

# Jennifer K. Olsen

jenniferolsen@sandiego.edu

## Academic Positions

---

**Assistant Professor, Department of Computer Science**

University of San Diego, August 2020-Present

**Postdoctoral Researcher in Computer-Human Interaction in Learning and Instruction (CHILI) Lab**

Ecole Polytechnique Federale de Lausanne, Switzerland, September 2017-July 2020

Advisor: Pierre Dillenbourg

## Education

---

**Ph.D. in Human-Computer Interaction**, August 2012-August 2017

Carnegie Mellon University, Pittsburgh, Pennsylvania

Thesis: Orchestrating Combined Collaborative and Individual Learning in the Classroom

Advisors: Vincent Aleven and Nikol Rummel

**Master of Science in Human-Computer Interaction**, August 2012-May 2015

Carnegie Mellon University, Pittsburgh, Pennsylvania

**Bachelor of Science in Cognitive Science**, August 2006-May 2010

Carnegie Mellon University, Pittsburgh, Pennsylvania

Double Major in Human-Computer Interaction; Minor in Computer Science

Senior Honors Thesis: The Effect of Color on Conscious and Unconscious Cognition

## Grants

---

**Uni Analytics: What, How, and Why Do Different Educational Stakeholders Use Learning Analytics in Higher Education?**

Swiss National Science Foundation

589,204 CHF over 4 years, Co-PIs: Pierre Dillenbourg, Patrick Jermann, Roland Tormey,

Francisco Pinto, Partner: **Jennifer Olsen**

## Awards and Honors

---

School of Computer and Communication Sciences Teaching Award, 2018 & 2019

Best Paper Award from European Conference of Technology Enhanced Learning, Sept. 2018

Siebel Scholar Class of 2017, Sept. 2016-Aug. 2017

Program in Interdisciplinary Educational Research (PIER) Fellowship, Aug. 2012-July 2016

Conference Travel Grant, AIED & EDM, National Science Foundation Grant, June 2015

Conference Travel Grant, CSCL, National Science Foundation Grant, June 2015

Graduate of Carnegie Mellon University with University and College Honors, May 2010

## Journal Articles in Preparation

---

Sharma, K. & **Olsen, J.K.** (under review). What are you looking at? A systematic literature review of collaborative eye tracking literature in education.

## Refereed Journal Articles

---

**Olsen, J.K.**, Rummel, N., & Aleven, V. (2020). Co-orchestrating Transitions between Individual, Small-Group and Whole-Class Learning in the Classroom: Co-designing for Teachers Values and Classroom Culture. *International Journal of Artificial Intelligence in Education*.

Kim, K.G., Oertel, C., Dobricki, M., **Olsen, J.K.**, Coppi, A.E., Cattaneo, A., & Dillenbourg, P. (2020). Using immersive virtual reality to support designing skills in vocational education. *British Journal of Educational Technology*.

**Olsen, J.K.**, Faucon, L., & Dillenbourg, P. (2020). Transferring interactive activities in large lectures from face-to-face to online settings. *Information and Learning Sciences*.

**Olsen, J.K.**, Sharma, K., Rummel, N., & Aleven, V. (2020). Temporal analysis of multimodal data to predict collaborative learning outcomes. *British Journal of Educational Technology*.

Sharma, K., **Olsen, J.K.**, Aleven, V., & Rummel, N. (2020). Using causality between collaborative and individual gaze for adaptive support: Collaborative problem solving with intelligent tutoring systems. *Journal of Computer Assisted Learning*.

Faucon, L., **Olsen, J.K.**, Haklev, S., & Dillenbourg, P. (2020). Real-time prediction of students activity progress and completion rates. *Journal of Learning Analytics*.

Ozgur, A. G., Wessel, M. J., **Olsen, J.K.**, Johal, W., Ozgur, A., Hummal, F. C., & Dillenbourg, P. (2020). Gamified Motor Training with Tangible Robots in Older Adults: a Feasibility Study and Comparison with Young. *Frontiers in Aging Neuroscience*.

Dillenbourg, P., Kim, K., Nasir, J., Yeo, S.T., & **Olsen, J.K.** (2019). Applying IDC theory to education in the Alps region: A response to Chan et al.'s contribution. *Research and Practice in Technology Enhanced Learning*.

**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*.

**Olsen, J.K.**, Aleven, V., & Rummel, N. (2017). Statistically modeling individual students learning over successive collaborative practice opportunities. *Journal of Educational Measurement*, 54(1), 123–138.

## Book Chapters

---

Holstein, K.\* & **Olsen, J.K.\*** (under review). Orchestration and AIED. *Handbook AIED 2021*.

\*First authorship is shared by the authors.

Dillenbourg, P., Prieto, L.P., & **Olsen, J.K.** (2018). Classroom orchestration. In F. Fischer, C. E. Hmelo-Silver, S.R. Goldman, & P. Reimann (Eds.), *International Handbook of the Learning Sciences* (pp. 180–190). Routledge.

**Olsen, J.K.**, Aleven, V., & Rummel, N. (2017). Exploring dual eye tracking as a tool to assess collaboration. In A. von Davier et al. (Eds.), *Innovative Assessment of Collaboration* (pp. 157–172). New York: Springer.

## Refereed Full and Short Conference Papers

---

Shahmoradi, S., Kothiyal, A., **Olsen, J.K.**, Bruno, B., & Dillenbourg, P. (2020). The teacher and robot: What teachers need for orchestrating robotic classrooms. To Appear In *Proceedings of the 15th European Conference on Technology Enhanced Learning*.

Faucon, L., **Olsen, J.K.**, Dillenbourg, P. (2020). A Bayesian model of individual differences and flexibility in inductive reasoning for categorization of examples. In *Proceedings of the 10th International Conference on Learning Analytics and Knowledge*.

Sharma, K., Papamitsiou, Z., **Olsen, J.K.**, & Giannakos, M. (2020). Predicting learners' effortful behaviour in adaptive assessment using multimodal data. In *Proceedings of the 10th International Conference on Learning Analytics and Knowledge*.

Nasir, J., Norman, U., Johal, W., **Olsen, J.K.**, Shahmoradi, S., & Dillenbourg, P. (2019). Robot analytics: What do human-robot interaction traces tell us about learning? In the *Proceedings of the 28th IEEE International Conference on Robot and Human Interactive Communication*.

Oertel, C., Coppi, A., **Olsen, J.K.**, Cattaneo, A., & Dillenbourg, P. (2019). On the use of gaze as a measure for performance in a visual exploration task. In *Proceedings of the 14th European Conference on Technology Enhanced Learning*.

Guneysu Ozgur, A., Wessel, M.J., Johal, W., Asselborn, T., **Olsen, J.K.**, Ozgur, A., Hummel, F.C., & Dillenbourg, P. (2019). Designing configurable arm rehabilitation games: How do different game elements affect user motion trajectories?. To Appear In *Proceedings of the 41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society*.

Sharma, K. & **Olsen, J.K.** (2019). An alternate statistical lens to look at collaboration data: Extreme value theory. In K. Lund, G. Niccolai, E. Lavoue, C. Hmelo-Silver G. Gweon, & M. Baker (Eds), *Proceedings of the 13th International Conference on Computer Supported Collaborative Learning*, (pp. 400–407). Lyon, France: International Society of the Learning Sciences.

**Olsen, J.K.** & Fox, A. (2019). Student usage of hints on coding-based summative assessments. In *The Proceedings of the 50th ACM Technical Symposium on Computer Science Education*.

- Sharma, K., **Olsen, J.K.**, Aleven, V., & Rummel, N. (2018). Exploring causality within collaborative problem solving using eye-tracking. In V. Dimitrova, S. Praharaaj, M. Fominykh, & H. Drachsler (Eds.), *Proceedings of the 13th European Conference on Technology Enhanced Learning* (pp. 412–426). Leeds, UK: Springer. **\*Best paper award.**
- Olsen, J.K.**, Sharma, K., Aleven, 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, R. (Eds.), *Proceedings of the 13th International Conference of the Learning Sciences*, (pp. 689–696). London, UK: International Society of the Learning Sciences.
- Olsen, J.K.** & Finkelstein, S. (2017). Through the (thin-slice) looking glass: An initial look at rapport and co-construction within peer collaboration. In B.K. Smith, M. Borge, E. Mercier, & K.Y. Lim (Eds), *Proceedings of the 12th International Conference on Computer Supported Collaborative Learning*, (pp. 511–518). Philadelphia, PA: International Society of the Learning Sciences.
- Olsen, J.K.**, Rummel, N., & Aleven, 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*, (pp. 95-102). Philadelphia, PA: International Society of the Learning Sciences.
- Hartmann, C., **Olsen, J.K.**, Brand, C., Rummel, N., & Aleven, V. (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*, (pp. 633-636). Philadelphia, PA: International Society of the Learning Sciences.
- 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. L. Polman, U. Cress, & P. Reimann (Eds.), *Proceedings of the 12th International Conference of the Learning Sciences*, (pp. 338-345). Singapore: International Society of the Learning Sciences.
- Gerritsen, D., Tasse, D., **Olsen, J.K.**, Vlahovic, T.A., Gulotta, R., Odom, W., Wiese, J., & Zimmerman, J. (2016). Mailing archived emails as postcards: Probing the value of virtual collections. In the *Proceedings of the 34th International Conference on Human Factors in Computing Systems (CHI)*, (pp. 1187-1199). ACM.
- Olsen, J.K.**, Aleven, 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*, (p. 211-217). Worcester, MA: Educational Data Mining Society.
- Wiese, E., Patel, R., **Olsen, J.K.**, & Koedinger, K. (2015). Transitivity is not obvious: Probing prerequisites of learning. In D. C. Noelle, R. Dale, A. S. Warlaumont, J. Yoshimi, T. Matlock, C. D. Jennings, & P. P. Maglio (Eds.), *Proceedings of the 37th Annual Conference of the Cognitive Science Society*, (pp. 2655-2660). Austin, TX: Cognitive Science Society.
- Belenky, D.M., Ringenberg, M., **Olsen, J.K.**, 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*. Austin, TX: Cognitive Science Society.

- Olsen, J. K.**, Belenky, D. M., Aleven, A., & 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*, (pp. 134-143). Berlin, Heidelberg: Springer.
- Olsen, J. K.**, Belenky, D. M., Aleven, A., Rummel, N., Sewall, J., & Ringenberg, 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*, (pp. 523-528). Berlin, Heidelberg: Springer.
- Mazurek, M., Arsenault, J.P., Bresee, J., Gupta, N., Ion, I., Johns, C., Lee, D., Liang, Y., **Olsen, J.**, Salmon, B., Shay, R., Vaniea, K., Bauer, L., Cranor, L.F., Ganger, G.R., & Reiter, M.K. (2010). Access control for home data sharing: Attitudes, needs and practices. In *Proceedings of the 28th International Conference on Human Factors in Computing Systems*, (pp. 645-654). ACM.

## Refereed Workshops and Posters

---

- Olsen, J.K.**, & Oertel, C. (2020). Supporting Empathy Training Through Virtual Patients To Appear In the *Proceedings of The 21th International Conference on Artificial Intelligence in Education*.
- Shahmoradi, S., **Olsen, J.K.**, Haklev, S., Johal, W., Norman, U., Nasir, J., & Dillenbourg, P. (2019). Orchestration of robotic activities in classrooms: Challenges and opportunities. In *Proceedings of the 14th European Conference on Technology Enhanced Learning*.
- Olsen, J.K.**, Rummel, N., & Aleven, V. (2018). Co-designing orchestration support for social plane transitions with teachers: Balancing automation and teacher autonomy. In J. Kay & R. Luckin, R. (Eds.), *Proceedings of the 13th International Conference of the Learning Sciences*, (pp. 1541–1542). London, UK: International Society of the Learning Sciences.
- Pace, A., Baligand, L., Haklev, S., **Olsen, J.K.**, de Grez, N., & De Wever, B. (2018). Quantifying collaboration in synchronous document editing. In *Proceedings of the 3rd Swiss Text Analytics Conference (Swiss-Text 2018)*.
- Hartmann, C., **Olsen, J.K.**, Rummel, N., & Aleven, V. (2016). Comparing two approaches to analyzing collaborative process data from learning with an ITS. In *Proceedings of the 5th Workshop on Intelligent Support for Learning in Groups at the 13th International Conference on Intelligent Tutoring Systems*.
- Olsen, J.K.**, Aleven, V., & Rummel, N. (2016). Enhancing student modeling for collaborative intelligent tutoring systems. In C. K. Looi, J. Polman, U. Cress, & P. Reimann (Eds.), *Proceedings of the 13th International Conference on Intelligent Tutoring Systems*, (pp. 485–489). Zagreb, Croatia.
- Olsen, J.K.**, Ringenberg, M., Aleven, V., & Rummel, N. (2015). Dual eye tracking as a tool to assess collaboration. In *Proceedings of the 4th Workshop on Intelligent Support for Learning in Groups at the 17th International Conference on Artificial Intelligence in Education*, (p. 25–30). Madrid, Spain.

- Olsen, J.K.**, Aleven, 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 AI in education*, (pp. 748–751). New York: Springer International Publishing.
- Olsen, J.K.**, Rummel, N., & Aleven, V. (2015). Finding productive talk around errors in intelligent tutoring systems. In O. Lindwall et al. (Eds.), *Proceedings of the 11th International Conference on Computer Supported Collaborative Learning*, (pp. 821–822). Gothenberg, Sweden.
- 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*.
- Olsen, J.K.**, Belenky, D.M., Aleven, V., Rummel, N., Sewall, J., & Ringenberg, M. (2013). Authoring collaborative intelligent tutoring systems. In R. Kumar & J. Kim (Eds.), *Proceedings of the 2nd Workshop on Intelligent Support for Learning in Groups at the 16th International Conference on Artificial Intelligence in Education*, (pp. 1-10). Memphis, TN.
- Belenky, D.M., Ringenberg, M., **Olsen, J.K.**, Aleven, 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 at the 10th International Conference on Computer Supported Collaborative Learning*. Madison, WI.

## Conference Presentations

---

- Olsen, J.K.**, Haklev, S., Faucon, L., & Dillenbourg, P. (2019). Orchestrating active learning in large lectures. Symposium Paper Presented at *the 2019 EARLI Meeting*. Aachen, Germany.
- Oertel, C., Kim, K., **Olsen, J.K.**, & Dillenbourg, P. (2019). Expanding apprentices experiences in the digital world. Symposium Paper Presented at *the 2019 EARLI Meeting*. Aachen, Germany.
- Olsen, J.K.** (2015). Using complimentary strengths of individual and collaborative learning within an intelligent tutoring system. Presented at *the Doctoral Consortium in conjunction with the 11th International Conference on Computer Supported Collaborative Learning*, (pp. 951–952). Gothenberg, Sweden.
- Olsen, J.K.**, Mazziotti, C., Aleven, V., & Rummel, N. (2014). Assessing collaboration dialogues of students using an intelligent tutoring system for fractions. Symposium Paper Presented at *the 2015 EARLI Meeting*. Limassol, Cyprus.
- Belenky, D.M., Ringenberg, M., **Olsen, J.K.**, Aleven, V., & Rummel, N. (2014). Integrating dual eye-tracking and Intelligent Tutoring System Logs: A novel method to study collaboration. Presented at *the 2014 EARLI SIG 6 (Instructional Design) & 7 (Learning and Instruction) Meeting*. Rotterdam, The Netherlands.
- Olsen, J.K.**, Belenky, D.M., Aleven, V., & Rummel, N. (2014). The use of collaborative technology with elementary school students. Poster presented at *Grace Hopper Celebration*. Phoenix, AZ.
- Booth, J.L. & **Olsen, J.K.** (2009). Encoding of equation features relates to conceptual and procedural knowledge of algebra. Poster presented at *the meeting of the Society for Research in Child Development*. Denver, CO.

## Invited Talks

---

**Invited Speaker**, October 2019

Methods and Research (M&R) Meeting, UNIL, Lausanne, Switzerland

*Using Diverse Statistical Lenses to Provide Insights into Collaborative Learning Processes*

**Invited Speaker**, September 2018

Program for Interdisciplinary Educational Research, CMU, Pittsburgh, PA

*Orchestrating the Timing of Classroom Activity Transitions*

**Invited Speaker**, September 2018

Teachers College, Columbia University, New York, NY

*Orchestrating the Timing of Classroom Activity Transitions*

**Invited Speaker**, February 2017

School of Computer & Communication Sciences, EPFL, Lausanne, Switzerland

*Supporting Collaborative and Individual Learning in the Classroom*

**Invited Speaker**, June 2015

Institute of Educational Research, Ruhr-Universitat Bochum, Bochum, Germany

*Predicting Student Performance in a Collaborative Learning Environment*

## Supervised Students

---

Diana Percy (Undergraduate Independent Study, USD), January 2021-present

Tanya Keval (Undergraduate Honors Thesis, USD), August 2020-present

Jules Courtois (PhD Student, EPFL), June 2020-July 2020

Kevin Kappel (Masters Student, EPFL), September 2019-April 2020

Thesis: How Micro-assessments Can Improve Learning Rates

Jiaxi Gu (Masters Student, EPFL), February 2018-June 2018

Thesis: Dynamically Predict Students' Progress and Completion Time in Class

Louis Faucon (PhD Student, EPFL), September 2017-July 2020

## Teaching Experience

---

**Computational Problem-solving (COMP 110)**, Fall 2020-Spring 2021

Undergraduate level

Department of Computer Science, USD, San Diego, CA

**Introduction to User-centered Design and Prototyping (COMP 494)**, Fall 2020

Undergraduate level

Department of Computer Science, USD, San Diego, CA

**Instructional Design with Orchestration Graphs**, November 2019

MOOC

Open edX

**Teaching Assistant in Digital Education & Learning Analytics**, Falls 2017-2019  
Graduate level  
EPFL, Lausanne, Switzerland

**Instructor at EPFL Digital Learning Sciences Winter School**, February 2019  
Instructor for Backwards Design Hands-on Session  
Instructor for Student Modelling and Bayesian Knowledge Tracing Hands-on Session  
Graduate level  
EPFL, Lausanne, Switzerland

**Teaching Assistant in Programming Usable Interfaces**, Fall 2015  
Undergraduate and graduate level  
HCII, CMU, Pittsburgh, PA

**Classroom Observer and Assistant**, January 2015-May 2015  
3rd - 5th grade classrooms  
Propel Braddock Hills Elementary School

**Teaching Assistant in User Centered Research and Evaluation**, Fall 2014  
Undergraduate and graduate level  
HCII, CMU, Pittsburgh, PA

**Mentor at the LearnLab summer school in the CTAT and Example-tracing Tutors track**, Summers 2014-2016  
Undergraduate and graduate level  
LearnLab, CMU, Pittsburgh, PA, USA

## Professional Experience

---

**Developer**, July 2010-June 2012  
The Vanguard Group, Malvern, Pennsylvania  
Produce and develop design solutions for the pension administrative system.

**Information Architect Internship**, May 2009-August 2009  
Verizon, Irving, Texas  
Design and develop wireframes for internal sites based on client needs.

## Service Experience

---

ISLS Annual Meeting Communications Co-Chair, 2021 Conference

ISLS Communications Committee Member, June 2019-present

Co-Organizer for Robots for Learning workshop at HRI, March 2021

Co-Organizer for EPFL Digital Learning Sciences Winter School, Feb. 2019

Co-Organizer for AI and Learning Analytics Track at the 2019 Applied Machine Learning Days, January 2019

Co-Organizer for reThinking Intelligent Support for Learning in Groups at ISLS, June 2018



Co-Organizer for Organizing and Analysing Computer-Supported Collaborative Writing at ISLS, June 2018

Co-Ombudsman, PhD Student Rep, July 2014-June 2016

Co-Organizer for the 5th Workshop on Intelligent Support for Learning in Groups at ITS, June 2016

Program Committee Member: Group Interaction Frontiers in Technology Workshop, 2018; Workshop on Intelligent Support for Learning in Groups, 2015

Student Volunteer, Educational Data Mining, June 2015

PIER Edbag Coordinator, July 2014-July 2015

PIER Summer Stats Course Organizer, Summer 2014

Curriculum Committee Student Rep, October 2012-May 2013

Reviewer: International Conference on Human Factors in Computing Systems (CHI), International Conference on the Learning Sciences (ICLS), International Conference on Computer Supported Collaborative Learning (CSCL), International Conference on Cognitive Science, International Conference on Artificial Intelligence in Education (AIED), Interaction Design and Children Conference, European Conference of Technology Enhanced Learning (EC-TEL), International Conference on Computers in Education (ICCE), Journal of Educational Measurement, User Modeling and User-Adapted Interaction, British Journal of Educational Technology, Instructional Science, International Journal on Artificial Intelligence in Education, Computers & Education, International Conference on Advanced Learning Technologies (ICALT)

## Volunteer Experience

---

Category Judge for the Pittsburgh Regional Science & Engineering Fair, 2015-2017

Big Brothers Big Sisters Community Big, November 2012-March 2017

Carnegie Mellon Women@SCS PhD Sisters Mentor, September 2015-May 2016

Carnegie Mellon Women@SCS Sisters Mentor, November 2012-May 2014