

Vincent A.W.M.M. Alevén

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POSITIONS HELD

- 2018-present Professor, HCI Institute, Carnegie Mellon University
- 2012-2018 Associate Professor with Tenure, HCI Institute, Carnegie Mellon University
- 2009-2012 Associate Professor, HCI Institute, Carnegie Mellon University
- 2008-2009 Assistant Professor, HCI Institute, Carnegie Mellon University
- 2004-2008 Research Scientist, HCI Institute, Carnegie Mellon University
- 2000-2004 Systems Scientist, HCI Institute, Carnegie Mellon University
- 1997-2000 Postdoctoral Fellow, HCI Institute, Carnegie Mellon University
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- 2013-present Director, Undergraduate Programs, HCI Institute, Carnegie Mellon University
- 2008-2016 Member, Executive Committee, Pittsburgh Science of Learning Center
- 2008-present Member, Steering Committee, CMU's PIER pre-doctoral scholarship program in educational research

EDUCATION

- Ph.D., Intelligent Systems, University of Pittsburgh, 1997
- M.Sc., Intelligent Systems, University of Pittsburgh, 1992
- M.Sc., Computer Science, Delft University of Technology, Delft, The Netherlands, 1988

AWARDS, HONORS, AND NOMINATIONS

- 2019 Distinguished Alumni Award, Learning Research and Development Center, University of Pittsburgh.
- Conference Best Paper Award, 7th International Conference on Intelligent Tutoring Systems, ITS 2004 (*Alevén, McLaren, Roll, & Koedinger, 2004*).
- Conference Best Paper Award, 5th International Conference on Intelligent Tutoring Systems, ITS 2000 (*Alevén & Koedinger, 2000*).
- Conference Best Paper Award, 14th European Conference on Technology Enhanced Learning, EC-TEL 2018 (*Sharma, Olsen, Alevén, & Rummel, 2018*).

- Conference Best Paper Award (1 of 2), 19th International Conference on Artificial Intelligence in Education, AIED 2018 (*Holstein, McLaren, & Alevén, 2018b*).
- Conference Best Paper Award, 6th International Conference on Educational Data Mining (EDM 2013) (*Rau, Scheines, Alevén, & Rummel, 2013*)
- Conference Best Student Paper Award. 13th International Conference of the Learning Sciences, ICLS 2018 (*Holstein, McLaren, & Alevén, 2018a*).
- Conference Best Student Paper Award, 16th International Conference on Artificial Intelligence in Education, AIED 2013 (*Long & Alevén, 2013*).
- Conference Best Student Paper Award, 14th International Conference on Artificial Intelligence in Education, AIED 2009 (*Rau, Alevén, & Rummel, 2009*).
- The 2008 Cognition and Student Learning (CaSL) Prize, given to the best full paper submission to the 2008 Annual Conference of the Cognitive Science Society on a topic directly related to cognitive science, educational practice and subject-matter learning (*Salden, Alevén, Renkl, & Schwonke, 2008*).
- Best Paper Award at the 4th e-Learning conference of the German Computer Science Association (*Pinkwart, Alevén, Ashley, & Lynch, 2006*).
- Nominee, Conference Best Paper Award, AIED 2019 (*Holstein, McLaren, & Alevén, 2019*)
- Honourable Mention, ACM SIGCHI Annual Symposium on Computer-Human Interaction in Play, CHIPLAY 2015 (*Harpstead & Alevén, 2015*).
- Best Paper Honorable Mention, ACM SIGCHI Conference on Human Factors in Computing Systems, CHI 2013 (*Harpstead, Myers, & Alevén, 2013*).
- Best Paper Honorable Mention, ACM SIGCHI Conference on Human Factors in Computing Systems, CHI 2013 (*Rau, Alevén, Rummel, & Rohrbach, 2013*).
- Nomination for Conference Best Paper Award, 5th International Conference on Educational Data Mining, EDM 2012 (*Goldin, Koedinger, & Alevén, 2012*).
- Honourable Mention (1 of 2) for Conference Best Paper, 14th International Conference on Artificial Intelligence in Education, AIED 2009 (*Baker, de Carvalho, Raspat, Alevén, Corbett, & Koedinger, 2009*).
- Nomination (1 of 8) for Conference Best Paper Award, 8th International Conference on Intelligent Tutoring Systems, ITS 2006 (*Pinkwart, Alevén, Ashley, & Lynch, 2006*).
- Nominations (2 of 8) for Conference Best Student Paper Award, 8th International Conference on Intelligent Tutoring Systems, ITS 2006 (*Kumar, Rosé, Alevén, Iglesias, & Robinson, 2006; Roll, Alevén, McLaren, Ryu, Baker, & Koedinger, 2006*).
- Finalist (1 of 5) for Conference Best Paper Award, 11th International Conference on Artificial Intelligence in Education, AI-ED 2003 (*Alevén Koedinger, & Popescu, 2003*).
- Journal article in *Cognitive Science* listed as one of “15 articles from my editorial stint from 2000-2005 that are good prospects for classic status 15 years from now,” in the 2005 Annual Editor’s Report to the readership of *Cognitive Science*, by Dr. Robert Goldstone, then the Executive Editor (*Alevén & Koedinger, 2002*). Google Scholar citation count (9/6/2020): 1108.

ACADEMIC ADVISING

Current PhD Students

Tomohiri Nagashima, Ph.D. candidate in the HCI Institute, since Fall 2018.

Kexin Yang, Ph.D. candidate in the HCI Institute, since Fall 2020.

Former PhD Students

Kenneth Holstein, Ph.D., HCI Institute, (co-advised with Bruce McLaren) 2015-2019.
Current position: Assistant Professor, HCI Institute, Carnegie Mellon University.

Jennifer Olsen, Ph.D., HCI Institute, (co-advised with Nikol Rummel, University of Bochum) 2012-2017.

Current position: Assistant Professor of Computer Science, University of San Diego

Erik Harpstead, Ph.D., HCI Institute, 2011-2017.

Current position: Systems Scientist, HCI Institute, Carnegie Mellon University.

Yanjin Long, Ph.D., HCI Institute, 2010-2015.

Current position: User Experience Researcher, Facebook.

Martina Rau, Ph.D., HCI Institute, (co-advised with Nikol Rummel, University of Bochum) 2008-2013.

Current position: Associate Professor, Department of Educational Psychology, School of Education, University of Wisconsin, Madison.

Amy E. Ogan, Ph.D., HCI Institute (co-advised with Christopher Jones, Modern Languages) 2004-2011.

Current position: Thomas and Lydia Moran Associate Professor of Learning Science, HCI Institute, Carnegie Mellon University.

Matthew Easterday, Ph.D., HCI Institute (co-advised with Richard Scheines and Sharon Carver) 2004-2010.

Current position: Associate Professor in the Learning Sciences Department, School of Education and Social Policy, Northwestern University.

Ido Roll, Ph.D., HCI Institute (co-advised with Kenneth Koedinger) 2007-2009.

Current position: Associate Professor, Department of Education in Science and Technology, Technion - Israel Institute of Technology, Haifa, Israel.

Turadg Aleahmad, HCI Institute (co-advised with Robert Kraut), 2006-2009.

Current position: Senior Engineering Manager, Quizlet, Inc.

Franceska Xhakaj, HCI Institute. Advised 2015-2019.

Current position: Ph.D. candidate in the HCI Institute, Carnegie Mellon University.

Current Postdoctoral Fellows

Yun Huang, HCI Institute, 2019-present (co-advising with Ken Koedinger).

Vanessa Echeverria-Barzola, HCI Institute, 2020-present (co-advising with Nikol Rummel).

LuEttaMae Lawrence, HCI Institute, 2020-present (co-advising with Nikol Rummel).

Former Postdoctoral Fellows

Kenneth Holstein, HCI Institute, 2019-2020 (co-advised with Bruce McLaren).
Current position: Assistant Professor, HCI Institute.

Daniel Belenky, HCI Institute, 2012-2014 (co-advised with Nikol Rummel, University of Bochum).
Current position: Director of Research on the Science of Teaching and Learning, Pearson.

Matthew Bernacki, LRDC, Univ. of Pittsburgh / Pittsburgh Science of Learning Center (LRDC), 2010-2013 (co-advised with Timothy Nokes-Malach, LRDC, Dept. of Psychology, University of Pittsburgh).
Current position: Assistant Professor, Learning Sciences, School of Education, University of Carolina, Chapel Hill.

Catherine Chase, Department of Psychology / HCI Institute, 2011-2013 (co-advised with David Klahr, Dept. of Psychology).
Current position: Assistant Professor, Human Development, Teachers College, Columbia University.

Ilya Goldin, HCI Institute, 2011-2013 (co-advised with Kenneth R. Koedinger).
Current position: Principal Data Scientist at Phenom People.

Zelha Tunc-Pekkan, HCI Institute / Pittsburgh Science of Learning Center, Fall 2009-2011.
Current position: Associate Professor of Mathematics Education, MEF University, Turkey.

Ryan S. Baker, HCI Institute / Pittsburgh Science of Learning Center, 2007-2009.
Current position: Associate Professor, Division of Teaching, Learning, and Leadership Division, Graduate School of Education; affiliated with the Higher Education Division and the Department of Computer and Information Science; Director of the Penn Center for Learning Analytics, University of Pennsylvania.

Ron Salden, HCI Institute / Pittsburgh Science of Learning Center, 2005-2009.
Current position: Assistant Professor in Psychology, Heriot-Watt University, Malaysia.

Kirsten R. Butcher, LRDC, Univ. of Pittsburgh / Pittsburgh Science of Learning Center, 2005-2008.

Current position: Associate Professor, Educational Psychology; Director, Center for the Advancement of Technology in Education (CATE); Director: Instructional Design and Educational Technology (IDET) Program, University of Utah.

Niels Pinkwart, HCI Institute, 2005-2006.

Current position: Full Professor in the Department of Informatics, Humboldt-Universität zu Berlin, Germany.

Ana Iglesias, Postdoctoral Fellow, HCI Institute, 2005 (co-advised with Carolyn Rosé).

Current position: Associate Professor of Informatics, University Carlos III of Madrid, Spain.

Other Academic Advising

Ph.D. committee member, **Anita Delahay**, Department of Psychology, Carnegie Mellon University, 2018-current.

Ph.D. committee member, **Roya Hosseini**, Intelligent Systems Program, University of Pittsburgh, 2017-2018.

Ph.D. committee member, **Cristina Zepeda**, Department of Psychology, University of Pittsburgh, 2016-2017.

Ph.D. committee member, **Alexandra Luccioni**, Department of Computer Science, Université du Québec à Montréal, Montréal, Canada

Ph.D. committee member, **Emily Keebler**, Department of Psychology, Carnegie Mellon University, 2016-2018.

Ph.D. committee member, **Christopher MacLellan**, Human-Computer Interaction Institute, Carnegie Mellon University, 2016-2017.

Ph.D. committee member, **Rony Patel**, Department of Psychology, Carnegie Mellon University, 2015-2017.

Ph.D. committee member, **Kelly Rivers**, Human-Computer Interaction Institute, Carnegie Mellon University, since 2015-2017.

Ph.D. committee member, **Eliane Stampfer Wiese**, Human-Computer Interaction Institute, Carnegie Mellon University, 2013-2015.

Ph.D. committee member, **Michael Lipschultz**, Intelligent Systems Program, University of Pittsburgh, 2010-2014.

Ph.D. committee member, **David Adamson**, Language Technologies Institute, Carnegie Mellon University, 2013-2014.

Ph.D. thesis jury member, **Andrea Mazzei**, Computer-Human Interaction in Learning and Instruction Lab, School of Computer and Communication Sciences, Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland, 2013.

Ph.D. committee member, **Iris Howley**, Human-Computer Interaction Institute, Carnegie Mellon University, 2013-2015.

Ph.D. committee member, **Claudia Mazziotti**, Institute for Educational Psychology, Ruhr University Bochum, Germany, 2013-2017.

Ph.D. committee member, **Bryan Matlen**, Department of Psychology, Carnegie Mellon University, 2012-2013.

Ph.D. committee member, **Soniya Gadgil**, Department of Psychology, University of Pittsburgh, 2012-2014.

M.Sc. project advisor, **Margreet Vogelzang**, Department of Artificial Intelligence, University of Groningen, the Netherlands, 2011-2012.

Ph.D. committee member, **Daniel Belenky**, Department of Psychology, University of Pittsburgh, 2011-2012.

M.Sc. project advisor, **Maaïke Waalkens**, Department of Artificial Intelligence, University of Groningen, the Netherlands, 2010-2011.

M.Sc. project advisor, **Laurens Feenstra**, Department of Artificial Intelligence, University of Groningen, the Netherlands, 2009-2010.

Ph.D. committee member, **Michael Heilman**, Language Technologies Institute, Carnegie Mellon University, 2009-current.

Ph.D. committee member, **Collin Lynch**, Intelligent Systems Program, University of Pittsburgh, 2010-2014.

M.Sc. committee member, **Collin Lynch**, Intelligent Systems Program, University of Pittsburgh, 2008-9.

Ph.D. committee member, **Ponnurangam Kumaraguru**, Computation, Organizations and Society Program, Institute for Software Research, School of Computer Science, Carnegie Mellon University, 2007-2009.

Ph.D. committee member, **Quincy Brown**, Department of Computer Science, Drexel University, Philadelphia, PA, 2007-2008.

M.Sc. project co-advisor, **Martina Rau**, Psychological Institute, University of Freiburg, Germany, 2007.

M.Sc. project advisor, **Stefan King**, Department of Artificial Intelligence, University of Groningen, the Netherlands, 2007.

M.Sc. committee member, **James Leszczenski**, Language Technologies Institute, Carnegie Mellon University, 2007.

GRANT SUPPORT

Principal Investigator

NSF (IIS) 1822861. PI: Vincent Aleven. Co-PI: Nikol Rummel. "Human/AI Co-Orchestration of Dynamically-Differentiated Collaborative Classrooms." \$749,995, 09/01/2018 – 08/31/2021

https://www.nsf.gov/awardsearch/showAward?AWD_ID=1822861

REU Supplement for the previous grant: \$24,000

US Department of Education (IES, NCR Education Technology) R305A180301. PI: Vincent Aleven, co-PI: Bruce McLaren, Steve Ritter. "Enhancing Student Learning with an Orchestration Tool for Personalized Teacher-Student Interactions in Classrooms Using Intelligent Tutoring Software Education Technology." \$1,399,754, 07/01/2018-

06/30/2021. Collaborative research with Dr. Steve Ritter, Carnegie Learning, Pittsburgh.
<https://ies.ed.gov/funding/grantsearch/details.asp?ID=2221>

NSF (DRL, ECR) Award No. 1760922. PI: Vincent Alevén. “Collaborative research: Fostering conceptual understanding and skill with an intelligent tutoring system for equation solving.” \$975,223, 6/1/2018-5/31/2021. Collaborative research with Dr. Martha Alibali, the University of Wisconsin, Madison.
https://www.nsf.gov/awardsearch/showAward?AWD_ID=1760922

REU Supplements for the previous grant: \$48,000

ARL Award No. W911NF-16-2-0122: PI: Vincent Alevén, co-PI: Ryan Baker. “Integrating edX, GIFT, and CTAT.” \$650,757, 3/28/2016-12/31/2018.

NSF (Cyberlearning) Award No. IIS-1530726, PI: Vincent Alevén, co-PI: Bruce McLaren. “EXP: Helping Teachers Help Their Students: Teachers’ Use of Intelligent Tutoring Software Analytics to Improve Student Learning,” \$549,575, 9/1/2015- 8/31/2018.

REU Supplement for the previous grant for a total of \$16,000.

US Department of Education (IES, NCER-CASL) Award No. R305A120734, PI: Vincent Alevén, co-PI: Nikol Rummel. “Combining Advantages of Collaborative and Individual Learning with an Intelligent Tutoring System for Fractions.” Amount: \$1,500,000. 9/1/2012-8/31/2017.

ONR N00014-12-C-0284 (awarded by DARPA), PI Vincent Alevén, Senior Personnel Sharon Carver, Steven Dow, Kenneth Koedinger, Carolyn Rosé, Lori Takeuchi (Sesame Workshop). “Learning to Solve Problems, Solving Problems to Learn.” Funding amount \$2,470,126 over a 32-month period starting January 12, 2012.

NSF (REESE) Award No. DRL-0910010, PI: Vincent Alevén, co-PI: Nikol Rummel. “Empirical Research: Emerging Research: Learning with multiple graphical representations in a complex, real-world domain: intelligent software tutors for fractions.” 3-year budget in the amount of \$1,007,417 starting 8/15/2009.

REU Supplements for the previous grant for a total of \$24,000.

US Department of Education (IES) Award No. R305A080093, PI: Vincent Alevén, co-PI: Bruce McLaren. “Bringing Cognitive Tutors to the Internet: A Website that Helps Middle-School Students Learn Math.” Amount: \$1,490,705. Project Period: 3/1/2008-2/28/2012.

NSF Award No. REC-043779, PI: Vincent Alevén, co-PIs: Albert Corbett and Carolyn Penstein Rosé. “Learning-Oriented Dialogs in Cognitive Tutors: Toward a Scalable Solution to Performance Orientation.” 5-year budget in the amount of \$1,270,000, starting 10/01/04.

NSF Award No. IIS-0308200, PI: Vincent Alevén, co-PI: Kenneth R. Koedinger, “Improving Life-Long Learning Skills with Interactive Learning Environments.” 3-year budget in the amount of \$375,000, starting June 15, 2003.

NSF Award No. EIA-0113864, PI: Vincent Alevén, co-PI: Kenneth R. Koedinger, “ITR/PE(CISE): Tutoring Explanation and Discovery Learning: Achieving Deep Understanding through Tutorial Dialog.” 3-year budget in the amount of \$394,914, starting September, 2001.

REU Supplements for the previous grant for a total of \$18,000.

Co-Principal Investigator

Bill & Melinda Gates Foundation Investment ID OPP1196889. PI: Kenneth R. Koedinger, co-PIs, Vincent Alevén and Judith Harackiewicz (University of Wisconsin-Madison). “Exploring Cognitive-Metacognitive-Motivational Multiplier Effects in Middle Years Math.” \$1,984,154, 11/1/2018-10/31/2021.

NSF Award IIS-1361062. PI: Catherine Chase (Columbia University), co-PI: Vincent Alevén. “Developing a Tutor to Guide Students as They Invent Deep Principles with Contrasting Cases.” \$548,676, 9/15/2013-8/31/2016.

US Department of Education (IES, NCER-CASL) Award No. R305A130215, PI: Emma Brunskill, co-PI: Vincent Alevén. “Use of Machine Learning to Adaptively Select Activity Types and Enhance Student Learning with an Intelligent Tutoring System.” Amount: \$1,497,264. 9/1/2013-8/31/2017.

US Department of Education (IES) Award No. R305B110003, “Post-doctoral Training Program in Interdisciplinary Education Research (PostPIER).” PI: David Klahr, co-PIs: Vincent Alevén and Kenneth R. Koedinger. 3-year period, starting approx. March 2011, \$648,974.

ONR Award “CycleTalk: Further Exploring the Value of Pedagogical Tutorial Dialogue on the Exploratory Learning Continuum.” PI: Carolyn Penstein Rosé, co-PIs: Vincent Alevén and Alan Robinson. Amount of Award: \$540,003, 11/1/06-10/31/08.

ONR Award No.: N000140310220 (continuation), PI: Kenneth R. Koedinger, co-PIs: Neil Heffernan and Vincent Alevén. “Demonstrating Affordable Behavioral Modeling with CTAT Through Machine Learning and Human-Computer Interaction Techniques.” Amount of Award: \$ 828,818. Period: 12/01/05 to 11/30/08.

NSF Award IIS-0412830, PI: Kevin D. Ashley, co-PI: Vincent Alevén. “Hypothesis Formation and Testing in an Interpretive Domain: a Model and Intelligent Tutoring System.” 3-year grant, \$650,000, starts September 15, 2004.

ONR Award No.: N000140410107 “CycleTalk: A Tutorial Dialogue System that Supports Negotiation in a Design Context.” PI: Carolyn Penstein Rosé, co-PI: Vincent Alevén. Amount of Award: \$453,489, 11/17/03-09/30/06.

NSF Award No. ROLE-0310420, PI: Kenneth Koedinger, co-PIs: Roy Pea and Vincent Alevén. “Implementation of an American-German Research Network in the Field of Technology-Supported Education.” 2-year grant in the amount of \$97,468, starting June 15, 2003.

ONR Award No.: N000140310220, PI: Kenneth R. Koedinger, co-PIs: Neil Heffernan and Vincent Alevén. “Affordable Cognitive Model Authoring Tools Using HCI Methods.” Amount of Award: \$ 389,325. Period: 10/01/02 to 09/30/05.

ONR Award No.: N000140210443, PI: Kenneth R. Koedinger, co-PIs: Neil Heffernan and Vincent Alevén. “Cognitive Tutor Tools for Advanced Instructional Strategies”. Amount of Award: \$193,445. Period: 4/1/2002-9/30/2002.

Senior Personnel

DARPA Award No. FA8750, PI: Robin Shoop, “Fostering Innovation through Robotics Exploration (FIRE).” Amount of Award: \$6,611,903, 06/23/10 – 10/13/13.

NSF Award SBE-0836012, PI: Kenneth R. Koedinger, “Toward a Decade of PSLC Research: Investigating Instructional, Social, and Learner Factors in Robust Learning through Data-Driven Analysis and Modeling.” Amount of Award: \$23,050,000. Period: 2/15/10-1/31/15.

Subcontracts

Subcontract of Contract W911NF-04-D-0005-0028 issued by the US Army Research Office to the Institute for Creative Technology, University of Southern California. PI: Vincent Alevén. “Social Interactions with Virtual Humans in BiLAT.” Amount of Award: \$77,814. Period: 11/1/2009-8/29/2010.

Subcontract of Contract W911NF-04-D-0005-0030 issued by the US Army Research Office to the Institute for Creative Technology, University of Southern California. PI: Vincent Alevén. “Attribution Effects in BiLAT.” Amount of Award: \$28,928. Period: 1/5/2009-9/29/2009.

Subgrants from the Pittsburgh Science of Learning Center (sponsored by NSF Awards SBE-0836012 and SBE0354420)

“Self-Regulated Learning in Intelligent Tutoring Systems.” PI Vincent Alevén. Co-PI Yanjin Long. Amount Awarded: \$ 240,000. Period: 10/1/2013-9/31/2015.

“Cognitive Tutor Authoring Tools.” PI Vincent Alevén. Amount Awarded: \$400,000. Period: 10/1/2012-9/31/2014.

“Self-Regulated Learning in Intelligent Tutoring Systems.” PI Vincent Alevén. Co-PI Yanjin Long. Amount Awarded: \$ 137,080. Period: 10/1/2012-9/31/2013.

“Self-assessment and Student Models.” PI Vincent Alevén. Co-PI Yanjin Long. Amount Awarded: \$140,000. Period: 10/1/2011-9/31/2012.

“Cognitive Tutor Authoring Tools.” PI Vincent Alevén. Amount Awarded: \$600,000. Period: 10/1/2009-9/31/2012.

“Metacognition and Motivation during Tutored Problem Solving.” PI Vincent Alevén. Amount Awarded: \$95,000. Period: 10/1/2010-9/31/2011.

“Inducing a principle orientation in learners: Striving towards skills rooted in deep conceptual understanding.” PI Alexander Renkl, Co-PI Vincent Alevén. Amount Awarded: \$48,000. Period: 10/1/2010-9/31/2012.

“Fractions Tutor With Game Elements.” PI Vincent Alevén, co-PI Ryan Baker. Amount Awarded: \$127,000. Period: 10/1/2009-9/31/2011.

“Geometry Greatest Hits.” PI Vincent Alevén. Amount Awarded: \$67,000. Period: 10/1/2009-9/31/2010.

“Causal Argumentation Game.” PI Vincent Alevén, co-PI: Matthew Easterday. Amount Awarded: \$58,000. Period: 10/1/2009-9/31/2010.

“Geometry Greatest Hits.” PI Vincent Alevén, co-PIs Ryan S. J. de Baker, Kirsten Butcher, Hao Cen, and Ron Salden. Amount Awarded: \$101,861.28. Period: 9/1/2008-8/31/2009.

“Learning with multiple interactive representations of rational numbers.” PI Vincent Alevén, co-PIs Nikol Rummel and Martina Rau. Amount Awarded: \$70,182.50. Period: 9/1/2008-8/31/2009.

“Improving student affect through adding game elements to mathematics LearnLabs.” PI Vincent Alevén, co-PI Ryan Baker. Amount Awarded: \$104,907.85. Period: 9/1/2008-8/31/2009.

“Visual Feature Focus in Geometry: Instructional Support for Visual Coordination During Learning.” PI Kirsten Butcher, co-PI Vincent Alevén. Amount Awarded: \$133,554. Period: 9/1/2007-8/31/2008.

“Worked Examples and the Assistance Dilemma.” PI Ron Salden, co-PIs Vincent Alevén, Alexander Renkl, and Rolf Schwonke. Amount Awarded: \$292,439. Period: 9/1/2007-8/31/2009.

“CTAT: start-to-finish creation of computer-based tutors without programming.” PI Vincent Alevén, co-PIs Bruce McLaren, Jonathan Sewall. Amount Awarded: \$200,000. Period: 10/1/2007-9/30/2008.

“CTAT: authoring tools and services for computer-based tutors in LearnLab experiments and courses.” PI Vincent Alevén, co-PIs Bruce McLaren, Jonathan Sewall. Amount requested: \$428,528. Period: 10/1/2006-9/30/2007.

“Learning with diagrams in geometry: Strategic support for robust learning.” PI Vincent Alevén, Co-PI Kirsten Butcher. Amount Awarded: \$ 294.304. Period: 8/1/2005-10/30/2007.

“CTAT: Tools to author intelligent and pseudo-intelligent tutors.” PI: Vincent Alevén, co-PIs: Bruce McLaren, Jonathan Sewall. Amount Awarded: \$635.740. Period: 10/1/2004-9/30/2006.

“Robust learning with a Meta-Cognitive Tutor: Does tutoring help seeking prepare students for better future learning?” PI: Vincent Alevén, co-PI Bruce McLaren. Amount Awarded: \$242.181. Period: 1/1/2005-12/31/2006.

“Contiguity in the classroom: A test of Mayer’s principle.” PI: Vincent Alevén. Amount Awarded: \$78.126. Period: 9/1/2005-8/31/06.

“Does learning from examples improve tutored problem solving?” PI: Alexander Renkl, co-PI: Vincent Alevén. Amount Awarded: \$199.078. Period: 9/1/2005-8/31/2007.

“Improving cultural learning by predicting in French film.” PI: Amy Ogan. Co-PIs: Vincent Alevén and Christopher Jones. Amount Awarded: \$94.168. Period: 9/1/2004-8/31/2006.

EDITORSHIP

Co-Editor in Chief, *International Journal of Artificial Intelligence in Education*, 2013-current.

Associate Editor, *International Journal of Artificial Intelligence in Education*, 2012-2013.

Member Editorial Board, *Metacognition and Learning*, 2012-current.

Member Editorial Board, *Learning and Instruction*, 2011-current.

Member Editorial Board, *Journal of Educational Psychology*, 2010-2015.

Edited Volumes

Aleven, V., Hoppe, U., Kay, J., Mizoguchi, R., Pain, H., Verdejo, F., & Yacef, K. (Eds.) (2003). *Supplemental Proceedings of the 11th International Conference on Artificial Intelligence in Education, AIED2003*. School of Information Technologies, University of Sydney.

Aleven, V., Kay, J., & Mostow, J. (Eds.) (2010). *Proceedings of the 10th International Conference on Intelligent Tutoring Systems, ITS 2010* (Volumes I and II). Berlin: Springer.

Azevedo, R., & Aleven, V. (Eds.) (2013). *International handbook of metacognition and learning technologies*. New York: Springer.

Haywood, J., Aleven, V., Kay, J., & Roll, I. (Eds.) (2016). *Proceedings of the Third (2016) ACM Conference on Learning @ Scale*. New York: ACM.

Sugimoto, M., Aleven, V., Chee, Y. S., & Manjon, B. F. (Eds.) (2012). *Proceedings Fourth IEEE International Conference on Digital Game and Intelligent Toy Enhanced Learning DIGITEL 2012*. Los Alamitos, CA: IEEE Computer Society.

Special Issues Edited

International Journal of Artificial Intelligence in Education 26(1), 2016, IJAIED 25th Anniversary Issue co-edited with Monique Grandbastien, Rosemary Luckin, and Riichiro Mizoguchi.

Journal of Educational Psychology 105(4), November 2013, special issue “Advanced Learning Technologies,” co-edited with Carole Beal and Arthur Graesser.

International Journal of Artificial Intelligence in Education 21(1/2), 2011, special issue “Best of ITS 2010,” co-edited with Judy Kay.

International Journal of Artificial Intelligence in Education 19(3/4), 2010, special issues (2) “Ill-Defined Domains,” co-edited with Collin Lynch, Niels Pinkwart, and Kevin Ashley.

INVITED TALKS

“The Smart Classroom of the Future: Progress and Open Challenges,” an invited talk during the AI4EDU (AI for Education) workshop during the AAAI 2020 conference held in New York City, February 8, 2020.

“Personalizing Classroom Instruction with AI: Progress and Open Challenges.” LRDC Distinguished Alumni ceremony, University of Pittsburgh, January 22, 2020.

“AI for Personalized Learning: Students, Teachers, and AI systems Augmenting Each Others’ Abilities.” Workshop on Human-Machine Co-Creation, Co-Learning and Co-Adaptation (CoCoLAd), during the Global Forum on AI for Humanity. Paris, October 28, 2019.

“Easy authoring of adaptive tutoring software.” Keynote address at the International Conference for Open and Innovative Education (ICOIE 2019), Hong Kong, July 10, 2019.

“Case Study: Authoring of adaptive tutoring software, and improving it with data.” Invited workshop at the International Conference for Open and Innovative Education (ICOIE 2019), Hong Kong, July 11, 2019.

“How AI is Helping Teachers Observe and Guide Their Classrooms.” Together with Bruce M. McLaren. Symposium “AI in Education” during the 30th Anniversary Celebration of the Intelligent Systems Program. University of Pittsburgh, March 16, 2018

“Design and Evaluation of Teacher Support Tools for Different Use Scenarios Involving Intelligent Tutoring Software.” Symposium “Using Traces of Digital Activity to Study and Support Learning and Teaching.” Ruhr-Universität Bochum, February 21, 2018

Overview presentation “Integration of Themes: Data Science, Data Analytics, Machine Learning, Data Visualizations, Advanced Learning Technologies and Multimodal SRL Data.” Collaborative: NSF-FUNDED Workshop on Interdisciplinary Research about Multimodal Human Learning Data during Human-Machine Interactions North Carolina State University (Feb. 15-16, 2018).

“Een Intelligent Tutorsysteem dat Leerlingen Helpt te Leren om Effectief Oefentaken te Kiezen.” (“An Intelligent Tutoring System That Helps Students Learn to Make Good Task Selection Decisions.”) Symposium “Zelfregulatie” (“Self-regulation”), Open University, Heerlen, the Netherlands. October 25, 2017.

“Helping Students (Learn to?) Make Good Task Selection Decisions While Learning with an Intelligent Tutoring System.” Dept. of Pedagogical and Educational Sciences – Education, Utrecht University, the Netherlands, March 23, 2017.

“Empirical Research on Adaptivity in Learning Technologies.” Institut für Erziehungswissenschaft, Ruhr-Universität Bochum, Germany, February 2, 2017.

“Adaptivity in Learning Technologies: What Works? A Non-technical Review of Empirical Research.” Department of Educational Psychology, School of Education, University of Wisconsin, Madison. December 21, 2016.

“Supporting Collaborative Learning of Fractions with an Intelligent Tutoring System.” Cognitive and Cognitive Neuroscience Group, Department of Psychology, University of Wisconsin-Madison. December 13, 2016

“(How to) Design for Motivation When Creating Advanced Learning Technologies? Supporting Task Selection Decisions with an Intelligent Tutoring System.” Social and Personality Group, Department of Psychology, University of Wisconsin-Madison. November 9, 2016.

“Adaptive Learning Technologies.” Presentation during the retreat of the board of the Robertson Family Foundation. New York, November 14, 2016.

“Adaptive Learning Technologies: What Works?” Faculty of Electrical Engineering, Mathematics and Computer Science, Delft University of Technology, the Netherlands. October 17, 2016.

“Building Intelligent Tutoring Systems.” Key note speech at the Annual Meeting of the Centre for Education and Learning of Leiden University, Delft University of Technology and Erasmus University Rotterdam in the Netherlands. October 14, 2016.

“Adaptivity in Learning Technologies: Kinds, Effectiveness, and Authoring.” Keynote address at EC-TEL 2016: Eleventh European Conference on Technology-Enhanced Learning. Lyon, France, September 15, 2016.

“Collaborative and Individual Learning of Fractions Supported by an Intelligent Tutoring System.” Dept. of Pedagogical and Educational Sciences – Education, University of Utrecht, the Netherlands. March 22, 2016.

“Elementary School Students Learning Collaboratively and Individually Through the Use of an Intelligent Tutoring System.” Talk given jointly with Nikol Rummel. Department of Humanities, Social, and Political Sciences, Federal Institute of Technology Zürich, ETH. Zürich, Switzerland, October 13, 2015.

“The Knowledge-Learning-Instruction (KLI) Framework: Helping to Bring Science into Practice to Promote Robust Student Learning.” Presented during the EARLI SIG 6 invited symposium “Instructional Design Models: Do They Still Exist?” EARLI Conference, Limassol, Cyprus, August 25-29, 2015.

“Supporting Self-Regulated Learning with Intelligent Tutoring Systems.” Annual project workshop about educational technologies, organized by the eMadrid R&D Network on educational technology in the Region of Madrid. Madrid, Spain, June 30, 2015.

“How to Make Online Learning-by-Doing Highly Adaptive and Easy to Create.” LaunchCMU, A Technology Startup and Research Showcase, organized by the CMU Center for Innovation and Entrepreneurship. Redwood Shores, CA, May 12, 2015.

“Uses of Technology to Enhance Learning and Teaching.” Winchester Thurston School, educational technology presentations series for parents and educators. Pittsburgh, PA, Feb 17, 2015.

“A Case Study: Using Multiple Data Sources to Study Collaborative Learning with an Intelligent Tutoring System.” Workshop on Innovative Assessment of Collaboration, organized by the Educational Testing Service (ETS). Arlington, VA, Nov 3-4, 2014.

“Reuse, Interoperability, and Generalization of ITS Components & Technologies.” Army Research Laboratories, GIFT Advisory Board Meeting, Pittsburgh, June 11-12, 2014.

“Engagement + progression through levels \neq out-of-game transfer of learning” (joint work with Yanjin Long). Presented during the 2014 Center for Advanced Technology in Schools (CATS) Conference, hosted by UCLA/CRESST: Warp Speed, Mr. Sulu: Integrating Games, Technology, and Assessment to Accelerate Learning in the 21st Century. Redondo Beach, CA, 4/29/2014.

“A Knowledge Component Approach to Understanding Self-regulated Learning.” Learning Sciences Institute, Arizona State University. Tempe, AZ, 4/8/2014.

“The Knowledge-Learning-Instruction framework: A very brief introduction.” Seventh Annual Inter-Science of Learning Center Student and Postdoc Conference. Pittsburgh, PA, 3/7/2014.

“Cognitive Tutors.” Webinar, Network of Academic Programs in the Learning Sciences (NAPLeS). International Society of the Learning Sciences, 2/27/2014.

“Supporting Metacognition in an Intelligent Tutoring System: Self-Assessment.” Center for Digital Education, Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland, 10/9/2013.

“Games for Collaborative Science Inquiry for Grades K-3.” LRDC 50th “New Directions in Research on Learning and Education: A Symposium Celebrating 50 Years of LRDC” at the University Club of the University of Pittsburgh, 5/16/2013.

“From research to practice: Self-explanation as a design pattern in intelligent tutoring systems.” Workshop on Technology-Enhanced Learning for Mathematics and Science:

Landmark Research and New Contributions (TELMAS), dedicated to the memory of Erica Melis (1949-2011), held during the Sixth European Conference on Technology-Enhanced Learning (EC-TEL 2011). Palermo, Italy, 9/21/2011.

“Toward a framework for the analysis and design of educational games.” Institute for Intelligent Systems, University of Memphis. Memphis, TN. January 31, 2011.

“Supporting metacognition in an intelligent tutoring system: self-explanation and help seeking.” Institut für Erziehungswissenschaft, Ruhr-Universität Bochum, Bochum, Germany. December 21, 2010.

“CTAT: Efficiently building real-world intelligent tutoring systems through programming by demonstration.” Keynote, special track on Intelligent Tutoring Systems, The 22nd International FLAIRS Conference (Florida Artificial Intelligence Research Society). Sanibel Island, FL, May 20, 2009.

“Progress in assessment and tutoring of life-long-learning skills: An intelligent tutor agent that helps students become better help seekers.” Adaptive Training Technology Workshop, March 3-5, 2009, organized by the U.S. Army Research Institute for the Behavioral and Social Sciences. Charleston, SC, March 4, 2009.

“Modeling and tutoring help seeking: Applying the Cognitive Tutor technology to meta-cognitive skills.” Learning Sciences Research Institute, University of Nottingham, Nottingham, UK. July 11, 2006.

INVITED PANELIST

Panel: What is Fundamental Research? What’s next for Fundamental Research?” NSF EHR Core Research (ECR) PI Convening. Alexandria, VA, September 25 & 26, 2017.

Panel: Learning Analytics in Higher Education and Assessment. Understanding the Role of Learning Analytics in Technology Enhanced Learning. The Office of the Provost, Center for Advancement of Teaching (CAT), New York University. October 27, 2016.

Panel: AIED Panel. EC-TEL 2016: Eleventh European Conference on Technology-Enhanced Learning. Lyon, France, September 14, 2016.

Panel: Lessons Learned for Designing Instructional Materials using Visual Verbal Mapping. Bringing Cognitive Science Research to the Classroom, National Center for Cognition and Mathematics Instruction, April 13, 2016.

Panel: Grand Challenges for Education and the place of AIED. 17th International Conference on Artificial Intelligence in Education, AIED 2015.

Panel: Education –Priorities for the Next Decade. The Seventh Annual Blouin Creative Leadership Summit (BCLS). 9/20/2012, New York City.

Panel: Intelligent Tutoring Systems. 12th Annual ADL Co-Laboratory iFest, 7/31/2012-8/2/2012.

Roundtable Discussion: Intelligent Tutoring Systems. 12th Annual ADL Co-Laboratory iFest, 7/31/2012-8/2/2012.

Panel: “Policy, Practices and Research on WMUTE/DIGITEL in Formal and Informal Learning Contexts.” 4th IEEE Conference on Digital Game and Intelligent Toy-Enhanced Learning, DIGITEL 2012.

Panel: Will AIED be in mainstream education 10 years down the road? 15th International Conference on Artificial Intelligence in Education, AIED 2011.

ADVISORY BOARDS

Member, Scientific Advisory Board (“Beirat”), Leibniz-Institut für Wissensmedien (Institute for Knowledge Media), Tübingen, Germany. Term to start Jan 1, 2018.

Member, Advisory Board: “INT: Collaborative Research: Detecting, Predicting and Remediating Student Affect and Grit Using Computer Vision” (funded by NSF Cyberlearning). PIs: Beverly Park Woolf, School of Information and Computer Science at University of Massachusetts, Amherst, MA. Ivon Arroyo, Worcester Polytechnic Institute, Worcester, MA. 2016-2020.

Member, Advisory Board: “Supporting Chemistry Learning with Adaptive Support for Connection Making between Graphical Representations in a Cognitive Tutoring System.” PI: Martina Rau, Department of Educational Psychology, School of Education, University of Wisconsin, Madison. 2016-2019.

Member, Advisory Board: “Learning Theory and Analytics as Guides and to Improve STEM learning” (funded by NSF REAL). PI: Matthew Bernacki, Department of Educational Psychology and Higher Education, University of Nevada at Las Vegas. 2014-2017.

Member, Advisory Board: “Java Tutor” (funded by NSF REESE). PI: James Lester, Department of Computer Science, North Carolina State University. 2010-2013.

Member, Advisory Board: “Improving the Quality of Worked Examples in Open, Online, Homework Help forums” (project funded by NSF CyberLearning). PI/Co-PI: Carla van de Sande, School of Mathematical & Statistical Sciences, Arizona State University. 2012-2015.

Member, ARL-IIS ITS Advisory Board (Army Research Laboratory / Institute for Intelligent Systems at the University of Memphis). 2012-2014. First meeting: University of Memphis, 9/9/2012-9/10/2012.

Member, advisory board for EU-STREP (EU Specific Targeted Research Projects) project “iTalk2Learn: Talk, Tutor, Explore, Learn: Intelligent Tutoring and Exploration for Robust Learning.” PI/co-PI: Lars Schmidt-Thieme (University of Hildesheim, Germany), Nikol Rummel (University of Bochum, Germany), et al. 2012-2015.

Member, advisory board: ImREAL: Immersive Reflective Experience-based Learning, funded by European Commission, ICT, Framework 7. PI Vania Dimitrova (University of Leeds, UK). <http://www.imreal-project.eu/index.php>

Participant, ONR Workshop on Intelligent Tutoring Systems and Games for STEM Instruction 11/1/2010, CRESST, UCLA.

Member, advisory board for NSF REESE-funded project: “Contextual Research-Empirical Research--Detecting, Tracking, and Modeling Cognitive, Affective, and Metacognitive Regulatory Processes to Optimize Learning with MetaTutor.” PI/co-PI: Roger Azevedo (McGill University), Ronald Landis (Illinois Institute of Technology). 2011.

PROFESSIONAL ACTIVITIES

Program Committee, 21st International Conference on Artificial Intelligence in Education, AIED 2020.

Program Committee, LAK-20 (10th International Learning Analytics and Knowledge Conference).

Program Committee, 20th International Conference on Artificial Intelligence in Education, AIED 2019.

Program Committee, LAK-19 (9th International Learning Analytics and Knowledge Conference).

Senior Program Committee Member, 19th International Conference on Artificial Intelligence in Education, AIED 2018.

Program Committee Member, APA Technology, Mind, and Society conference, 2018.

Program Committee Member, 13th European Conference for Technology-Enhanced Learning, EC-TEL 2018

Program Committee Member, 8th International Learning Analytics and Knowledge Conference, LAK 2018

Program Committee Member, L@S 2017: Fourth Annual Meeting of the ACM Conference on Learning at Scale

Senior Program Committee Member, 18th International Conference on Artificial Intelligence in Education, AIED 2017.

Senior Program Committee Member, 10th International Conference on Educational Data Mining, EDM 2017.

Program Co-Chair L@S 2016: Third Annual Meeting of the ACM Conference on Learning at Scale

Program Committee Member, 9th International Conference on Educational Data Mining, EDM 2016.

Senior Program Committee Member, 17th International Conference on Artificial Intelligence in Education, AIED 2015.

Senior Program Committee Member, 12th International Conference on Intelligent Tutoring Systems, ITS 2014.

Senior Program Committee Member, 16th International Conference on Artificial Intelligence in Education, AIED 2013.

NSF Review Panelist, 2012.

FWO Belgium, Ad-hoc reviewer, 2012.

Senior Program Committee Member, 11th International Conference on Intelligent Tutoring Systems, ITS 2012.

NSF Review Panelist, 2011.

Associate Technical Program Chair, INTERACT 2011, 13th IFIP TC13 Conference on Human-Computer Interaction.

Senior Program Committee Member, 15th International Conference on Artificial Intelligence in Education, AIED 2011.

Elected member, Executive Committee, International Artificial Intelligence in Education Society (term: 2010-2015).

Program Co-Chair, the 4th IEEE Conference on Digital Game and Intelligent Toy-Enhanced Learning, Digital 2012.

NSF Ad-Hoc Reviewer, 2010.

Program Co-Chair, 10th International Conference on Intelligent Tutoring Systems, ITS 2010.

Program Committee Member, 5th European Conference on Technology Enhanced Learning (EC-TEL 2010).

Program Committee Member, The 3rd IEEE Conference on Digital Game and Intelligent Toy-Enhanced Learning, Digital 2010.

Program Committee Member, 14th International Conference on Artificial Intelligence in Education, AIED 2009.

NSF Ad-Hoc Reviewer, 2009.

Co-Chair, ITS 2008: The 3rd Workshop on Meta-Cognition and Self-Regulated Learning in Educational Technologies (Roll and Aleven)

Co-Chair, ITS-2008 Workshop on Intelligent Tutoring Systems for Ill-Defined Domains.

Program Committee member, 9th International Conference on Intelligent Tutoring Systems, ITS 2008.

Co-Chair, AIED 2007 Workshop on AIED Applications for Ill-Defined Domains.

Co-Chair, AIED 2007 Workshop on Metacognition and Self-Regulated Learning in Intelligent Tutoring Systems.

Program Committee Member, 13th International Conference on Artificial Intelligence in Education, AIED 2007.

Program Committee Member, 11th International Conference on Artificial Intelligence and Law, ICAIL-2007.

Workshop Chair, 8th International Conference on Intelligent Tutoring Systems, ITS 2006.

Co-Chair, ITS-2006 Workshop on Intelligent Tutoring Systems for Ill-Defined Domains.

Program Committee member, 8th International Conference on Intelligent Tutoring Systems, ITS 2006.

Program Committee member, 8th European Conference on Case-Based Reasoning, ECCBR 2006.

Program Committee Member, the 19th International FLAIRS Conference (FLAIRS-2006).

Program Committee Member, 12th International Conference on Artificial Intelligence in Education, AIED 2005.

Program Committee Member, 6th International Conference on Case-Based Reasoning, ICCBR-2005.

Program Committee Member, 10th International Conference on Artificial Intelligence and Law, ICAIL-2005.

Ad-hoc Reviewer, NSF, 2004.

NSF Review Panelist, 2004.

Panels Chair, 7th International Conference on Intelligent Tutoring Systems, ITS 2004.

Program Committee member, 7th International Conference on Intelligent Tutoring Systems, ITS 2004.

Co-organizer, NSF/DFG-sponsored Germany-USA Workshop series on Technology-Supported Education, 2003/2004.

Program Committee Member, 5th International Conference on Case-Based Reasoning, ICCBR-2003.

Interactive Events Chair, 11th International Conference on Artificial Intelligence in Education, AI-ED 2003.

Co-Chair, AIED-2003 Workshop on Tutorial Dialogue Systems: With a View Towards the Classroom.

Program Committee Member, 9th International Conference on Artificial Intelligence and Law, ICAIL-2003.

Co-Chair, ITS-2002 Workshop on Empirical Methods for Tutorial Dialogue Systems.

Reviewer, the Netherlands Organization for Scientific Research (NWO), Nov. 2001.

Invited Participant, NSF/DFG-sponsored German-USA Early Career Research Exchange Program: Research on Learning Technologies and Technology-Supported Education.

Program Committee Member, 10th International Conference on Artificial Intelligence in Education, AI-ED 2001.

Program Committee Member, 8th International Conference on Artificial Intelligence and Law, ICAIL-2001.

Chair, AIED-2001 Workshop on Tutorial Dialogue Systems.

Member Organizing Committee, AIED-2001 Workshop on Help Provision and Help Seeking in Interactive Learning Environments.

Member Organizing Committee, AAAI 2000 Fall Symposium on Building Dialogue Systems for Tutorial Applications.

Member of the Organizing Committee, Workshop on Case-Based Reasoning in Intelligent Training Systems, held during the ITS 2000 conference.

Program Committee Member, 7th International Conference on Artificial Intelligence and Law, ICAIL-99, 1999.

TEACHING EXPERIENCE

Degree Program Creation

Led the creation of an undergraduate major in Human-Computer Interaction

Started Fall 2020, within the School of Computer Science, Carnegie Mellon University

Course Creation

Advanced Topics in Personalized Online Learning

A graduate/undergraduate course

First run: Spring 2019.

Design of Educational Games

A graduate/undergraduate course

Co-created with Eben Myers, Matt Easterday, and Amy Ogan

First run: Fall 2007

Learning and Motivation

A graduate/undergraduate course

Co-created with Ryan Baker

First run: Spring 2009

Tools for Online Learning

A graduate/undergraduate lab course

Co-created with Eliane Stampfer Wiese, John Stamper, and Yanjin Long

First run: Fall 2013

Teaching

Personalized Online Learning

A graduate/undergraduate course

Instructor: Fall 2013, 2014, 2015, 2018.

Advanced Topics in Personalized Online Learning

A graduate/undergraduate course

Instructor: Spring 2019, Spring 2020.

Cognitive Modeling and Intelligent Tutoring Systems

A graduate/undergraduate course

Instructor: Fall 2005, 2006, 2008, 2010, Spring 2012

Co-instructor (with Kenneth Koedinger): Fall 2000, Spring 2003, Fall 2004

Undergraduate Project in HCI

Instructor: Spring 2008, Spring 2009

Co-instructor (with Richard Scheines): Spring 2007

Co-instructor (with Noboru Matsuda): Spring 2011

Co-instructor (with Jenna Date): Spring 2013

Co-instructor (with John Zimmerman): Spring 2015

Co-instructor (with Karen Berntsen): Spring 2019

Co-instructor (with Carol Smith): Spring 2020

Masters in HCI Capstone Project Course

Co-instructor: Spring, Summer 2016; Spring, Summer 2018

Design of Educational Games

A graduate/undergraduate course

Lead instructor (co-taught with Eben Myers): Fall 2007, Fall 2009, Fall 2012, Spring 2014.

Learning and Motivation

A graduate/undergraduate course

Lead instructor (co-taught with Ryan Baker): Spring 2009

Tools for Online Learning

A graduate/undergraduate lab course

Lead instructor, co-taught with Eliane Stampfer Wiese and John Stamper (2013) and Yanjin Long (2014)

Fall 2013, Fall 2014

Programming Usable Interfaces

A graduate/undergraduate course

Co-instructor (with Noboru Matsuda): Fall 2011

Knowledge Representation

A graduate core course in the Intelligent Systems Program, University of Pittsburgh.

Creator and instructor: Spring 2000

1st-16th Annual PSLC LearnLab Summer School

A weeklong summer school on learning science and learning technologies, open to participants from around the world

Co-organizer and track leader (ITS track): Summer 2005-2020

1st-4th annual Summer School on Intelligent Tutoring Systems

A weeklong (free) summer school, open to participants from around the world

Co-organizer and co-Instructor: Summer 2001-2004

Self-Regulation in a Digital World: Empirical Research and Future Directions

Track leader: How can intelligent tutoring systems support the learning of self-regulated learning?

2nd International Summer School of the Leibniz Science Campus Tübingen, Germany
“Informational Environments” Black Forest, Germany, August 4 – 8, 2014

PUBLICITY

Kunkeler, T. (2020). Virtual teaching assistants help students learn. *Hello World*, 12 (March 26, 2020), 32 <https://helloworld.raspberrypi.org/issues/12>

- Aglio, J. (2018). 3 ways districts can use AR and AI. *eSchool News*, May 1st, 2018. <https://www.eschoolnews.com/2018/05/01/3-amazing-ways-our-district-is-using-ar-and-vr/>
- García Mathewson, T. (2018). These glasses give teachers superpowers. Future of Learning, *The Hechinger Report*, 10/4/2018. <https://hechingerreport.org/these-glasses-give-teachers-superpowers/>
- Mericle, J. (2018). With Lumilo, teachers can see classroom analytics floating above students' heads. *Pittsburgh Business Times* Oct 3, 2018. <https://www.bizjournals.com/pittsburgh/news/2018/10/03/with-lumilo-teachers-can-see-classroom-analytics.html>
- Smart glasses give teachers real-time view of pupil progress. *Special World*, July 13, 2018. <http://www.specialworld.net/2018/07/13/smart-glasses-give-teachers-real-time-view-of-pupil-progress/>
- Fun and Games. Carnegie Mellon University front page, June 2014. <http://www.cmu.edu/homepage/computing/2014/spring/fun-and-games.shtml>
- Wilson Fuoco, L. (2014). Pet Tales: Helping feral cats and those who care for them. *Pittsburgh Post-Gazette*, May 16, 2014. <http://www.post-gazette.com/life/pet-stories/2014/05/17/Helping-feral-cats-and-those-who-care-for-them/stories/201405170038#ixzz365YPV5bZ>
- Alevén, V. (2012). Students in K-3 learn physics with new educational game. Wow! Ed, Newsletter from the Center for Educational Improvement. October 2012. <http://archive.constantcontact.com/fs193/1103192011285/archive/1111084544668.html#LETTER.BLOCK14>
- Sparks, S. D. (2011). Computer tutors prod students to ask for help. *Education Week*, April 14, 2011. <http://www.edweek.org/ew/articles/2011/04/14/28help.h30.html>

PUBLICATIONS

Journal Articles

- Aleahmad, T., Alevén, V., & Kraut, R. (2009). Creating a corpus of targeted learning resources with a web-based open authoring tool, *IEEE Transactions on Learning Technologies*, 2(1), 3-9, January-March, 2009
- Alevén, V. (2006). An intelligent learning environment for case-based argumentation. *Technology, Instruction, Cognition, and Learning* 4(2), 191-241.
- Alevén, V. (2003). Using background knowledge in case-based legal reasoning: a computational model and an intelligent learning environment. *Artificial Intelligence* 150, 183-237.
- Alevén, V., Beal, C. R., & Graesser, A. C. (2013). Introduction to the special issue on advanced learning technologies. *Journal of Educational Psychology*, 105(4), 929-931.
- Alevén, V., & Kay, J. (2011) Preface special issue: Best of ITS 2010. *International Journal of Artificial Intelligence in Education*, 21(1-2), 1-4.
- Alevén, V., & Koedinger, K. R. (2002). An effective meta-cognitive strategy: learning by doing and explaining with a computer-based Cognitive Tutor. *Cognitive Science*, 26(2), 147-179.

- Aleven, V., McLaren, B., Roll, I., & Koedinger, K. (2006). Toward meta-cognitive tutoring: A model of help seeking with a Cognitive Tutor. *International Journal of Artificial Intelligence in Education*, 16, 101-128.
- Aleven, V., McLaren, B. M., & Sewall, J. (2009). Scaling up programming by demonstration for intelligent tutoring systems development: An open-access website for middle-school mathematics learning. *IEEE Transactions on Learning Technologies*, 2(2), 64-78. <http://www.computer.org/portal/web/csdl/doi/10.1109/TLT.2009.22>
- Aleven, V., McLaren, B. M., Sewall, J., & Koedinger, K. R. (2009). A new paradigm for intelligent tutoring systems: Example-tracing tutors. *International Journal of Artificial Intelligence in Education*, 19(2), 105-154.
- Aleven, V., McLaren, B. M., Sewall, J., van Velsen, M., Popescu, O., Demi, S., Ringenberg, M., & Koedinger, K. R. (2016). Example-tracing tutors: Intelligent tutor development for non-programmers. *International Journal of Artificial Intelligence in Education*, 26(1), 224-269. doi:10.1007/s40593-015-0088-2.
- Aleven, V., McLaren, B. M., Roll, I., & Koedinger, K. R. (2016). Help helps, but only so much: Research on help seeking with intelligent tutoring systems. *International Journal of Artificial Intelligence in Education*, 26(1), 205-223.
- Aleven, V., Roll, I., McLaren, B. M., & Koedinger, K. R. (2010). Automated, unobtrusive, action-by-action assessment of self-regulation during learning with an intelligent tutoring system. *Educational Psychologist*, 45(4), 224-233.
- Aleven, V., Stahl, E., Schworm, S., Fischer, F., & Wallace, R.M. (2003). Help seeking and help design in interactive learning environments. *Review of Educational Research*, 73(3), 277-320.
- Bernacki, M. L., Aleven, V., & Nokes-Malach, T. J. (2014). Stability and change in adolescents' task-specific achievement goals and implications for learning mathematics with intelligent tutors. *Computers in Human Behavior*, 37, 73-80. doi: 10.1016/j.chb.2014.04.009
- Bernacki, M. L., Nokes-Malach, T. J., & Aleven, V. (2015). An examination of self-efficacy during a learning episode: Initial levels, changes and associations with learning. *Metacognition & Learning*, 10(1), 99-117. DOI: 10.1007/s11409-014-9127-x
- Butcher, K., & Aleven, V. (2013). Using student interactions to foster rule-diagram mapping during problem solving in an intelligent tutoring system. *Journal of Educational Psychology*, 105(4), 988-1009.
- Chase, C. C., Connolly, H., Lamnina, M., & Aleven, V. (2019). Problematizing helps! A classroom study of computer-based guidance for invention activities. *International Journal of Artificial Intelligence in Education*, 29(2), 283-316.
- Doroudi, S., Aleven, V., & Brunskill, E. (2019). Where's the Reward? A review of reinforcement learning for instructional sequencing. *International Journal of Artificial Intelligence in Education*, 29(4), 568-620.
- Easterday, M. W., Aleven, V., & Scheines, R. (2009). Causal diagrams as a representational system for ill-defined policy problems. *International Journal of Artificial Intelligence in Education*, 19(4), 425-445.
- Easterday, M. W., Aleven, V., Scheines, R., & Carver, S. M. (2017). Using tutors to improve educational games: A cognitive game for policy argument. *Journal of the Learning Sciences*, 26(2), 226-276. doi:10.1080/10508406.2016.1269287

- Holstein, K., McLaren, B. M., & Aleven, V. (2019). Co-designing a real-time classroom orchestration tool to support teacher–AI complementarity. *Journal of Learning Analytics*, 6(2), 27–52. doi:10.18608/jla.2019.62.3
- Koedinger, K. R., & Aleven V. (2007). Exploring the assistance dilemma in experiments with Cognitive Tutors. *Educational Psychology Review*, 19(3), 239-264.
- Koedinger, K. R., & Aleven, V. (2016). An interview reflection on “Intelligent tutoring goes to school in the big city.” *International Journal of Artificial Intelligence in Education*, 26(1), 13-24.
- Lynch, C., Ashley, K., Pinkwart, N., & Aleven, V. (2009). Concepts, structures, and goals: Redefining ill-definedness. *International Journal of Artificial Intelligence in Education*, 19(3), 253–266.
- Long, Y., & Aleven, V. (2017). Enhancing learning outcomes through self-regulated learning support with an open learner model. *User Modeling and User-Adapted Interaction*, 27(1), 55-88. doi:10.1007/s11257-016-9186-6
- Long, Y., & Aleven, V. (2017). Educational game and intelligent tutoring system: A classroom study and comparative design analysis. *ACM Transactions on Computer-Human Interaction (TOCHI)*, 24(3). doi:10.1145/3057889
- MacLellan, C. J., Harpstead, E., Aleven, V., & Koedinger, K. R. (2016). TRESTLE: A model of concept formation in structured domains. *Advances in Cognitive Systems*, 4, 131-150.
- Magner, U. I. E., Schwonke, R., Aleven, V., Popescu, O., & Renkl, A. (2014). Triggering situational interest by decorative illustrations both fosters and hinders learning in computer-based learning environments. *Learning and Instruction*, 29, 141-152. Doi: learninstruc.2012.07.002
- Ogan, A., Aleven, V., & Jones, C. (2009). Advancing development of intercultural competence through supporting predictions in narrative video. *International Journal of Artificial Intelligence in Education*, 19(3), 267-288.
- Olsen, J., Aleven, V., & Rummel, N. (2017). Statistically modeling individual students’ learning over successive collaborative practice opportunities. *Journal of Educational Measurement*, 54(1), 123-138. doi:10.1111/jedm.12137
- Olsen, J. K., Rummel, N., & Aleven, V. (2019). It is not either or: An initial investigation into combining collaborative and individual learning using an ITS. *International Journal of Computer-Supported Collaborative Learning*, 14(3), 353-381.
- Pinkwart, N., Aleven, V., Ashley, K., & Lynch, C. (2009). Evaluating the LARGO intelligent tutoring system. *International Journal of Artificial Intelligence in Education*, 19(4), 401-424.
- Rau, M. A., Aleven, V., & Rummel, N. (2013). Interleaved practice in multi-dimensional learning tasks: which dimension should we interleave? *Learning and Instruction*. 23, 98-114. doi: learninstruc.2012.07.003
- Rau, M. A., Aleven, V., & Rummel, N. (2015). Successful learning with multiple graphical representations and self-explanation prompts. *Journal of Educational Psychology*, 107(1), 30-46. doi:10.1037/a0037211
- Rau, M. A., Aleven, V., & Rummel, N. (2016). Supporting students in making sense of connections and in becoming perceptually fluent in making connections among multiple graphical representations. *Journal of Educational Psychology*. doi:10.1037/edu0000145

- Rau, M. A., Aleven, V., & Rummel, N. (2017). Making connections among multiple graphical representations of fractions: Sense-making competencies enhance perceptual fluency, but not vice versa. *Instructional Science*, 1-27. doi:10.1007/s11251-017-9403-7
- Rau, M. A., Aleven, V., Rummel, N., & Pardos, Z. (2014). How should intelligent tutoring systems sequence multiple graphical representations of fractions? A multi-methods study. *International Journal of Artificial Intelligence in Education*, 24(1), 125-161. doi: 10.1007/s40593-013-0011-7.
- Roll, I., Aleven, V., McLaren, B. M., & Koedinger, K. R. (2011). Improving students' help-seeking skills using metacognitive feedback in an intelligent tutoring system. *Learning and Instruction*, 21(2), 267-280.
- Roll, I., Aleven, V., McLaren, B., & Koedinger, K. (2007). Designing for metacognition – applying Cognitive Tutor principles to metacognitive tutoring. *Metacognition and Learning*, 2(2-3), 125-140.
- Roll, I., Baker, R. S. J. d., Aleven, V., & Koedinger, K. R. (2014) On the benefits of seeking (and avoiding) help in online problem- solving environments. *Journal of the Learning Sciences*, 23(4), 537-560, DOI: 10.1080/10508406.2014.883977
- Rosé, C. P., Kumar, R., Aleven, V., Robinson, A., & Wu, C. (2006). CycleTalk: Data driven design of support for simulation based learning. *International Journal of Artificial Intelligence in Education*. 16, 195-223. doi:10.1.1.179.2241
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Refereed Conference and Workshop Publications – 2020

- Echeverria, V., Holstein, K., Huang, J., Sewall, J., Rummel, N., & Alevén, V. (in press). Exploring human–AI control over dynamic transitions between individual and collaborative learning. To appear in the Proceedings of the 15th European Conference on Technology-Enhanced Learning.
- Fancsali, S. E., Holstein, K., Sandbothe, M., Ritter, S., McLaren, B. M., & Alevén, V. (2020). Towards practical detection of unproductive struggle. In I. Bittencourt, M. Cukurova, K. Muldner, R. Luckin, & E. Millán (Eds.), *Proceedings, 21th International Conference on Artificial Intelligence in Education, AIED 2020* (pp. 92-97). Cham: Springer. https://doi.org/10.1007/978-3-030-52240-7_17
- Holstein, K., Alevén, V., & Rummel, N. (2020). A conceptual framework for human–AI hybrid adaptivity in education. In I. Bittencourt, M. Cukurova, K. Muldner, R. Luckin, &

E. Millán (Eds.), *Proceedings, 21th International Conference on Artificial Intelligence in Education, AIED 2020* (pp. 240-254). Cham: Springer. https://doi.org/10.1007/978-3-030-52237-7_20

Huang Y., Aleven V., McLaughlin E., & Koedinger K. (2020). A general multi-method approach to design-loop adaptivity in intelligent tutoring systems. In I. Bittencourt, M. Cukurova, K. Muldner, R. Luckin, & E. Millán (Eds.), *Proceedings, 21th International Conference on Artificial Intelligence in Education, AIED 2020* (pp. 124-129). Cham: Springer. https://doi.org/10.1007/978-3-030-52240-7_23

Nagashima, T., Bartel, A.N., Silla, E., Vest, N., Alibali, M.W., & Aleven, V. (2020). Enhancing conceptual knowledge in early algebra through scaffolding diagrammatic self-explanation Proceedings of International Conference of the Learning Sciences, ICLS 2020 (Part 1, pp. 35-42). International Society of the Learning Sciences.

Nagashima, T., Yang, K., Bartel, A.N., Silla, E., Vest, N., Alibali, M.W., & Aleven, V. (2020). Pedagogical Affordance Analysis: Leveraging teachers' pedagogical knowledge for eliciting pedagogical affordances and constraints of instructional tools. Proceedings of International Conference of the Learning Sciences, ICLS 2020 (pp. 1561-64). International Society of the Learning Sciences.

Refereed Conference and Workshop Publications – 2019

Aleven, V., Sewall, J., Andres, J. M., Popescu, O., Sottolare, S., Long, R., & Baker, R., (2019). Towards deeper integration of intelligent tutoring systems: One-way student model sharing between GIFT and CTAT. In *Proceedings GIFTSym7*.

Holstein, K., McLaren, B. M., & Aleven, V. (2019). Designing for complementarity: Teacher and student needs for orchestration support in AI-enhanced classrooms. In: Isotani S., Millán E., Ogan A., Hastings P., McLaren B., Luckin R. (Eds.), *Proceedings, 20th International Conference on Artificial Intelligence in Education, AIED 2019* (pp. 157-171). Cham: Springer. doi: 10.1007/978-3-030-23204-7_14 **Nominee (1 of 5) for Conference Best Paper Award.**

Zhang, C., Huang, Y., Wang, J., Fang, W., Lu, D., Stamper, J., Fancsali, S., Holstein, K., & Aleven, V. (2019). Early detection of wheel spinning: Comparison across tutors, models, features, and operationalizations. In *Proceedings of the Twelfth International Conference on Educational Data Mining (EDM'19)*. Worcester, MA: International Educational Data Mining Society.
<http://www.educationaldatamining.org/EDM2016/proceedings.html>

Refereed Conference and Workshop Publications – 2018

Aleven, V., Sewall, J., Andres, J. M., Sottolare, R., Long, R., & Baker, R. (2018). Towards adapting to learners at scale: Integrating MOOC and intelligent tutoring frameworks. In R. Luckin, S. Klemmer, & K. Koedinger (Eds.), *Proceedings of the Fifth Annual ACM Conference on Learning at Scale, L@S 2018* (Article No. 14). New York: ACM. Work-in-Progress paper. doi: 10.1145/3231644.3231671

Bodily, R., Kay, J., Aleven, V., Jivet, I., Davis, D., Xhakaj, F., & Verbert, K. (2018). Open learner models and learning analytics dashboards: A systematic review. In A. Pardo, K. Bartimote-Aufflick, G. Lynch, S. Buckingham Shum, R. Ferguson, A. Merceron, & X. Ochoa (Eds.), *LAK '18: Proceedings of the Eighth International Learning Analytics & Knowledge Conference* (pp. 41-50). New York: ACM. doi:10.1145/3170358.3170409

Chase, C., Connolly, H., Lamnina, M., & Alevén, V. (2018). The design and evaluation of optimal computerized guidance for invention activities: The Invention Coach. In J. Kay & R. Luckin (Eds.), *Proceedings of the 13th International Conference of the Learning Sciences (ICLS) 2018* (Vol. 1, pp. 304-311) London, UK: International Society of the Learning Sciences. <https://repository.isls.org//handle/1/708>

Holstein, K., Hong, G., Tegene, M., McLaren, B. M., & Alevén, V. (2018). The classroom as a dashboard: Co-designing wearable cognitive augmentation for K-12 Teachers. In A. Pardo, K. Bartimote-Aufflick, G. Lynch, S. Buckingham Shum, R. Ferguson, A. Merceron, & X. Ochoa (Eds.), *LAK '18: Proceedings of the Eighth International Learning Analytics & Knowledge Conference* (pp. 79-88). New York: ACM. doi: 10.1145/3170358.3170377

Holstein, K., McLaren, B. M., & Alevén, V. (2018a). Informing the design of teacher awareness tools through causal alignment analysis. In J. Kay, & R. Luckin (Eds.), *Proceedings of the 13th International Conference of the Learning Sciences, ICLS 2018* (Vol. 1, pp. 104-111). London, UK: International Society of the Learning Sciences. **Conference Best Student Paper Award.**

Holstein, K., McLaren, B. M., & Alevén, V. (2018b). Student learning benefits of a mixed-reality teacher awareness tool in AI-enhanced classrooms. In C. P. Rosé, R. Martínez-Maldonado, H. U. Hoppe, R. Luckin, M. Mavrikis, K. Porayska-Pomsta, B. McLaren, & B. du Boulay (Eds.), *Proceedings, 19th International Conference on Artificial Intelligence in Education, AIED 2018* (Part 1, pp. 154-168). Cham, Switzerland: Springer. doi: 10.1007/978-3-319-93843-1_12 **Conference Best Paper Award (1 of 2).**

Holstein, K., Yu, Z., Sewall, J., Popescu, O., McLaren, B. M., & Alevén, V. (2018). Opening up an Intelligent Tutoring System development environment for extensible student modeling. In C. P. Rosé, R. Martínez-Maldonado, H. U. Hoppe, R. Luckin, M. Mavrikis, K. Porayska-Pomsta, B. McLaren, & B. du Boulay (Eds.), *Proceedings, 19th International Conference on Artificial Intelligence in Education, AIED 2018* (Part 1, pp. 169-183). Cham, Switzerland: Springer. doi: 10.1007/978-3-319-93843-1_13

Long, Y., Holstein, K., & Alevén, V. (2018). What exactly do students learn when they practice equation solving? Refining knowledge components with the Additive Factors Model. In A. Pardo, K. Bartimote-Aufflick, G. Lynch, S. Buckingham Shum, R. Ferguson, A. Merceron, & X. Ochoa (Eds.), *LAK '18: Proceedings of the Eighth International Learning Analytics & Knowledge Conference* (pp. 399-408). New York: ACM. doi: 10.1145/3170358.3170411

Olsen, J. K., Rummel, N., & Alevén, V. (2018). Co-designing orchestration support for social plane transitions with teachers: balancing automation and teacher autonomy. In J. Kay, & R. Luckin (Eds.), *Proceedings of the 13th International Conference of the Learning Sciences, ICLS 2018* (Vol. 3, pp. 1541-1542). London, UK: International Society of the Learning Sciences. Poster

Olsen, J. K., Sharma, K., Alevén, V., & Rummel, N. (2018). Combining gaze, dialogue, and action from a collaborative intelligent tutoring system to inform student learning processes. In J. Kay, & R. Luckin (Eds.), *Proceedings of the 13th International Conference of the Learning Sciences, ICLS 2018* (Vol. 2, pp. 689-696). London, UK: International Society of the Learning Sciences.

Sharma, K., Olsen, J., Alevén, V., & Rummel, N. (2018). Exploring causality within collaborative problem solving using eye-tracking. In V. Pammer-Schindler, M. Pérez-Sanagustín, H. Drachler, R. Elferink, & M. Scheffel (Eds.), *Proceedings of the 13th European Conference on Technology-Enhanced Learning, EC-TEL 2018* (pp. 412-426).

Lecture Notes in Computer Science, Vol. 11082. Cham: Springer. doi: 10.1007/978-3-319-98572-5_32 **Conference Best Paper Award.**

Khakaj, F., & Alevén, V. (2018). Improving introductory computer programming by supporting conceptual learning with an ITS. In C. Penstein Rosé, R. Martínez-Maldonado, H. U. Hoppe, R. Luckin, M. Mavrikis, K. Porayska-Pomsta, B. McLaren, & B. du Boulay (Eds.), *Proceedings of the 19th International Conference on Artificial Intelligence in Education, AIED 2018* (pp. 535-538). Cham, Switzerland: Springer. doi: 10.1007/978-3-319-93846-2_101. Young Researcher Track paper.

Refereed Conference and Workshop Publications – 2017

Alevén, V., Connolly, H., Popescu, O., Marks, J., Lamnina, M., & Chase, C. (2017). An adaptive coach for Invention activities. In E. André, R. Baker, X. Hu, Ma. M. T. Rodrigo, & B. du Boulay (Eds.): *Proceedings of the 18th International Conference on Artificial Intelligence in Education, AIED 2017* (pp. 3–14). Cham, Switzerland: Springer International Publishing. doi: 10.1007/978-3-319-61425-0_1

Alevén, V., Baker, B., Long, R., Sewall, J., Andres, J. M., Wang, Y., Popescu, O., & Blomberg, N. (2017). Integrating MOOCs and intelligent tutoring systems: edX, GIFT, and CTAT. In R. Sottolare (Ed.), *Proceedings of the 5th Annual Generalized Intelligent Framework for Tutoring (GIFT) Users Symposium (GIFTSym5)* (p. 11-21). Orlando, FL: US Army Research Laboratory.

Doroudi, S., Alevén, V., & Brunskill, E. (2017). Robust evaluation matrix: towards a more principled offline exploration of instructional policies. In C. Urrea, J. Reich, & C. Thille (Eds.), *Proceedings of the Fourth Annual Meeting of the ACM Conference on Learning at Scale, L@S 2017* (pp. 3-12). New York: ACM. doi:10.1145/3051457.3051463

Hartmann, C., Olsen, J. K., Brand, C., Alevén, V., & Rummel, N. (2017). Examining positive and negative interdependence in an elementary school CSCL setting. In B. K. Smith, M. Borge, E. Mercier, & K. Y. Lim (Eds.), *Proceedings of the 12th International Conference on Computer Supported Collaborative Learning, CSCL 2017* (pp. 633-636). Philadelphia, PA: International Society of the Learning Sciences. doi: 10.22318/cscl2017.96. Short paper.

Holstein, K., McLaren, B. M., & Alevén, V. (2017). Intelligent tutors as teachers' aides: Exploring teacher needs for real-time analytics in blended classrooms. In A. Wise et al. (Eds.), *LAK '17: Proceedings of the Seventh International Learning Analytics & Knowledge Conference* (pp. 257-266). New York: ACM. doi:10.1145/3027385.3027451

Holstein, K., McLaren, B. M., & Alevén, V. (2017). SPACLE: Investigating learning across virtual and physical spaces using spatial replays. In A. Wise et al. (Eds.), *LAK '17: Proceedings of the Seventh International Learning Analytics & Knowledge Conference* (pp. 358-367). New York: ACM. doi:10.1145/3027385.3027450

Olsen, J. K., Rummel, N., & Alevén, V. (2017). Learning alone or together? A combination can be best! In B. K. Smith, M. Borge, E. Mercier, & K. Y. Lim (Eds.), *Proceedings of the 12th International Conference on Computer Supported Collaborative Learning, CSCL 2017* (pp. 96-102). Philadelphia, PA: International Society of the Learning Sciences. doi: 10.22318/cscl2017.16

Khakaj, F., Alevén, V., & McLaren, B. M. (2017). Effects of a dashboard for an intelligent tutoring system on teacher knowledge, lesson plans and class sessions. In E. André, R. Baker, X. Hu, Ma. M. T. Rodrigo, & B. du Boulay (Eds.), *Proceedings of the 18th*

International Conference on Artificial Intelligence in Education, AIED 2017 (pp. 582-585). Cham, Switzerland: Springer International Publishing. doi: 10.1007/978-3-319-61425-0_69. Poster.

Xhakaj, F., Aleven, V., & McLaren, B. M. (2017). Effects of a dashboard for an intelligent tutoring system on teacher knowledge, lesson planning, lessons, and student learning. In É. Lavoué, H. Drachler, K. Verbert, J. Broisin, & M. Pérez-Sanagustín (Eds.), *Proceedings of the 12th European Conference on Technology-Enhanced Learning, EC-TEL 2017* (pp 315-329). Switzerland: Springer International Publishing. doi: 10.1007/978-3-319-66610-5_23

Refereed Conference and Workshop Publications – 2016

Aleven, V., Baker, R., Wang, Y., Sewall, J., & Popescu, O. (2016). Bringing non-programmer authoring of intelligent tutors to MOOCs. In J. Haywood, V. Aleven, J. Kay, & I. Roll (Eds.), *L@S '16: Work-in-Progress Papers of the Third (2016) ACM Conference on Learning @ Scale* (pp. 313-316). New York: ACM. doi:10.1145/2876034.289344

Aleven, V., & Sewall, J. (2016). The frequency of tutor behaviors: A case study. In A. Micarelli, J. Stamper, & K. Panourgia (Eds.), *Proceedings of the 13th International Conference on Intelligent Tutoring Systems, ITS 2016* (pp. 396-401). Springer International Publishing. doi: 10.1007/978-3-319-39583-8_47. Short Paper.

Aleven, V., Sewall, J., Popescu, O., van Velsen, M., Ringenberg, M., & Demi, S. (2016). Embedding intelligent tutoring systems in MOOCs and e-learning platforms. In A. Micarelli, J. Stamper, & K. Panourgia (Eds.), *Proceedings of the 13th International Conference on Intelligent Tutoring Systems, ITS 2016* (pp. 409-415). Springer International Publishing. doi:10.1007/978-3-319-39583-8_49. Short Paper.

Aleven, V., Xhakaj, F., Holstein, K., & McLaren, B. M. (2016). Developing a teacher dashboard for use with intelligent tutoring systems. In the *Proceedings of 4th International Workshop on Teaching Analytics, held during the 11th European Conference on Technology-Enhanced Learning, EC-TEL 2016*. Workshop Paper.

Chase, C., Harpstead, E., & Aleven, V. (2016). Inciting out-of-game transfer: Adapting contrast-based instruction for educational games. To appear in the *Proceedings of the Games+Learning+Society Conference*.

Doroudi, S., Holstein, K., Aleven, V., & Brunskill, E. (2016). Sequence matters, but how exactly? A methodology for evaluating activity sequences from data. In T. Barnes, M. Chi & M. Feng (Eds.) *Proceedings of the 9th International Conference on Educational Data Mining* (pp. 70-77). Worcester, MA: International Educational Data Mining Society. <http://www.educationaldatamining.org/EDM2016/proceedings.html>

Holstein, K., Xhakaj, F., Aleven, V., & McLaren, B. M. (2016). Luna: A dashboard for teachers using intelligent tutoring systems. In the *Proceedings of 4th International Workshop on Teaching Analytics, to be held during the 11th European Conference on Technology-Enhanced Learning, EC-TEL 2016*. Demo Abstract.

Long, Y., & Aleven, V. (2016). Mastery-Oriented shared student/system control over problem selection in a linear equation tutor. In A. Micarelli, J. Stamper, & K. Panourgia (Eds.), *Proceedings of the 13th International Conference on Intelligent Tutoring Systems, ITS 2016* (pp. 90-100). Springer International Publishing. doi:10.1007/978-3-319-39583-8_9

Olsen, J. K., Aleven, V., & Rummel, N. (2016). Enhancing student modeling for collaborative intelligent tutoring systems. In A. Micarelli, J. Stamper, & K. Panourgia (Eds.), *Proceedings of the 13th International Conference on Intelligent Tutoring Systems, ITS 2016* (pp. 485-487). Springer International Publishing. Poster.

Olsen, J. K., Hartmann, C., Rummel, N., & Aleven, V. (2016). Comparing two approaches to analyzing collaborative process data from learning with an ITS. 5th Workshop on Intelligent Support for Learning in Groups (ISLG 2016), held during the 13th International Conference on Intelligent Tutoring Systems, ITS 2016.

Olsen, J. K., Rummel, N., & Aleven, V. (2016). Investigating effects of embedding collaboration in an intelligent tutoring system for elementary school students. In C. K. Looi, J. Polman, U. Cress, & P. Reimann (Eds.), *Proceedings of the 12th International Conference of the Learning Sciences, ICLS 2016* (Vol. I, pp. 338-345). Singapore: International Society of the Learning Sciences.

Khakaj, F., Aleven, V., & McLaren, B. M. (2016). How teachers use data to help students learn: Contextual inquiry for the design of a dashboard. In K. Verbert, M. Sharples, & T. Klobučar (Eds.), *Proceedings of the 11th European Conference on Technology-Enhanced Learning, EC-TEL 2016* (pp. 340-354). Switzerland: Springer International Publishing. doi:10.1007/978-3-319-45153-4_26

Refereed Conference and Workshop Publications – 2015

Aleven, V. (2015). A is for Adaptivity, but what is Adaptivity? Re-defining the field of AIED. In K. Porayska-Pomsta, G. McCalla, & B. du Boulay (Eds.), *Proceedings of the Workshops at the 17th International Conference on Artificial Intelligence in Education AIED 2015* (Vol. 4, Workshop on Les Contes du Mariage: Should AI stay married to Ed? A workshop examining the current and future identity of the AIED field).

Aleven, V., Sewall, J., Popescu, O., Xhakaj, F., Chand, D., Baker, R. S., . . . Gasevic, D. (2015). The beginning of a beautiful friendship? Intelligent tutoring systems and MOOCs. In C. Conati, N. Heffernan, A. Mitrovic, & M. F. Verdejo (Eds.), *Proceedings of the 17th International Conference on Artificial Intelligence in Education, AIED 2015* (pp. 525-528). New York: Springer. doi:10.1007/978-3-319-19773-9_53. Poster.

Chase, C., Marks, J., Bennett, D., & Aleven, V. (2015). The design of an exploratory learning environment to support Invention. Poster presented during the Workshop on Intelligent Support in Exploratory and Open-Ended Learning Environments, held as part of the 17th International Conference on Artificial Intelligence in Education, AIED 2015. http://ceur-ws.org/Vol-1432/iseole_pap1.pdf

Chase, C., Marks, J., Bennett, D., Bradley, M., & Aleven, V. (2015). Towards the development of the Invention Coach: A naturalistic study of teacher guidance for an exploratory learning task. In C. Conati, N. Heffernan, A. Mitrovic, & M. F. Verdejo (Eds.), *Proceedings of the 17th International Conference on Artificial Intelligence in Education, AIED 2015* (pp. 558-561). New York: Springer. doi:10.1007/978-3-319-19773-9_6. Poster.

Doroudi, S., Holstein, K., Aleven, V., & Brunskill, E. (2015). Towards understanding how to leverage sense-making, induction/refinement and fluency to improve robust learning. In O. C. Santos et al. (Eds.) *Proceedings of the 8th International Conference on Educational Data Mining, EDM 2015* (pp. 376-379). Worcester, MA: International Educational Data Mining Society. Short Paper.

Harpstead, E., MacLellan, C. J., & Alevan, V. (2015). Discovering knowledge models in an open-ended educational game using concept formation. Poster presented during the Workshop on Intelligent Support for Learning in Groups, held as part of the 17th International Conference on Artificial Intelligence in Education (AIED 2015). Available from: http://ceur-ws.org/Vol-1432/iseole_pap2.pdf

Harpstead, E., & Alevan, V. (2015). Using empirical learning curve analysis to inform design in an educational game. In A. L. Cox, P. Cairns, R. L. Mandryk, & D. Johnson (Eds.), *Proceedings of the ACM SIGCHI Annual Symposium on Computer-Human Interaction in Play, CHIPLAY '15* (pp. 197-207). New York: ACM. **Best Paper Honourable Mention**

Long, Y., Aman, Z., & Alevan, V. (2015). Motivational design in an intelligent tutoring system that helps students make good task selection decisions. In C. Conati, N. Heffernan, A. Mitrovic, & M. F. Verdejo (Eds.), *Proceedings of the 17th International Conference on Artificial Intelligence in Education, AIED 2015* (pp. 226-236). New York: Springer International Publishing. doi:10.1007/978-3-319-197

MacLellan, C. J., Harpstead, E., Alevan, V., & Koedinger, K. R. (2015). TRESTLE: Incremental learning in structured domains using partial matching and categorization. In A. Goel & M. Riedl (Eds.), *Proceedings of the Third Annual Conference on Advances in Cognitive Systems, ACS-2015*. Cognitive Systems Foundation.

Olsen, J. K., Alevan, V., & Rummel, N. (2015). Predicting student performance in a collaborative learning environment. In O. C. Santos et al. (Eds.), *Proceedings of the 8th International Conference on Educational Data Mining, EDM 2015* (pp. 211-217). Worcester, MA: Educational Data Mining Society.

Olsen, J. K., Alevan, V., & Rummel, N. (2015). Adapting collaboration dialogue in response to intelligent tutoring system feedback. In C. Conati, N. Heffernan, A. Mitrovic, & M. F. Verdejo (Eds.), *Proceedings of the 17th International Conference on Artificial Intelligence in Education, AIED 2015* (pp. 748-751). New York: Springer International Publishing. doi:10.1007/978-3-319-19773-9_107. Poster.

Olsen, J. K., Alevan, V., & Rummel, N. (2015). Toward combining individual and collaborative learning within an intelligent tutoring system. In C. Conati, N. Heffernan, A. Mitrovic, & M. F. Verdejo (Eds.), *Proceedings of the 17th International Conference on Artificial Intelligence in Education, AIED 2015* (pp. 848-851). New York: Springer International Publishing. doi:10.1007/978-3-319-19773-9_130. Doctoral Consortium Paper.

Olsen, J. K., Alevan, V., & Rummel, N. (2015). Finding productive talk around errors in intelligent tutoring systems. In O. Lindwall, P. Häkkinen, T. Koschman, P. Tchounikine, & S. Ludvigsen (Eds.) *Proceedings 11th International Conference on Computer Supported Collaborative Learning, CSCCL 2015* (Vol. 1, pp. 821-822). Gothenburg, Sweden: The International Society of the Learning Sciences. Poster.

Olsen, J. K., Ringenberg, M., Alevan, V., & Rummel, N. (2015). Dual eye tracking as a tool to assess collaboration. Poster presented during the Workshop on Intelligent Support for Learning in Groups, held as part of the 17th International Conference on Artificial Intelligence in Education (AIED 2015). Available from: http://ceur-ws.org/Vol-1432/islg_pap5.pdf

Refereed Conference and Workshop Publications – 2014

- Belenky, D.M., Ringenber, M., Olsen, J., Aleven, V., & Rummel, N. (2014). Using dual eye-tracking to evaluate students' collaboration with an Intelligent Tutoring System for elementary-level fractions. In P. Bello, M. Guarini, M. McShane, & B. Scassellati (Eds.), *Proceedings of the 36th Annual Conference of the Cognitive Science Society* (pp. 176-181). Austin, TX: Cognitive Science Society.
- Harpstead, E., MacLellan, C. J., Aleven, V., & Myers, B. A. (2014). Using extracted features to inform alignment-driven design ideas in an educational game. In M. Jones, P. Palanque, A. Schmidt, & T. Grossman (Eds.), *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI 2014)* (pp. 3329-3338). New York: ACM Press. doi: 10.1145/2556288.2557393
- Kim, S., Aleven, V., & Dey, A. K. (2014). Understanding expert-novice differences during geometry problem-solving tasks with sensors. In M. Jones, P. Palanque, A. Schmidt, & T. Grossman (Eds.), *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI 2014)* (pp. 1867-1872). New York: ACM Press. Work-in-Progress. doi: 10.1145/2559206.2581248
- Long, Y., & Aleven, V. (2014). Gamification of joint student/system control over problem selection in a linear equation tutor. In S. Trausan-Matu, K. E. Boyer, M. Crosby, & K. Panourgia (Eds.), *Proceedings of the 12th International Conference on Intelligent Tutoring Systems, ITS 2014* (pp. 378-387). New York: Springer. doi:10.1007/978-3-319-07221-0_47.
- Olsen, J., Belenky, D., Aleven, V., & Rummel, N. (2014). Using an intelligent tutoring system to support collaborative as well as individual learning. In S. Trausan-Matu, K. E. Boyer, M. Crosby, & K. Panourgia (Eds.), *Proceedings of the 12th International Conference on Intelligent Tutoring Systems, ITS 2014* (pp. 134-143). Berlin: Springer. doi: 10.1007/978-3-319-07221-0_16
- Olsen, J., Belenky, D., Aleven, V., Rummel, N., Sewall, J., & Ringenber, M. (2014). Authoring tools for collaborative intelligent tutoring system environments. In S. Trausan-Matu, K. E. Boyer, M. Crosby, & K. Panourgia (Eds.), *Proceedings of the 12th International Conference on Intelligent Tutoring Systems, ITS 2014* (pp. 523-528). Berlin: Springer. doi: 10.1007/978-3-319-07221-0_66. Short Paper.
- Olsen, J. K., Belenky, D. M., Aleven, V., & Rummel, N. (2014). Collaboration on procedural problems may support conceptual knowledge more than you may think. In *Proceedings of the 3rd Workshop on Intelligent Support for Learning in Groups at the 12th International Conference on Intelligent Tutoring Systems*. Workshop Paper.
- Rau, M. A., Aleven, V., & Rummel, N. (2014). Sequencing sense-making and fluency-building support for connection making between multiple graphical representations. In J. L. Polman, E. A. Kyza, D. K. O'Neill, I. Tabak, W. R. Penuel, A. S. Jurow, K. O'Connor, T. Lee & L. D'Amico (Eds.), *Learning and Becoming in Practice: The International Conference of the Learning Sciences (ICLS) 2014* (Vol. 2, pp. 977-981). Boulder, CO: International Society of the Learning Sciences.

Refereed Conference and Workshop Publications – 2013

- Aleven, V., Dow, S., Christel, M., Stevens, S., Rosé, C., Koedinger, K., Myers, B., Flynn, J. B., Hintzman, Z., Harpstead, E., Hwang, S., Lomas, D., Reid, C., Yannier, N., Fathollahpour, M., Glenn, R., Sewall, J., Balash, J., Bastida, N., Bhargava, C., Brice, S.,

Champer, M., Collier, S., Feng, J., Hausmann, D., Koh, M. H., Huo, W., Ma, Q., Maher, B., Tian, W., & Zhang, X., (2013). Supporting social-emotional development in collaborative inquiry games for K-3 science learning. In C. C. Williams, A. Ochsner, J. Dietmeier, & C. Steinkuehler (Eds.), *Conference Proceedings, Games+Learning+Society 9.0* (pp. 53-60). Pittsburgh, PA: ETC Press

Belenky, D. M., Ringenberg, M., Olsen, J. K., Alevin, V., & Rummel, N. (2013). Using dual eye-tracking measures to differentiate between collaboration on procedural and conceptual learning activities. In Proceedings of the workshop “DUET 2013: Dual Eye Tracking in CSCL” held during the CSCL 2013 conference.
http://dualeyetracking.org/duet2013/DUET_2013.html

Goldin, I. M., Koedinger, K. R., & Alevin, V. (2013). Hints: You can't have just one. In S. K. D'Mello, R. A., Calvo, & A. Olney (Eds.) *Proceedings of the 6th International Conference on Educational Data Mining (EDM 2013)* (pp. 232-235). Worcester, MA: International Educational Data Mining Society. Short Paper.

Harpstead, E., Myers, B., & Alevin, V. (2013). In search of learning: Facilitating data analysis in educational games. In W. E. Mackay, S. Brewster, & S. Bødker (Eds.), *Proceedings of the ACM SIGCHI Conference on Human Factors in Computing Systems (CHI 2013)* (pp. 79-88). ACM, New York. doi: 10.1145/2470654.2470667. **Conference Best Paper Honorable Mention.**

Harpstead, E., MacLellan, C. J., Koedinger, K. R., Alevin, V., Dow, S. P., & Myers, B. A. (2013). Investigating the solution space of an open-ended educational game using conceptual feature extraction. In S. K. D'Mello, R. A., Calvo, & A. Olney (Eds.) *Proceedings of the 6th International Conference on Educational Data Mining (EDM 2013)* (pp. 51-58). Worcester, MA: International Educational Data Mining Society.

Long, Y., & Alevin, V. (2013). Skill diaries: Improve student learning in an intelligent tutoring system with periodic self-assessment. In H. C. Lane, K. Yacef, J. Mostow, & P. Pavlik (Eds.), *Proceedings of the 16th International Conference on Artificial Intelligence in Education AIED 2013* (pp. 219-228). Berlin, Heidelberg: Springer. doi: 10.1007/978-3-642-39112-5_26 **Conference Best Student Paper Award.**

Long, Y., & Alevin, V. (2013). Supporting students' self-regulated learning with an open learner model in a linear equation tutor. In H. C. Lane, K. Yacef, J. Mostow, & P. Pavlik (Eds.), *Proceedings of the 16th International Conference on Artificial Intelligence in Education AIED 2013* (pp. 249-258). Berlin, Heidelberg: Springer. 10.1007/978-3-642-39112-5_23

Long, Y., & Alevin, V. (2013). Active learners: Redesigning an intelligent tutoring system to support self-regulated learning. In D. Hernández-Leo, T. Ley, R. Klamma, & A. Harrer (Eds.), *Scaling up Learning for Sustained Impact, Proceedings of the Eighth European Conference on Technology Enhanced Learning (EC-TEL 2013)*, (pp. 490-495). Berlin, Heidelberg: Springer. doi: 10.1007/978-3-642-40814-4_44. Short Paper.

Olsen, J. K., Belenky, D. M., Alevin, V., Rummel (2013). Intelligent tutoring systems for collaborative learning: Enhancements to authoring tools. In H. C. Lane, K. Yacef, J. Mostow, & P. Pavlik (Eds.), *Proceedings of the 16th International Conference on Artificial Intelligence in Education AIED 2013* (pp. 900-903). Berlin, Heidelberg: Springer. doi: 10.1007/978-3-642-39112-5_141. Doctoral Consortium.

Olsen, J. K., Belenky, D. M., Alevin, V., Rummel, N., Sewall, J., & Ringenberg, M. (2013). Authoring collaborative intelligent tutoring systems. In R. Kumar & J. Kim (Eds.), *Proceedings 2nd Workshop on Intelligent Support for Learning in Groups at the 16th*

International Conference on Artificial Intelligence in Education (pp. 1-10).
<https://sites.google.com/site/islg2013/AIED2013-ISLG-Proceedings.pdf>

Rau, M. A., Aleven, V., & Rummel, N. (2013). Complementary effects of sense-making and fluency- building support for connection making: A matter of sequence? In H. C. Lane, K. Yacef, J. Mostow, & P. Pavlik (Eds.), *Proceedings of the 16th International Conference on Artificial Intelligence in Education AIED 2013* (pp. 329-338). Berlin, Heidelberg: Springer. doi: 10.1007/978-3-642-39112-5_34

Rau, M. A., Aleven, V., & Rummel, N. (2013). How to use multiple graphical representations to support conceptual learning? Research-based principles in the Fractions Tutor. In H. C. Lane, K. Yacef, J. Mostow, & P. Pavlik (Eds.), *Proceedings of the 16th International Conference on Artificial Intelligence in Education AIED 2013* (pp. 762-765). Berlin, Heidelberg: Springer. doi: 10.1007/978-3-642-39112-5_107

Rau, M. A., Aleven, V., Rummel, N., & Rohrbach, S. (2013). Why interactive learning environments can have it all: Resolving design conflicts between conflicting goals. In W. E. Mackay, S. Brewster, & S. Bødker (Eds.), *Proceedings of the ACM SIGCHI Conference on Human Factors in Computing Systems (CHI 2013)* (pp. 109-118). ACM, New York. doi: 10.1145/2470654.2470670. **Conference Best Paper Honorable Mention.**

Rau, M. A., Scheines, R., Aleven, V., & Rummel, N. (2013). Does representational understanding enhance fluency – or vice versa? Searching for mediation models. In S. K. D'Mello, R. A., Calvo, & A. Olney (Eds.) *Proceedings of the 6th International Conference on Educational Data Mining (EDM 2013)* (pp. 161-168). Worcester, MA: International Educational Data Mining Society. **Conference Best Paper Award.**

Refereed Conference and Workshop Publications – 2012

Aleven, V., Rau, M., & Rummel, N. (2012). Planned use of eye movement data to explore complementary strengths of individual and collaborative learning. DUET 2012 - Dual Eye-Tracking in CSCW. Available from
<http://www.dualeyetracking.org/duet2012/Program.html>

Baker, R. S.J.d., Gowda, S. M., Wixon, M., Kalka, J., Wagner, A. Z., Salvi, A., Aleven, V., Kusbit, G. W., Ocumpaugh, J., & Rossi, L. (2012). Towards sensor-free affect detection in Cognitive Tutor Algebra. In K. Yacef, O. Zaïane, A. Hershkovitz, M. Yudelson, & J. Stamper (Eds.), *Proceedings of the 5th International Conference on Educational Data Mining (EDM 2012)* (pp. 126-133). Worcester, MA: International Educational Data Mining Society.

Christel, M. G., Stevens, S. M., Maher, B. S., Brice, S., Champer, M., Jayapalan, L., Chen, Q., Jin, J., Hausmann, D., Bastida, N., Zhang, X., Aleven, V., Koedinger, K., Chase, C., Harpstead, E., & Lomas D. (2012). RumbleBlocks: Teaching science concepts to young children through a Unity game. In Q. Mehdi, A. Elmaghraby, I. Marshall, R. Moreton, R. Ragade, B. García Zapiain, J. Chariker, M. El-Said, R. Yampolskiy, & N. Li Zhigiang (Eds.) *Proceedings 17th International Conference on Computer Games (CGAMES): AI, Animation, Mobile, Interactive Multimedia, Educational and Serious Games* (pp. 162 – 166). IEEE Computer Society. doi 10.1109/CGames.2012.6314570

Goldin, I., Koedinger, K. R., & Aleven, V. (2012). Learner differences in hint processing. In K. Yacef, O. Zaïane, A. Hershkovitz, M. Yudelson, & J. Stamper (Eds.), *Proceedings of the 5th International Conference on Educational Data Mining (EDM 2012)* (pp. 73-80). Worcester, MA: International Educational Data Mining Society. **Nominated for Conference Best Paper Award.**

Long, Y., & Aleven, V. (2012). Skill diaries: Can periodic self-assessment improve students' learning with an intelligent tutoring system? In S. A. Cerri, W. J. Clancey, G. Papadourakis, & K. Panourgia (Eds.), *Proceedings of the 11th International Conference on Intelligent Tutoring Systems, ITS 2012* (pp. 673-674). Berlin: Springer. Poster.

Long, Y., & Aleven, V. (2012). Skill diaries: Scaffolding students' self-assessment in an intelligent tutoring system. The Fourth Workshop on Self-Regulated Learning in Educational Technologies, held during the 11th International Conference on Intelligent Tutoring Systems, ITS 2012.

<http://srlet.idoroll.org/its12//program/assets/SRL2012Proceedings.pdf>

Rau, M. A., Rummel, N., Aleven, V., Pacilio, L., & Tunc-Pekkan, Z. (2012). How to schedule multiple graphical representations? A classroom experiment with an intelligent tutoring system for fractions. In J. van Aalst, K. Thompson, M. J. Jacobson & P. Reimann (Eds.), *The future of learning: Proceedings of the 10th International Conference of the Learning Sciences (ICLS 2012) - Volume 1, Full Papers* (pp. 64-71).

Rau, M. A., Aleven, V., Rummel, N., & Rohrbach, S. (2012). Sense making alone doesn't do it: Fluency matters too! ITS support for robust learning with multiple representations. In S. A. Cerri, W. J. Clancey, G. Papadourakis, & K. Panourgia (Eds.), *Proceedings of the 11th International Conference on Intelligent Tutoring Systems, ITS 2012* (pp. 174-184). Berlin: Springer.

Refereed Conference and Workshop Publications – 2011

Easterday, M. W., Aleven, V., Scheines, R., & Carver, S. (2011). Using tutors to improve educational games. In G. Biswas, S. Bull, J. Kay, & T. Mitrovic (Eds.), *Proceedings of the 15th International Conference on Artificial Intelligence in Education (AIED 2011)* (pp. 63-71). Berlin: Springer Verlag.

Feenstra, L., Aleven, V., Rummel, N., Rau, M., & Taatgen, N. (2011). Thinking with your hands: Interactive graphical representations in a tutor for fractions learning. In G. Biswas, S. Bull, J. Kay, & T. Mitrovic (Eds.), *Proceedings of the 15th International Conference on Artificial Intelligence in Education (AIED 2011)* (pp. 453-455). Berlin: Springer Verlag. Poster.

Long, Y., & Aleven, V. (2011). Students' understanding of their student model. In G. Biswas, S. Bull, J. Kay, & T. Mitrovic (Eds.), *Proceedings of the 15th International Conference on Artificial Intelligence in Education (AIED 2011)* (pp. 179-186). Berlin: Springer Verlag.

Ogan, A., Aleven, V., Jones, C., & Kim, J. (2011). Pervasive social effects of agent-based instructional dialog. In G. Biswas, S. Bull, J. Kay, & T. Mitrovic (Eds.), *Proceedings of the 15th International Conference on Artificial Intelligence in Education (AIED 2011)* (pp. 238-246). Berlin: Springer Verlag.

Otieno, C., Schwonke, R., Renkl, A., Aleven, V., & Salden, R. (2011). Measuring learning progress via self-explanations versus problem solving - a suggestion for optimizing adaptation in intelligent tutoring systems. In L. Carlson, C. Hölscher, & T. Shipley (Eds.), *Proceedings of the 33rd Annual Conference of the Cognitive Science Society* (pp. 84-89). Austin, TX: Cognitive Science Society.

Roll, I., Aleven, V., & Koedinger, K.R. (2011). Outcomes and mechanisms of transfer in invention activities. In L. Carlson, C. Hölscher, & T. Shipley (Eds.), *Proceedings of the*

33rd Annual Conference of the Cognitive Science Society (pp. 2824-2829). Austin, TX: Cognitive Science Society.

Roll, I., Aleven, V., McLaren, B., & Koedinger, K. R. (2011). Metacognitive practice makes perfect: Improving students' self-assessment skills with an intelligent tutoring system. In G. Biswas, S. Bull, J. Kay, & T. Mitrovic (Eds.), *Proceedings of the 15th International Conference on Artificial Intelligence in Education (AIED 2011)* (pp. 288-295). Berlin: Springer Verlag.

Stampfer, E., Long, Y., Aleven, V., & Koedinger, K. R. (2011). Eliciting intelligent novice behaviors with grounded feedback in a fraction addition tutor. In G. Biswas, S. Bull, J. Kay, & T. Mitrovic (Eds.), *Proceedings of the 15th International Conference on Artificial Intelligence in Education (AIED 2011)* (pp. 560-562). Berlin: Springer Verlag. Poster.

Waalkens, M., Aleven, V., & Taatgen, N. (2011). Does supporting multiple student strategies lead to greater learning and motivation? Investigating a source of complexity in ITS architectures. In G. Biswas, S. Bull, J. Kay, & T. Mitrovic (Eds.), *Proceedings of the 15th International Conference on Artificial Intelligence in Education (AIED 2011)* (pp. 572-574). Berlin: Springer Verlag. Poster.

Refereed Conference and Workshop Publications – 2010

Aleven, V., Myers, E., Easterday, M., & Ogan, A. (2010). Toward a framework for the analysis and design of educational games. In G. Biswas, D. Carr, Y. S. Chee, & W. Y. Hwang (Eds.), *Proceedings of the 3rd IEEE Conference on Digital Game and Intelligent Toy-Enhanced Learning* (pp. 69 – 76). Los Alamitos, CA: IEEE Computer Society. doi: 10.1109/DIGITEL.2010.55

Ashley, K. D., Lynch, C., Pinkwart, N., & Aleven, V. (2010). Borderline cases of ill-definedness - and how different definitions deal with them. In C. Lynch, K. Ashley, A. Mitrovic, V. Dimitrova, N. Pinkwart, & V. Aleven, (Eds.), *Proceedings of the Workshop on Intelligent Tutoring Systems for Ill-Defined Domains at the 10th International Conference on Intelligent Tutoring Systems (ITS 2010)* (pp. 1 - 8). Pittsburgh, PA, USA.

Butcher, K. R., & Aleven, V. (2010). Learning during intelligent tutoring: When do integrated visual-verbal representations improve student outcomes? In S. Ohlsson & R. Catrambone (Eds.), *Proceedings of the 32nd Annual Meeting of the Cognitive Science Society* (pp. 2888 – 2893). Austin, TX: Cognitive Science Society.

Feenstra, L., Aleven, V., Rummel, N., & Taatgen, N. (2010). Multiple interactive representations for fractions learning. In V. Aleven, J. Kay, & J. Mostow (Eds.), *Proceedings of the 10th international conference on intelligent tutoring systems, ITS 2010* (Vol. 2, pp. 221-3). Berlin: Springer.

Magner, U., Schwonke, R., Renkl, A., Aleven, V., & Popescu, O. (2010). Pictorial illustrations in intelligent tutoring systems: Do they distract or elicit interest and engagement? In K. Gomez, L. Lyons, & J. Radinsky, J. (Eds.), *Learning in the Disciplines: Proceedings of the 9th International Conference of the Learning Sciences (ICLS 2010) - Volume 1, Full Papers*. International Society of the Learning Sciences: Chicago IL.

Ogan, A., Aleven, V., Kim, J., & Jones, C. (2010). Intercultural negotiation with virtual humans: The effect of social goals on gameplay and learning. In V. Aleven, J. Kay, & J. Mostow (Eds.), *Proceedings of the 10th international conference on intelligent tutoring systems, ITS 2010* (Vol. 1, pp. 174-83). Berlin: Springer.

Ogan, A., Alevan, V., Kim, J., & Jones, C. (2010). Developing interpersonal relationships with virtual agents through social instructional dialog. In J. M. Allbeck, N. I. Badler, T. W. Bickmore, C. Pelachaud, & A. Safonova (Eds.), *Proceedings of the 10th International Conference on Intelligent Virtual Agents, IVA 2010* (pp. 236-249). Lecture Notes in Computer Science 6356. Berlin: Springer.

Rau, M., Alevan, V., & Rummel, N. (2010). Blocked versus interleaved practice with multiple representations in an intelligent tutoring system for fractions. In V. Alevan, J. Kay, & J. Mostow (Eds.), *Proceedings of the 10th International Conference on Intelligent Tutoring Systems, ITS 2010* (Vol. 1, pp. 413-422) Berlin: Springer.

Rau, M. A., Alevan, V., & Rummel, N. (2010). Blocked versus interleaved practice with multiple graphical representations of fractions. Paper presented at the International EARLI Special Interest Group on Text and Graphics Comprehension, Tubingen, Germany.

Rau, M. A., Alevan, V., & Rummel, N. (2010). Supporting learning with multiple graphical representations with intelligent tutoring technology. Paper presented at the International EARLI Special Interest Group on Instructional Design and Learning with Computers, Ulm, Germany.

Roll, I., Alevan, V., & Koedinger, K. R. (2010). The Invention Lab: Using a hybrid of model tracing and constraint-based modeling to offer intelligent support in inquiry environments. In V. Alevan, J. Kay, & J. Mostow (Eds.), *Proceedings of the 10th international conference on intelligent tutoring systems, ITS 2010* (Vol. 1, pp. 115-24). Berlin: Springer.

Tunç-Pekkan, Z., Zeylikman, L., Alevan, V., & Rummel, N. (2010). Fifth graders' conception of fractions on numberline representations. Poster presented at *The Annual Meeting of North American Chapter of the International Group for the Psychology of Mathematics Education*.

Refereed Conference and Workshop Publications – 2009

Ashley, K. D., Lynch, C., Pinkwart, N., & Alevan, V. (2009). Toward modeling and teaching legal case-based adaptation with expert examples. In L. McGinty, & D. Wilson (Eds.), *Proceedings of the 8th International Conference on Case-Based Reasoning*. Lecture Notes in Computer Science 5650 (pp. 45-49). Berlin: Springer.

Baker, R. S. J. d., de Carvalho, A. M. J. B., Raspat, J., Alevan, V., Corbett, A. T., & Koedinger, K. R. (2009). Educational software features that encourage and discourage “gaming the system.” In V. Dimitrova, R. Mizoguchi, B. du Boulay, & A. Graesser (Eds.), *Proceedings of the 14th International Conference on Artificial Intelligence in Education, AIED 2009* (pp. 475-482). Amsterdam: IOS Press. **Honorable Mention for the Conference Best Paper Award, AIED 2009.**

Brown, Q., Salvucci, D., Lee, F., & Alevan, V. (2009). Who helps when the tutor is asleep. In V. Dimitrova, R. Mizoguchi, B. du Boulay, & A. Graesser (Eds.), *Proceedings of the 14th International Conference on Artificial Intelligence in Education, AIED 2009* (pp. 632-634). Amsterdam: IOS Press. Poster.

Easterday, M. W., Alevan, V., Scheines, R., & Carver, S. M. (2009). Will Google destroy western democracy? Bias in policy problem solving. In V. Dimitrova, R. Mizoguchi, B. du Boulay, & A. Graesser (Eds.), *Proceedings of the 14th International Conference on Artificial Intelligence in Education, AIED 2009* (pp. 249-256). Amsterdam: IOS Press.

- Lynch, C., Ashley, K. D., Pinkwart, N., & Alevén, V. (2009). Toward assessing law students' argument diagrams. In *Proceedings of the 12th International Conference on Artificial Intelligence and Law* (pp. 222-223). New York: ACM Press.
- Lynch, C., Ashley, K. D., Pinkwart, N., & Alevén, V. (2009). Argument diagramming and diagnostic reliability. In G. Governatori, (Eds.), *Frontiers in Artificial Intelligence and Applications (205) - Proceedings of the 22nd International Conference on Legal Knowledge and Information Systems (JURIX)* (pp. 106 - 115). Amsterdam, The Netherlands: IOS Press.
- Ogan, A., Kim, J., Alevén, V., & Jones, C. (2009). Explicit social goals and learning: enhancing a negotiation game with virtual characters. In V. Dimitrova, R. Mizoguchi, B. du Boulay, & A. Graesser (Eds.), *Proceedings of the 14th International Conference on Artificial Intelligence in Education, AIED 2009* (pp. 692-694). Poster.
- Ogan, A., Alevén, V., & Jones, C. (2009). Investigating the effects of social goals in negotiations with virtual humans. In V. Dimitrova, R. Mizoguchi, B. du Boulay, & A. Graesser (Eds.), *Proceedings of the 14th International Conference on Artificial Intelligence in Education, AIED 2009* (pp. 777-778). Amsterdam: IOS Press. Young Researcher Track.
- Ogan, A., Alevén, V., Kim, J., & Jones, C. (2009). Antecedents of attributions in an educational game for social learning: Who's to blame? In A. A. Ozok & P. Zaphiris (Eds.), *Proceedings of the 3rd International Conference on Online Communities and Social Computing* (pp. 593-602). Lecture Notes in Computer Science, vol. 5621. Berlin: Springer-Verlag,
- Ogan, A., Kim, J., Alevén, V. & Jones, C. (2009). Explicit social goals and learning in a game for cross-cultural negotiation. In *Proceedings of the Workshop on Intelligent Educational Games, 14th International Conference on Artificial Intelligence in Education*. Brighton, UK, July 2009.
- Pinkwart, N., Lynch, C., Ashley, K., & Alevén, V. (2009). Assessing argument diagrams in an ill-defined domain. In V. Dimitrova, R. Mizoguchi, B. du Boulay, & A. Graesser (Eds.), *Proceedings of the 14th International Conference on Artificial Intelligence in Education, AIED 2009* (pp. 590-592). Amsterdam: IOS Press. Poster.
- Rau, M., Alevén, V., & Rummel, N. (2009). Intelligent tutoring systems with multiple representations and self-explanation prompts support learning of fractions. In V. Dimitrova, R. Mizoguchi, B. du Boulay, & A. Graesser (Eds.), *Proceedings of the 14th International Conference on Artificial Intelligence in Education, AIED 2009* (pp. 441-448). Amsterdam: IOS Press. **Best Student Paper Award AIED 2009 Conference.**
- Roll, I., Alevén, V., & Koedinger, K. R. (2009). Helping students know "further" - increasing the flexibility of students' knowledge using symbolic invention tasks. In N. A. Taatgen, & H. van Rijn (Eds.), *Proceedings of the 31st Annual Conference of the Cognitive Science Society* (pp. 1169-74). Austin, TX: Cognitive Science Society.

Refereed Conference and Workshop Publications – 2008

- Aleahmad, T., Alevén, V., & Kraut, R. (2008). Open community authoring of targeted worked example problems. In B. Woolf, E. Aimeur, R. Nkambou, & S. Lajoie (Eds.), *Proceedings of the 9th International Conference on Intelligent Tutoring Systems (ITS-08)*, Lecture Notes in Computer Science, 5091 (pp. 216-227). Berlin: Springer.

Aleahmad, T., Kraut, R., & Alevén, V. (2008). Community authoring of worked example problems aligned to content standards. In P. A. Kirschner, J. van Merriënboer, & T. de Jong (Eds.), *International Perspectives in the Learning Sciences: Proceedings of ICLS 2008*. Utrecht, The Netherlands. Poster.

Baker, R., Corbett, A., & Alevén, V., (2008). More accurate student modeling through contextual estimation of slip and guess probabilities in Bayesian Knowledge Tracing. In B. Woolf, E. Aimeur, R. Nkambou, & S. Lajoie (Eds.), *Proceedings of the 9th International Conference on Intelligent Tutoring Systems (ITS-08)*, Lecture Notes in Computer Science, 5091 (pp. 406-415). Berlin, Germany: Springer Verlag.

Baker, R.S.J.d., Corbett, A.T., & Alevén, V. (2008). Improving contextual models of guessing and slipping with a truncated training set. In R. Baker & J. Beck (Eds.) *Proceedings of the 1st International Conference on Educational Data Mining*, (pp. 67-76). Montreal, Canada.

Brown, Q., Lee, F. J., Salvucci, D. D., & Alevén, V. (2008). Interface challenges for mobile tutoring systems. In B. Woolf, E. Aimeur, R. Nkambou, & S. Lajoie (Eds.), *Proceedings of the 9th International Conference on Intelligent Tutoring Systems (ITS-08)*, Lecture Notes in Computer Science, 5091 (pp. 693-695). Berlin: Springer Verlag. Poster.

Butcher, K., & Alevén, V. (2008). Diagram interaction during intelligent tutoring in geometry: Support for knowledge retention and deep transfer. In B. C. Love, K. McRae, & V. M. Sloutsky (Eds.), *Proceedings of the 30th Annual Conference of the Cognitive Science Society, CogSci 2008* (pp. 894-899). Austin, TX: Cognitive Science Society. Poster.

Chaudhuri, S., Kumar, R., Joshi, M., Terrell, E., Alevén, V., & Rose, C. (2008). It's not easy being green: Supporting collaborative "green design" learning. In B. Woolf, E. Aimeur, R. Nkambou, & S. Lajoie (Eds.), *Proceedings of the 9th International Conference on Intelligent Tutoring Systems (ITS-08)*, Lecture Notes in Computer Science, 5091 (pp. 807-809). Berlin: Springer. Poster.

Koedinger, K., Pavlik, P., McLaren, B., & Alevén, V. (2008). Is it better to give than to receive? The Assistance Dilemma as a fundamental unsolved problem in the cognitive science of learning and instruction. In B. C. Love, K. McRae, & V. M. Sloutsky (Eds.) *Proceedings of the 30th Annual Meeting of the Cognitive Science Society, CogSci 2008* (pp. 2155-2160). New York, NY: Lawrence Erlbaum. Poster.

Ogan, A., Alevén, V., & Jones, C. (2008). Pause, predict, and ponder: Use of narrative videos to improve cultural discussion and learning. In M. Czerwinski, A.M. Lund & D.S. Tan (Eds.), *Proceeding of the Twenty-Sixth Annual SIGCHI Conference on Human Factors in Computing Systems* (pp. 155-162). New York: ACM.

Ogan, A., Walker, E., Alevén, V., & Jones, C. (2008). Toward supporting collaborative discussion in an ill-defined domain. In B. Woolf, E. Aimeur, R. Nkambou, & S. Lajoie (Eds.), *Proceedings of the 9th International Conference on Intelligent Tutoring Systems (ITS-08)*, Lecture Notes in Computer Science, 5091 (pp. 825 – 827). Berlin: Springer. Poster.

Pinkwart, N., Ashley, K. D., Lynch, C., & Alevén, V. (2008). Graph grammars: An ITS technology for diagram representations. In H. Chad Lane & D. Wilson (Eds.), *Proceedings of the 21st International FLAIRS Conference* (pp. 433-438). Coconut Grove (FL), AAAI.

Pinkwart, N., Lynch, C., Ashley, K., & Alevén, V. (2008). Re-evaluating LARGO in the classroom: are diagrams better than text for teaching argumentation skill? In B. Woolf, E. Aimeur, R. Nkambou, & S. Lajoie (Eds.), *Proceedings of the 9th International Conference on Intelligent Tutoring Systems (ITS-08)*, Lecture Notes in Computer Science, 5091 (pp. 90-100). Berlin: Springer.

Roll, I., Alevén, V., & Koedinger, K.R. (2008). Instruments and challenges in assessing help-seeking knowledge and behavior. In I. Roll, & V. Alevén (Eds.), *Proceedings of the Workshop on Metacognition and Self-Regulated Learning in Educational Technologies (SRL@ET)*, in conjunction with ITS 2008 (pp. 41-50). Montreal, Canada.

Salden, R., Alevén, V., Renkl, A., & Schwonke, R. (2008). Worked examples and tutored problem solving: redundant or synergistic forms of support? In B. C. Love, K. McRae, & V. M. Sloutsky (Eds.), *Proceedings of the 30th Annual Conference of the Cognitive Science Society* (pp. 589-594). Austin, TX: Cognitive Science Society. **Winner of the Cognition and Student Learning prize.**

Salden, R., Alevén, V., Schwonke, R., & Renkl, A., (2008). Are worked examples and tutored problem solving synergistic forms of support? In P. A. Kirschner, J. van Merriënboer, & T. de Jong (Eds.), *International Perspectives in the Learning Sciences: Proceedings of ICLS 2008*. Utrecht, The Netherlands. Poster.

Refereed Conference and Workshop Publications - 2007

Ashley, K., Pinkwart, N., Lynch, C., & Alevén, V. (2007). Learning by graphically representing US Supreme Court oral arguments. In *Proceedings of the 11th International Conference on Artificial intelligence and Law* (pp. 271–275). New York, ACM Press.

Butcher, K., & Alevén, V. (2007). Integrating visual and verbal knowledge during classroom learning with computer tutors. In D. S. McNamara & J. G. Trafton (Eds.), *Proceedings of the 29th Annual Conference of the Cognitive Science Society* (pp. 137–142). Austin, TX: Cognitive Science Society.

Easterday, M., Alevén, V., & Scheines, R. (2007). Tis better to construct than to receive? The effects of diagramming tools on causal reasoning. In R. Luckin, K. Koedinger, & J. Greer (Eds.), *Proceedings of the 13th International Conference on Artificial Intelligence in Education* (pp. 93–100). Amsterdam, the Netherlands: IOS Press.

Easterday, M. W., Alevén, V., & Scheines, R. (2007). The logic of Babel: Causal reasoning from conflicting sources. In V. Alevén, K. Ashley, C. Lynch, & N. Pinkwart (Eds.), *Proceedings of the Workshop on AIED Applications for Ill-Defined Domains at the 13th International Conference on Artificial Intelligence in Education* (pp. 31-40). Los Angeles, CA.

Lynch, C., Ashley, K., Pinkwart, N., & Alevén, V. (2007). Argument diagramming as focusing device: does it scaffold reading? In V. Alevén, K. Ashley, C. Lynch, & N. Pinkwart (Eds.), *Proceedings of the Workshop on AIED Applications for Ill-Defined Domains at the 13th International Conference on Artificial Intelligence in Education* (pp. 51-60). Los Angeles, CA.

Pinkwart, N., Alevén, V., Ashley, K., & Lynch, C. (2007). Evaluating legal argument instruction with graphical representations using LARGO. In R. Luckin, K. Koedinger, & J. Greer (Eds.), *Proceedings of the 13th International Conference on Artificial Intelligence in Education* (pp. 101–108). Amsterdam, the Netherlands: IOS Press.

Pinkwart, N., Lynch, C., Ashley, K., & Aleven, V. (2007). Student's usage of multiple linked argument representations in LARGO. In T. Gross (Ed.), *Tagungsband Mensch & Computer 2007* (pp. 245–250). Munich, Germany: Oldenbourg.

Roll, I., Aleven, V., McLaren, B., & Koedinger, K. (2007). Can help seeking be tutored? Searching for the secret sauce of metacognitive tutoring. In R. Luckin, K. Koedinger, & J. Greer (Eds.), *Proceedings of the 13th International Conference on Artificial Intelligence in Education* (pp. 203–210). Amsterdam, the Netherlands: IOS Press.

Salden, R., Aleven, V., & Renkl, A. (2007). Can tutored problem solving be improved by learning from examples? In D. S. McNamara & J. G. Trafton (Eds.), *Proceedings of the 29th Annual Conference of the Cognitive Science Society* (p. 1847). Austin, TX: Cognitive Science Society. Poster.

Schwonke, R., Wittwer, J., Aleven, V., Salden, R., Krieg, C., & Renkl, A. (2007). Can tutored problem solving benefit from faded worked-out examples? In S. Vosniadou, D. Kayser, & A. Protopapas (Eds.), *Proceedings of the 2nd European Cognitive Science Conference* (pp. 59-64). Mahwah, NJ: Erlbaum.

Refereed Conference and Workshop Publications - 2006

Aleven, V., McLaren, B. M., Sewall, J., & Koedinger, K. R. (2006). The Cognitive Tutor Authoring Tools (CTAT): Preliminary evaluation of efficiency gains. In M. Ikeda, K. D. Ashley, & T. W. Chan (Eds.), *Proceedings of the 8th International Conference on Intelligent Tutoring Systems (ITS 2006)*, (pp. 61-70). Berlin: Springer Verlag.

Aleven, V., Pinkwart, N., Ashley, K., & Lynch, C. (2006). Supporting self-explanation of argument transcripts: specific v. generic prompts. 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* (p. 47-55). Jhongli (Taiwan), National Central University.

Aleven, V., Sewall, J., McLaren, B. M., & Koedinger, K. R. (2006). Rapid authoring of intelligent tutors for real-world and experimental use. In Kinshuk, R. Koper, P. Kommers, P. Kirschner, D. G. Sampson, & W. Didderen (Eds.), *Proceedings of the 6th IEEE International Conference on Advanced Learning Technologies (ICALT 2006)*, (pp. 847-851). Los Alamitos, CA: IEEE Computer Society.

Kumar, R., Rosé, C., Aleven, V., Iglesias, A., & Robinson, A. (2006). Evaluating the effectiveness of tutorial dialogue in an exploratory learning context. In M. Ikeda, K. D. Ashley, & T. W. Chan (Eds.), *Proceedings of 8th International Conference on Intelligent Tutoring Systems (ITS 2006)*, (pp. 666-674). Berlin: Springer Verlag. **Nominee (1 of 8) for Conference Best Student Paper Award.**

Lynch, C., Ashley, K., Aleven, V., & Pinkwart, N. (2006). Defining ill-defined domains; a literature survey. 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* (p. 1-10). Jhongli (Taiwan), National Central University.

Ogan, A., Jones, C., & Aleven, V. (accepted for presentation, 2006). Focusing attention on critical moments: evaluation of a system for teaching intercultural competence. To be presented, European Computer Assisted Language Learning. Granada, Spain.

Ogan, A., Aleven, V., & Jones, C. (2006). Culture in the classroom: challenges for assessment 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* (p. 92-100). Jhongli (Taiwan), National Central University.

Pinkwart, N., Aleven, V., Ashley, K., & Lynch, C. (2006). Toward legal argument instruction with graph grammars and collaborative filtering techniques. In M. Ikeda, K. D. Ashley, & T. W. Chan (Eds.), *Proceedings of 8th International Conference on Intelligent Tutoring Systems (ITS 2006)*, (pp. 227-236). Berlin: Springer Verlag. **Nominee (1 of 8) for Conference Best Paper Award.**

Pinkwart, N., Aleven, V., Ashley, K., & Lynch, C. (2006). Using collaborative filtering in an intelligent tutoring system for legal argumentation. In S. Weibelzahl, & A. Cristea (Eds.), *Proceedings of Workshops held at the 4th International Conference on Adaptive Hypermedia and Adaptive Web-Based Systems*. Lecture Notes in Learning and Teaching (p. 542-551). Dublin (Ireland), National College of Ireland.

Pinkwart, N., Aleven, V., Ashley, K., & Lynch, C. (2006). Schwachstellenermittlung und Rückmeldungsprinzipien in einem intelligenten Tutorensystem für juristische Argumentation. (Weakness detection and feedback principles in an intelligent tutoring system for legal argumentation). In M. Mühlhäuser, G. Rößling, & R. Steinmetz (Eds.), *GI Lecture Notes in Informatics - Tagungsband der 4. e-Learning Fachtagung Informatik* (p. 75-86). Bonn (Germany), Gesellschaft für Informatik. **Conference Best Paper Award.**

Roll, I., Aleven, V., McLaren, B. M., Ryu, E., Baker, R. S., & Koedinger, K. R. (2006). The Help Tutor: does metacognitive feedback improve students' help-seeking actions, skills and learning? In M. Ikeda, K. D. Ashley, & T. W. Chan (Eds.), *Proceedings of 8th International Conference on Intelligent Tutoring Systems (ITS 2006)*, (pp. 360-369). Berlin: Springer Verlag. **Nominee (1 of 8) for Conference Best Student Paper Award.**

Roll, I., Ryu, E., Sewall, J., Leber, B., McLaren, B.M., Aleven, V., & Koedinger, K. R. (2006). Towards teaching metacognition: supporting spontaneous self-assessment. In M. Ikeda, K. D. Ashley, & T. W. Chan (Eds.), *Proceedings of 8th International Conference on Intelligent Tutoring Systems (ITS 2006)*, (pp. 738-740). Berlin: Springer Verlag. Poster.

Salden R. J. C. M., Aleven, V., Renkl, A., & Wittwer, J. (2006). Does learning from examples improve tutored problem solving? In R. Sun & N. Miyake (Eds.), *Proceedings of the 28th Annual Meeting of the Cognitive Science Society* (pp. 2602). Vancouver, Canada. Poster.

Refereed Conference and Workshop Publications - 2005

Aleven, V., Roll, I., McLaren, B., Ryu, E.J., & Koedinger, K. R. (2005). An architecture to combine meta-cognitive and cognitive tutoring: Pilot testing the Help Tutor. In C. K. Looi, G. McCalla, B. Bredeweg, & J. Breuker (Eds.), *Proceedings of the 12th International Conference on Artificial Intelligence in Education, AIED 2005* (pp. 17-24). Amsterdam, IOS Press.

Aleven, V., & Rosé, C. (2005). Authoring plug-in tutor agents by demonstration: Rapid, rapid tutor development. In C. K. Looi, G. McCalla, B. Bredeweg, & J. Breuker (Eds.), *Proceedings of the 12th International Conference on Artificial Intelligence in Education, AIED 2005* (pp. 735-737). Amsterdam: IOS Press. (Poster.)

Aleven, V., & Ashley, K. (2005). Toward supporting hypothesis formation and testing in an interpretive domain. In C. K. Looi, G. McCalla, B. Bredeweg, & J. Breuker (Eds.), *Proceedings of the 12th International Conference on Artificial Intelligence in Education, AIED 2005* (pp. 732-734). Amsterdam: IOS Press. (Poster.)

Aleven, V., Ashley, K., Lynch, C. (2005). Helping Law Students to Understand US Supreme Court Oral Arguments: An Experiment in Progress. In A Gardner (Ed.), *Proceedings of the 10th International Conference on Artificial Intelligence and Law, ICAIL-2005* (pp. 55-59). New York: ACM Press. (Short paper.)

Ogan, A., Jones, C., & Aleven, V. (2005) Improving intercultural competence by predicting in french film. In G. Richards (Ed.), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2005*, (pp. 3101-3106). Chesapeake, VA: AACE.

Rosé, C., Aleven, V., Carey, R., & Robinson, A. (2005). A first evaluation of the instructional value of negotiable problem solving goals on the exploratory learning continuum. In C. K. Looi, G. McCalla, B. Bredeweg, & J. Breuker (Eds.), *Proceedings of the 12th International Conference on Artificial Intelligence in Education, AIED 2005* (pp. 563-570). Amsterdam: IOS Press.

Roll, I., Baker, R.S., Aleven, V., McLaren, B., & Koedinger, K. (2005). Modeling students' metacognitive errors in two intelligent tutoring systems. In L. Ardissono, P. Brna and A. Mitrovic (Eds.), *Proceedings of the 10th International Conference on User Modeling (UM'2005)*, (pp. 379-88). Berlin: Springer-Verlag.

Refereed Conference and Workshop Publications - 2004

Aleven, V., Ogan, A., Popescu, O., Torrey, C., & Koedinger, K. (2004). Evaluating the effectiveness of a tutorial dialogue system for self-explanation. In J. C. Lester, R. M. Vicario, & F. Paraguaçu (Eds.), *Proceedings of Seventh International Conference on Intelligent Tutoring Systems, ITS 2004* (pp. 443-454). Berlin: Springer Verlag.

Aleven, V., McLaren, B., Roll, I., & Koedinger, K. (2004). Toward tutoring help seeking: Applying cognitive modeling to meta-cognitive skills. In J. C. Lester, R. M. Vicario, & F. Paraguaçu (Eds.), *Proceedings of Seventh International Conference on Intelligent Tutoring Systems, ITS 2004* (pp. 227-239). Berlin: Springer Verlag. **Conference Best Paper Award ITS 2004.**

Rosé, C. P., Torrey, C., Aleven, V., Robinson, A., Wu, C., & Forbus, K. (2004). CycleTalk: Toward a dialogue agent that guides design with an articulate simulator. In J. C. Lester, R. M. Vicario, & F. Paraguaçu (Eds.), *Proceedings of Seventh International Conference on Intelligent Tutoring Systems, ITS 2004* (pp. 401-411). Berlin: Springer Verlag.

Koedinger, K. R., Aleven, V., Heffernan, N., McLaren, B., & Hockenberry, M. (2004). Opening the door to non-programmers: Authoring intelligent tutor behavior by demonstration. In J. C. Lester, R. M. Vicario, & F. Paraguaçu (Eds.), *Proceedings of Seventh International Conference on Intelligent Tutoring Systems, ITS 2004* (pp. 162-174). Berlin: Springer Verlag.

Roll, I., Baker, R. S., Aleven, V., & Koedinger, K. R. (2004). A metacognitive ACT-R model of students' learning strategies in intelligent tutoring systems. In J. C. Lester, R. M. Vicario, & F. Paraguaçu (Eds.), *Proceedings of Seventh International Conference on Intelligent Tutoring Systems, ITS 2004* (pp. 854-856). Berlin: Springer Verlag.

Roll, I., Baker, Aleven, V., & Koedinger, K. R. (2004). Promoting effective help-seeking behavior through declarative instruction. In J. C. Lester, R. M. Vicario, & F. Paraguaçu (Eds.), *Proceedings of Seventh International Conference on Intelligent Tutoring Systems, ITS 2004* (pp. 857-859). Berlin: Springer Verlag.

Roll, I., Baker, R.S., Aleven, V., & Koedinger, K.R. (2004) What goals do students have when choosing the actions they perform? In M. Lovett, C. Schunn, C. Lebiere, & P. Munro (Eds.), *Proceedings of 6th International Conference on Cognitive Modeling* (pp. 380-381). Mahwah, NJ: Lawrence Erlbaum. Poster.

Aleven, V., & Rosé, C. P. (2004). Towards easier creation of tutorial dialogue systems: Integration of authoring environments for tutoring and dialogue systems. In J. Mostow & P. Tedesco (Eds.), *Papers from the Workshop on Dialog-Based Intelligent Tutoring Systems, held in conjunction with ITS 2004* (pp. 1-7). Maceió, Brazil.

Rosé, C. P., Torrey, C., & Aleven, V. (2004). Guided exploratory learning versus directed learning in a simulation environment for thermodynamics: A pilot study. In J. Mostow & P. Tedesco (Eds.), *Papers from the Workshop on Dialog-Based Intelligent Tutoring Systems, held in conjunction with ITS 2004* (pp. 43-48). Maceió, Brazil.

Refereed Conference and Workshop Publications – 1991-2003

Aleven V., Koedinger, K. R., & Popescu, O. (2003). A tutorial dialog system to support self-explanation: Evaluation and open questions. In U. Hoppe, F. Verdejo, & J. Kay (Eds.), *Proceedings of the 11th International Conference on Artificial Intelligence in Education, AI-ED 2003* (pp. 39-46). Amsterdam: IOS Press. **Finalist for Conference Best Paper Award, AIED 2003.**

Koedinger, K. R., Aleven, V. A. W. M. M., & Heffernan, N. T. (2003). Toward a rapid development environment for Cognitive Tutors. In U. Hoppe, F. Verdejo, & J. Kay (Eds.), *Proceedings of the 11th International Conference on Artificial Intelligence in Education, AI-ED 2003* (pp. 455-457). Amsterdam: IOS Press.

Aleven V., Popescu, O., Ogan, A. & Koedinger, K. R. (2003). A formative classroom evaluation of a tutorial dialogue system that supports self-explanation. In V. Aleven, U. Hoppe, J. Kay, R. Mizoguchi, H.Pain, F. Verdejo, & K. Yacef (Eds.), *Supplemental Proceedings of the 11th International Conference on Artificial Intelligence in Education, AIED2003, Vol. VI* (pp. 303-312). School of Information Technologies, University of Sydney.

Popescu, O., Aleven, V., & Koedinger, K. R. (2003). A knowledge-based approach to understanding students' explanations. In V. Aleven, U. Hoppe, J. Kay, R. Mizoguchi, H.Pain, F. Verdejo, & K. Yacef (Eds.), *Supplemental Proceedings of the 11th International Conference on Artificial Intelligence in Education, AIED2003, Vol. VI* (pp. 345-355). School of Information Technologies, University of Sydney.

Koedinger, K. R., Aleven, V. A. W. M. M., & Heffernan, N. T., (2003). Tools towards reducing the costs of designing, building, and testing cognitive models. *The 2003 Conference on Behavior Representation in Modeling and Simulation, BRIMS 2003.*

Aleven V., Popescu, O., & Koedinger, K. R. (2002). More on pilot-testing a tutorial dialog system that supports self-explanation: Good feedback on explanations helps, how we can generate more of it? In C. P. Rose & V. Aleven (Eds.), *Working notes of the ITS 2002*

Workshop on Empirical Methods for Tutorial Dialogue Systems. Available via <http://www-2.cs.cmu.edu/~aleven/ITS2002DialogueWS/>

Aleven V., Popescu, O. , & Koedinger, K. R. (2002). Pilot-testing a tutorial dialogue system that supports self-explanation. In S. A. Cerri, G. Gouardères, & F. Paraguaçu (Eds.), *Proceedings of Sixth International Conference on Intelligent Tutoring Systems, ITS 2002* (pp. 344-354). Berlin: Springer Verlag.

Aleven V., Popescu, O. , & Koedinger, K. R. (2001). A tutorial dialogue system with knowledge-based understanding and classification of student explanations. In *Working Notes of the 2nd IJCAI Workshop on Knowledge and Reasoning in Practical Dialogue Systems*, August 5, 2001, Seattle.

Aleven V., Popescu, O. , & Koedinger, K. R. (2001). Pedagogical content knowledge in a tutorial dialogue system to support self-explanation. In V. Aleven (Ed.), *Papers of the AIED-2001 Workshop on Tutorial Dialogue Systems* (pp. 59-70). Available via <http://www.hcrc.ed.ac.uk/aied2001/workshops.html>.

Aleven, V., & Koedinger, K. R. (2001). Investigations into help seeking and learning with a Cognitive Tutor. In R. Luckin (Ed.), *Papers of the AIED-2001 Workshop on Help Provision and Help Seeking in Interactive Learning Environments* (pp. 47-58). Available via <http://www.hcrc.ed.ac.uk/aied2001/workshops.html>.

Aleven V., Popescu, O. , & Koedinger, K. R. (2001). Towards tutorial dialog to support self-explanation: Adding natural language understanding to a Cognitive Tutor. In J. D. Moore, C. L. Redfield, & W. L. Johnson (Eds.), *Artificial Intelligence in Education: AI-ED in the Wired and Wireless Future, Proceedings of AI-ED 2001* (pp. 246-255). Amsterdam, IOS Press.

Aleven, V., & Koedinger, K. R. (2000). The need for tutorial dialog to support self-explanation. In C. P. Rose & R. Freedman (Eds.), *Building Dialogue Systems for Tutorial Applications, Papers of the 2000 AAI Fall Symposium* (pp. 65-73). Technical Report FS-00-01. Menlo Park, CA: AAI Press.

Aleven, V., & Koedinger, K. R. (2000). Limitations of student control: Do students know when they need help? In G. Gauthier, C. Frasson, & K. VanLehn (Eds.), *Proceedings of the 5th International Conference on Intelligent Tutoring Systems, ITS 2000* (pp. 292-303). Berlin: Springer Verlag. **Conference Best Paper Award ITS 2000.**

Aleven, V., Koedinger, K. R. & Cross, K. (1999). Tutoring answer explanation fosters learning with understanding. In S. P. Lajoie & M. Vivet (Eds.), *Artificial Intelligence in Education, Open Learning Environments: New Computational Technologies to Support Learning, Exploration, and Collaboration, proceedings of AIED-99* (pp. 199-206). Amsterdam: IOS Press.

Aleven, V., K. R. Koedinger, Sinclair, H. C., & Snyder, J. (1998). Combatting shallow learning in a tutor for geometry problem solving. In B. P. Goettl, H. M. Halff, C. L. Redfield, & V. J. Shute (Eds.), *Intelligent Tutoring Systems, Fourth International Conference, ITS '98* (pp. 364-373). Lecture Notes in Computer Science 1452. Berlin: Springer Verlag.

Aleven, V., & Ashley, K. D. (1997). Teaching case-based argumentation through a model and examples: Empirical evaluation of an intelligent learning environment. In B. du Boulay & R. Mizoguchi (Eds.), *Artificial Intelligence in Education, Proceedings of AI-ED 97 World Conference* (pp. 87-94). Amsterdam: IOS Press.

Aleven, V., & Ashley, K. D. (1997). Evaluating a learning environment for case-based argumentation skills. In *Proceedings of the Sixth International Conference on Artificial Intelligence and Law, ICAIL-97*, 170-179. New York: ACM.

Ashley, K. D., & Aleven, V. (1997). Reasoning symbolically about partially matched cases. In M. Pollack (Ed.), *Proceedings IJCAI 97, the Fifteenth International Joint Conference on Artificial Intelligence* (pp. 335-341). San Francisco, CA: Morgan Kaufmann.

Aleven, V., & Ashley, K. D. (1996). How different is different? Arguing about the significance of similarities and differences. In I. Smith & B. Faltings (Eds.), *Advances in Case-Based Reasoning: Proceedings of the Third European Workshop, EWCBR-96* (pp. 1-15). Lecture Notes in Artificial Intelligence, 1168. Berlin: Springer Verlag.

Aleven, V., & Ashley, K. D. (1995). Doing things with factors. In *Proceedings of the Fifth International Conference on Artificial Intelligence and Law* (pp. 31-41). New York: ACM.

Aleven, V., & Ashley, K. D. (1995). Using a well-structured model to teach in an ill-structured domain. In *Proceedings of the Seventeenth Annual Conference of the Cognitive Science Society* (pp. 419-424). Mahwah, NJ: Lawrence Erlbaum.

Aleven, V., & Ashley, K. D. (1994). An instructional environment for practicing argumentation skills. In *AAAI-94: Proceedings of the Twelfth National Conference on Artificial Intelligence* (pp. 485-492). Menlo Park, CA: AAAI Press.

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