

Emily Jensen, Ph.D.

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RESEARCH OVERVIEW

I build **adaptive training systems** that help learners develop skills for **complex psychomotor tasks**. My research uses tools from formal methods and intelligent tutoring systems to create **explainable** systems that bring **pedagogical theories** into **modern learning scenarios**.

EDUCATION

- 2024 **Ph.D. Computer Science and Cognitive Science**
University of Colorado Boulder
Advisors: Bradley Hayes and Sriram Sankaranarayanan
Dissertation: Adaptive Training Systems for Human-Robot Interaction
- 2022 **M.S. Computer Science**
University of Colorado Boulder
- 2018 **B.A. Cognitive Science and B.S. Mathematics**, summa cum laude
Case Western Reserve University

PROFESSIONAL EXPERIENCE

- 2024 - present **Assistant Professor of Computer Science**
Franklin & Marshall College
- 2018 - 2024 **Graduate Research Assistant**
University of Colorado Boulder
- 2022 - 2023 **Journeyman Fellow**
U.S. Army Research Laboratory, HRED
Advisor: Anthony J. Ries
- 2017 **REU Undergraduate Researcher**
Florida Institute of Technology

JOURNAL ARTICLES

- [J1] Callahan-Flintoft, C., **Jensen, E.**, Naeem, J., Nonte, M. W., Madison, A. M., Ries, A. J., "A Comparison of Head Movement Classification Methods". In: *Sensors* (2024). DOI: [10.3390/s24041260](https://doi.org/10.3390/s24041260).
- [J2] Chang, C. T., Stull, M. P., Crockett, B., **Jensen, E.**, Lohrmann, C., Hebert, M., Hayes, B., "Iteratively Adding Latent Human Knowledge within Trajectory Optimization Specifications Improves Learning and Task Outcomes". In: *Robotics and Automation Letters* (2024). DOI: [10.1109/LRA.2024.3522779](https://doi.org/10.1109/LRA.2024.3522779).
- [J3] D'Mello, S. K., Moulder, R. G., **Jensen, E.**, "Momentary Measures of Emotions During Technology-enhanced Learning Prospectively Predict Standardized Test Scores in Two Large

- Samples”. In: *Learning and Instruction* 90 (2024). DOI: [10.1016/j.learninstruc.2023.101872](https://doi.org/10.1016/j.learninstruc.2023.101872).
- [J4] Villanueva, C., Ibonie, S., **Jensen, E.**, Eloy, L., Quoidbach, J., Bryan, A., D’Mello, S. K., Gruber, J., “Emotion Differentiation and Bipolar Risk in Emerging Adults Before and During the COVID-19 Pandemic”. In: *Journal of Emotion and Psychopathology* (2023). DOI: [10.31234/osf.io/xya43](https://doi.org/10.31234/osf.io/xya43). (In Press).

CONFERENCE PROCEEDINGS

- [C1] **Jensen, E.**, Sankaranarayanan, S., Hayes, B., “Automated Assessment and Adaptive Multimodal Formative Feedback Improves Psychomotor Skills Training Outcomes in Quadrotor Teleoperation”. In: *2024 International Conference on Human-Agent Interaction*. 2024. DOI: [10.1145/3687272.3688322](https://doi.org/10.1145/3687272.3688322). [Included conference talk].
- [C2] Schirmer, S., Singh, J., **Jensen, E.**, Dauer, J. C., Finkbeiner, B., Sankaranarayanan, S., “Temporal Behavior Trees: Robustness and Segmentation”. In: *Proceedings of the 2024 ACM International Conference on Hybrid Systems: Computation and Control*. 2024. DOI: [10.1145/3641513.3650180](https://doi.org/10.1145/3641513.3650180).
- [C3] **Jensen, E.**, Hayes, B., Sankaranarayanan, S., “More Than a Number: A Multi-dimensional Framework For Automatically Assessing Human Teleoperation Skill”. In: *Companion of the 2023 ACM/IEEE International Conference on Human-Robot Interaction*. 2023. DOI: [10.1145/3568294.3580167](https://doi.org/10.1145/3568294.3580167). [Included poster presentation].
- [C4] **Jensen, E.**, Luster, M., Pitts, B., Sankaranarayanan, S., “Using Artificial Potential Fields To Model Driver Situational Awareness”. In: *4th IFAC Workshop on Cyber-Physical Human-Systems*. 2022. DOI: [10.1016/j.ifacol.2023.01.118](https://doi.org/10.1016/j.ifacol.2023.01.118). [Included talk and poster].
- [C5] **Jensen, E.**, Luster, M., Yoon, H., Pitts, B., Sankaranarayanan, S., “Mathematical Models of Human Drivers Using Artificial Risk Fields”. In: *Proceedings of the Intelligent Transportation Systems Conference*. 2022. DOI: [10.1109/ITSC55140.2022.9922389](https://doi.org/10.1109/ITSC55140.2022.9922389). [Included conference talk].
- [C6] Leite, W. L., Roy, S., Chakraborty, N., Michailidis, G., Huggins-Manley, A. C., D’Mello, S. K., Faradonbeh, M. K. S., **Jensen, E.**, Kuang, H., Jing, Z., “A Novel Video Recommendation System for Algebra : An Effectiveness Evaluation Study”. In: *Proceedings of the 12th International Learning Analytics and Knowledge Conference (LAK22)*. 2022. DOI: [10.1145/3506906](https://doi.org/10.1145/3506906).
- [C7] **Jensen, E.**, Pugh, S. L., D’Mello, S. K., “A Deep Transfer Learning Approach to Modeling Teacher Discourse in the Classroom”. In: *Proceedings of the 11th International Learning Analytics and Knowledge Conference (LAK21)*. 2021. DOI: [10.1145/3448139.3448168](https://doi.org/10.1145/3448139.3448168). [Included conference talk].
- [C8] **Jensen, E.**, Umada, T., Hunkins, N. C., D’Mello, S. K., Hutt, S., Huggins-Manley, A. C., “What You Do Predicts How You Do: Prospectively Modeling Student Quiz Performance Using Activity Features in an Online Learning Environment”. In: *Proceedings of the 11th International Learning Analytics and Knowledge Conference (LAK21)*. 2021. DOI: [10.1145/3448139.3448151](https://doi.org/10.1145/3448139.3448151). [Best Paper Runner-up, included talk].
- [C9] **Jensen, E.**, Dale, M., Donnelly, P. J., Stone, C., Kelly, S., Godley, A., D’Mello, S. K., “Toward Automated Feedback on Teacher Discourse to Enhance Teacher Learning”. In: *2020 CHI Conference on Human Factors in Computing Systems Proceedings (CHI 2020)*. 2020. DOI: [10.1145/3313831.3376418](https://doi.org/10.1145/3313831.3376418).

- [C10] **Jensen, E.**, Hutt, S., D’Mello, S. K., “Generalizability of Sensor-Free Affect Detection Models in a Longitudinal Dataset of Tens of Thousands of Students”. In: *The 12th International Conference on Educational Data Mining*. 2019. URL: <https://eric.ed.gov/?id=ED599213>. [Included conference talk].
- [C11] Bryan, K. J., Solomon, M., **Jensen, E.**, Coley, C., Rajan, K., Tian, C., Mijatovic, N., Kiss, J. M., Lamoureux, B., Dersin, P., Smith, A. O., Peter, A. M., “Classification of Rail Switch Data Using Machine Learning Techniques”. In: *Proceedings of the 2018 Joint Rail Conference*. 2018. DOI: [10.1115/JRC2018-6175](https://doi.org/10.1115/JRC2018-6175).

BOOK CHAPTERS

- [B1] D’Mello, S. K., **Jensen, E.**, “Emotional Learning Analytics”. In: *Handbook of Learning Analytics*. 2022. DOI: [10.18608/hla22.012](https://doi.org/10.18608/hla22.012).

WORKSHOP PROCEEDINGS

- [W1] **Jensen, E.**, Sankaranarayanan, S., Hayes, B., “Large Language Models Enable Automated Formative Feedback in Human-Robot Interaction Tasks”. In: *Human-Large Language Model Interaction workshop at the 2024 ACM/IEEE International Conference on Human-Robot Interaction*. 2024. URL: <https://arxiv.org/abs/2405.16344>. [Included workshop talk].
- [W2] Wilson, J. R., **Jensen, E.**, “HRI Curriculum for a Liberal Arts Education”. In: *Designing an Intro to HRI Course Workshop at the 2024 ACM/IEEE International Conference on Human-Robot Interaction*. 2024. URL: <https://arxiv.org/abs/2403.14025>.
- [W3] **Jensen, E.** “Specifying Drone Teleoperation Skill for Adaptive Curriculum Generation”. In: *Humans in Cyber-Physical Systems: Safe Teleoperation through Shared Control Workshop at CPS-IoT Week*. 2023. [Included workshop talk].

INVITED TALKS

- [T1] **Jensen, E.** “Skill Acquisition Using Automated Feedback From Generative AI Systems”. Conversations on Generative AI series for University of Colorado Boulder Engineering’s Office of Digital Education. Apr. 2024.
- [T2] **Jensen, E.** “Defining and Assessing Skill for Human-Robot Interaction”. Student colloquium talk at University of Colorado Boulder. Sept. 2023.
- [T3] **Jensen, E.** “Defining and Assessing Skill for Human-Robot Interaction”. Seminar talk at Colorado School of Mines. June 2023.
- [T4] **Jensen, E.** “Revolutionizing Education with Personalized Learning Technologies”. Bucknell University. Dec. 2023.
- [T5] **Jensen, E.** “Revolutionizing Education with Personalized Learning Technologies”. Franklin & Marshall College. Dec. 2023.

POSTERS

- [P1] Le, N., Manns, B. H., Villanueva, C. M., Ibonie, S. G., **Jensen, E.**, Eloy, L., Bryan, A., D’Mello, S. K., Gruber, J., “Mind Wandering and Bipolar Spectrum Disorder Risk in Emerging Adults: An Experience Sampling Approach”. Presented at the 2024 Society for Research in Psychopathology (SRP) Annual Conference. 2024.
- [P2] Manns, B. H., Le, N., Villanueva, C. M., Ibonie, S. G., **Jensen, E.**, Eloy, L., Bryan, A., D’Mello, S. K., Gruber, J., “Mind Wandering and Bipolar Disorder Risk in Emerging Adults:

- An Experience Sampling Approach”. Presented at the 2024 Society for Affective Science (SAS) Annual Conference. 2024.
- [P3] Schirmer, S., Singh, J., **Jensen, E.**, Dauer, J., Finkbeiner, B., Sankaranarayanan, S., “Temporal Behavior Trees – Segmentation”. Presented at the 2024 ACM International Conference on Hybrid Systems: Computation and Control. 2024. [**Best Poster Award**].
- [P4] Villanueva, C. M., Ibonie, S. G., **Jensen, E.**, Eloy, L., D’Mello, S. K., Gruber, J., “Emotion Differentiation and Bipolar Risk in Emerging Adults Before and During the COVID-19 Pandemic: An Experience-Sampling Approach”. Presented at the 2021 Society for Research in Psychopathology (SRP) Annual Conference. 2024.
- [P5] **Jensen, E.**, Dale, M., Donnelly, P. J., Stone, C., Kelly, S., Godley, A., D’Mello, S. K., “Toward Automatic Feedback on Teacher Discourse to Enhance Teacher Learning”. Presented at the Institute of Cognitive Science at University of Colorado Boulder. 2020.
- [P6] **Jensen, E.**, Hutt, S., D’Mello, S. K., “Generalizability of Sensor-Free Affect Detection Models”. Presented at the Department of Computer Science at University of Colorado Boulder. 2019. [**Best Presentation Award**].
- [P7] **Jensen, E.**, Hutt, S., D’Mello, S. K., “Generalizability of Sensor-Free Affect Detection Models”. Presented at CRA-W Grad Cohort. 2019.

WORKSHOPS ORGANIZED

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|------------|---|
| May 2023 | Humans in Cyber-Physical Systems: Safe Teleoperation through Shared Control Workshop
At CPS-IoT Week 2023 |
| March 2023 | Virtual, Augmented, and Mixed-Reality for Human-Robot Interactions Workshop
At HRI 2023 |

TEACHING EXPERIENCE

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|-------------|---|
| Spring 2025 | CPS 111: Introduction to Computational Thinking, Instructor of Record
CPS 360: Introduction to Machine Learning, Instructor of Record and re-designed the course |
| Fall 2024 | CPS 111: Introduction to Computational Thinking, Instructor of Record |
| Spring 2021 | CSCI 3202: Intro to Artificial Intelligence, Teaching Assistant |
| Fall 2020 | CSCI 5100/6100: Computer Science Colloquium, Teaching Assistant
CSCI 6000: Intro to the Computer Science PhD Program, Teaching Assistant |

OUTREACH

- | | |
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| Graduate Orientation | Healthy Advising Relationships (2022, 2023)
Navigating the Computer Science PhD (2021)
Financial Basics (2021) |
| Workshops | Intro to AI and Machine Learning Seminar - ARL Researchers (2023)
Intro to Computational Thinking - Grad Students (2022)
Intro to Data Analysis in Python - Undergraduate Students (2021 - 2023) |

Volunteer Graduate School Peer Mentor (2019 - 2020)
 Science Fair Judge at Colorado STEM Academy (2019 - 2020)
 Tech Help Facilitator at Boulder Public Library (2019 - 2023)

PROFESSIONAL SERVICE

Conference	International Conference on Multimodal Interaction (ICMI)
Leadership	Webchair (2018)
	Educational Data Mining (EDM)
	Program Committee (2022 - 2024)
	Learning Analytics and Knowledge (LAK)
	Program Committee (2022)
	Human-Robot Interaction (HRI)
	Student Volunteer (2024)
Conference	Artificial Intelligence in Education (AIED ; 2020, 2021)
Reviews	Human Factors in Computing Systems (CHI ; 2021)
	Learning @ Scale (L@S ; 2021)
	Human-Robot Interaction (HRI ; 2023)
Journal	Computers & Education (2022)
Reviews	Higher Education Pedagogies (2022)
	Behavior Research Methods (2024)
Students	Tetsumichi Umada (MS; 2019 - 2020)
Supervised	Xuefei Sun (BS; 2019)
	Jasdeep Singh (BS; 2023)
	Kashyap Chapalli (BS; 2023)
	Nora Su (BS; 2024)
	Conner Malley (HS; 2019)
Campus	Computer Science Graduate Student Association (2018 - 2021)
Leadership	Various positions and projects, including Chair
	Graduate and Professional Student Government (2018 - 2023)
	Various positions and projects, including President of Engagement

AFFILIATIONS

ACM/SIGCHI, IEEE
Phi Beta Kappa Academic Honor Society, *Ohio Alpha Chapter*
Pi Mu Epsilon National Honorary Mathematics Society, *Ohio Sigma Chapter*
Phi Sigma Rho engineering sorority, *Omicron Chapter*
 National Ritual Director (2021 - 2024)

HONORS AND AWARDS

2024	Dissertation Completion Fellowship (CU Boulder)
2023	Endowed Founders Fellowship (CU Boulder)
	President's Commendation for outstanding service (Phi Sigma Rho)
	Conference Support Fellowship (CU Boulder)

- 2022 CPHS Fellow (CPHS Workshop)
 Volunteer of the Year Award (Phi Sigma Rho)
 David T. Spalding Graduate Teaching Fund Fellowship Award (CU Boulder)
- 2021 Graduate and Professional Student Government Travel Grant (CU Boulder)
 Best Paper Runner-up (LAK)
- 2020 Outstanding Service Award (CU Boulder)
 Student Travel Award (CU Boulder)
- 2019 Best Research Poster (CU Boulder)
- 2018 Computer Science Departmental Fellowship (CU Boulder)
 Webster Godman Simon Mathematics Award (CWRU)
- 2017 President's Commendation for outstanding service (Phi Sigma Rho)
- 2016 Phi Beta Kappa Prize for outstanding sophomore in the liberal arts and sciences
 (CWRU)