017-present.

Interactive Events Co-Chair. 19th International Conference on Artificial Intelligence in Education. 2017-2018.

Doctoral Consortium Co-Chair. 18th International Conference on Artificial Intelligence in Education. 2016-2017.

Workshop and Tutorials Co-Chair. 16th International Conference on Artificial Intelligence in Education. 2013.

Program Committees

CHI. International Conference on Human Factors in Computing. 2017-2019.

AIED. International Conference of Artificial Intelligence in Education. 2013-present.

L@S. Learning at Scale. 2017-2019.

ICLS. International Conference of the Learning Sciences. 2017-2019.

ITS. International Conference on Intelligent Tutoring Systems. 2015-2017.

FLAIRS. Special Track: Intelligent Tutoring Systems. 2013-present.

ICEduTech. Educational Technologies. 2014-2015.

Re-new. Digital Arts Festival. 2013.

ACM SAC. Track on Intelligent, Interactive, and Innovative Learning Environments. 2013. 2016.

AIED. Doctoral Consortium. 2013.

ITS. Workshop on Intelligent Support for Exploratory Learning Environments. 2012.

C5-12. Conference on Creating, Connecting, and Collaborating Through Computing, 2012

ITS. Young Researcher's Track. 2010.

Workshop Organizer

Rethinking Intelligent Support for Learning in Groups. 13th International Conference of the Learning Sciences, 2018.

3rd Workshop on Intelligent Support for Learning in Groups. 12th International Conference on Intelligent Tutoring Systems, 2014

Opportunities for Intelligent and Adaptive Behavior in Collaborative Learning Systems. 10th International Conference on Intelligent Tutoring Systems, 2010.

Advisory Boards

AI XPRIZE Judge. 2017-2020.

Learning Objects Inc. 2013-2014.

Reviewer

Journal submissions. Behavior Research Methods, Computers & Education, Educational Psychology Review, Future Generation Computing Systems, International Journal of Artificial Intelligence in Education, International Journal of Computer-Supported Collaborative Learning, International Journal of Learning Technologies, Journal of Educational Psychology, Transactions on Learning Technologies, Transactions on Computing Education.

Conference submissions. Human Factors in Computing Systems (CHI), Artificial Intelligence in Education, Computer-Supported Collaborative Learning, Cognitive Science, Intelligent Tutoring Systems, International Conference of the Learning Sciences, Learning@Scale, Human-Robot Interaction, ACM Symposium on Applied Computing. Pervasive Health.

Grant proposals. National Science Foundation. 2012. 2015. 2018. 2020.