

Stephen J. Hutt

CONTACT INFORMATION	3700 Walnut Street Philadelphia, PA, 19104, USA	– hutts@upenn.edu
EDUCATION	University of Colorado, Boulder , Boulder, CO Ph.D., Computer Science, August 2020 Thesis Topic: <i>Scaling Up: Moving Automated Gaze-Based Engagement Detection Out Of the Lab</i> Advisor: Sidney D'Mello, Ph.D University of York , York, United Kingdom M.Eng., <i>First Class Honours Computer Science with Artificial Intelligence</i> , July 2015 Thesis Topic: <i>Evolutionary Techniques for Developing Computer Poker Agents</i> Advisor: Dan Franks, Ph.D University of California, Santa Cruz , Santa Cruz, CA Exchange Year, Computer Science, 2012-2013	
RESEARCH INTERESTS	Learning Analytics, Machine Learning, Affective Computing, Fair AI, Adaptive Learning Technologies, Learning Sciences, Human Computer Interaction	
RESEARCH EXPERIENCE	Assistant Director Penn Center for Learning Analytics University of Pennsylvania August 2021 - Present I hold a leadership role within the center, mentoring and supporting students while also maintaining my own research. I provide guidance and feedback to both PhD and Masters students affiliated with the Center. I also support the broader research goals of the center and center funding proposals. I work closely with the development team for the MOOC Replication Framework (MORF) - a data repository and analysis framework - and assist external researchers wishing to leverage MORF for their work. Postdoctoral Researcher Graduate School of Education, University of Pennsylvania Supervisor: Ryan Baker, Ph.D August 2020 - Present Conducting research at the intersection of Artificial Intelligence and Education. Using Computer Science knowledge and techniques to create educational software and experiences that are both dynamic and beneficial for the learner. This research has a special focus on the fair treatment of students who are members of underrepresented groups. PhD Researcher Institute of Cognitive Science, University of Colorado, Boulder Supervisor: Sidney D'Mello, Ph.D January 2018 - August 2020 Explored how artificial intelligence and big data techniques can apply in education. Researched Fair AI in the context of educational software and worked with two large-scale datasets to explore how current methods commonly used in education contexts scale up. Designed and implemented real-time gaze-based Mind Wandering detection and interventions.	

PhD Researcher

September 2015 to August 2017

Department of Computer Science,
 University of Notre Dame
 Supervisor: Sidney D'Mello, Ph.D

Designed and implemented a multimodal experiment on detecting affect and engagement during classroom learning. Collected eye gaze, video, and interaction data from students whilst they interacted with a Biology Intelligent Tutoring System. Built machine learning models of mind wandering using eye gaze data of students interacting with computers in multiple tasks.

Masters Researcher

September 2014 to July 2015

Department of Computer Science,
 University of York
 Supervisor: Dan Franks, Ph.D

Designed and implemented a framework to train agents to play Texas Hold'em poker. Using genetic algorithms and evolutionary computation approaches, I trained multiple agents playing against each other as well as expert and pre-trained agents.

JOURNAL
 ARTICLES

1. M. Gardener, **S. Hutt**, D. Kamenz, A. L. Duckworth, and S. K. D'Mello, "How does high school extracurricular participation predict bachelor's degree attainment? it's complicated," *Journal of Research on Adolescence*, 2020. DOI: [10.1111/jora.12557](https://doi.org/10.1111/jora.12557)
2. **S. Hutt**, K. Krasich, C. Mills, N. Bosch, S. White, J. R. Brockmole, and S. K. D'Mello, "Automated gaze-based mind wandering detection during computerized learning in classrooms," *User Modeling and User-Adapted Interaction*, Jun. 2019, ISSN: 1573-1391. DOI: [10.1007/s11257-019-09228-5](https://doi.org/10.1007/s11257-019-09228-5)
3. B. M. Galla, E. P. Shulman, B. Plummer, M. Gardner, **S. Hutt**, J. Goyer, A. Finn, S. D'Mello, and A. Duckworth, "Why high school grades are better predictors of on-time college graduation than are admissions test scores: The role of self-regulation and cognitive ability.," *American Educational Research Journal*, 2019. DOI: [10.3102/0002831219843292](https://doi.org/10.3102/0002831219843292)
4. K. Krasich, R. McManus, **S. Hutt**, M. Faber, S. K. D'Mello, and J. R. Brockmole, "Gaze-based signatures of mind wandering during real-world scene processing," *Journal of Experimental Psychology: General*, vol. 147, no. 8, p. 1111, 2018. DOI: [10.1037/xge0000411](https://doi.org/10.1037/xge0000411)

CONFERENCE
 PUBLICATIONS -
 STRICTLY PEER
 REVIEWED

5. J. M. A. L. Andres, **S. Hutt**, J. L. Ocumpaugh, R. S. Baker, N. Naisar, and C. Porter, "How anxiety affects affect: A quantitative ethnographic investigation using affect detectors and data-targeted interviews," in *Proceedings of the 3rd International Conference on Quantitative Ethnography*, In Press
6. J. L. Ocumpaugh, **S. Hutt**, J. M. A. L. Andres, R. S. Baker, G. Biswas, N. Bosch, L. Paquette, and A. Munshi, "Using qualitative data from targeted interviews to inform rapid aided development," in *Proceedings of the 29th International Conference on Computers in Education*, In Press
7. **S. Hutt**, J. Ocumpaugh, J. M. A. L. Andres, A. Munshi, N. Bosch, R. S. Baker, Y. Zhang, L. Paquette, S. Slater, and G. Biswas, "Who's stopping you? - using microanalysis to explore the impact of science anxiety on self-regulated learning operations," in *Proceedings of the 43rd Annual Conference of the Cognitive Science Society*, 2021

8. **S. Hutt**, J. Ocumpaugh, J. M. A. L. Andres, N. Bosch, L. Paquette, G. Biswas, and R. S. Baker, "Sharpest tool in the shed: Investigating smart models of self-regulation and their impact on learning," in *Proceedings of the International Conference on Educational Data Mining*, 2021
9. Y. Zhou, J. Andres-Bray, **S. Hutt**, K. Ostrow, and R. S. Baker, "A comparison of hints vs. scaffolding in a mooc with adult learners," in *Proceedings of the International Conference on Artificial Intelligence and Education.*, 2021, pp. 427–432
10. R. S. Baker, B. McLaren, **S. Hutt**, J. Richey, E. Rowe, M. Almeda, M. Mogessie, and J. M. A. L. Andres, "Towards sharing student models across learning systems," in *Proceedings of the International Conference on Artificial Intelligence and Education.*, 2021, pp. 60–65
11. R. S. Baker, N. Nasiar, J. L. Ocumpaugh, **S. Hutt**, J. M. A. L. Andres, S. Slater, M. Schofield, A. Moore, L. Paquette, A. Munshi, and G. Biswas, "Affect-targeted interviews for understanding student frustration," in *Proceedings of the International Conference on Artificial Intelligence and Education.*, 2021, pp. 52–63 - **Best Paper Award**
12. **S. Hutt**, K. Krasich, J. R. Brockmole, and S. K. D'Mello, "Breaking out of the lab: Mitigating mind wandering with gaze-based attention-aware technology in classrooms," CHI '21, Yokohama, Japan: Association for Computing Machinery, 2021, ISBN: 9781450380966. DOI: [10.1145/3411764.3445269](https://doi.org/10.1145/3411764.3445269)
13. E. Jensen, T. Umada, N. C. Hunkins, **S. Hutt**, A. C. Huggins-Manley, and S. K. D'Mello, "What you do predicts how you do: Prospectively modeling student quiz performance using activity features in an online learning environment," in *LAK21: 11th International Learning Analytics and Knowledge Conference*, LAK21, Irvine, CA, USA: Association for Computing Machinery, 2021, pp. 121–131, ISBN: 9781450389358. DOI: [10.1145/3448139.3448151](https://doi.org/10.1145/3448139.3448151)
14. **S. Hutt**, M. Gardner, A. L. Duckworth, and S. K. D'Mello, "Evaluating fairness and generalizability in models predicting on-time graduation from college applications," in *Proceedings of the 12th International Conference on Educational Data Mining. International Educational Data Mining Society.*, C. F. Lynch, A. Merceron, M. Desmarais, and R. Nkambou, Eds., 2019, pp. 79–88
15. E. Jensen, **S. Hutt**, and S. K. D'Mello, "Generalizability of sensor-free affect detection models in a longitudinal dataset of tens of thousands of students," in *Proceedings of the 12th International Conference on Educational Data Mining. International Educational Data Mining Society.*, C. F. Lynch, A. Merceron, M. Desmarais, and R. Nkambou, Eds., 2019, pp. 324–329
16. **S. Hutt**, J. F. Grafsgaard, and S. K. D'Mello, "Time to scale: Generalizable affect detection for tens of thousands of students across an entire school year," in *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, CHI '19, Glasgow, Scotland UK: ACM, 2019, 496:1–496:14, ISBN: 978-1-4503-5970-2. DOI: [10.1145/3290605.3300726](https://doi.org/10.1145/3290605.3300726)
17. C. Stone, A. Quirk, M. Gardener, **S. Hutt**, A. L. Duckworth, and S. K. D'Mello, "Language as thought: Using natural language processing to model noncognitive traits that predict college success," in *Proceedings of the 9th International Conference on Learning Analytics & Knowledge*, LAK19, Tempe, AZ, USA: ACM, 2019, pp. 320–329, ISBN: 978-1-4503-6256-6. DOI: [10.1145/3303772.3303801](https://doi.org/10.1145/3303772.3303801)

18. K. Krasich, **S. Hutt**, C. Mills, C. A. Spann, J. R. Brockmole, and S. K. D'Mello, "MindTS: Testing a brief mindfulness intervention with an intelligent tutoring system," in *Proceedings of the 19th International Conference on Artificial Intelligence in Education (AIED'18)*, London, UK, Jun. 2018
19. **S. Hutt**, M. Gardener, D. Kamentz, A. L. Duckworth, and S. K. D'Mello, "Prospectively predicting 4-year college graduation from student applications," in *Proceedings of the 8th International Conference on Learning Analytics and Knowledge, LAK '18*, Sydney, New South Wales, Australia: ACM, 2018, pp. 280–289, ISBN: 978-1-4503-6400-3. DOI: 10.1145/3170358.3170395
20. J. DeBenedetto, **S. Hutt**, L. Faust, A. Liu, and N. Kremer-Herman, "Placating plato with plates of pasta: An interactive tool for teaching the dining philosophers problem," in *2017 IEEE Frontiers in Education Conference (FIE)*, Oct. 2017, pp. 1–9. DOI: 10.1109/FIE.2017.8190443
21. **S. Hutt**, C. Mills, N. Bosch, K. Krasich, J. Brockmole, and S. D'Mello, "Out of the fr-eye-ing pan: Towards gaze-based models of attention during learning with technology in the classroom," in *Proceedings of the 25th Conference on User Modeling, Adaptation and Personalization, UMAP '17*, Bratislava, Slovakia: ACM, 2017, pp. 94–103, ISBN: 978-1-4503-4635-1. DOI: 10.1145/3079628.3079669 - **Best Student Paper Award**
22. **S. Hutt**, J. Hardey, R. Bixler, A. Stewart, E. Risko, and S. K. D'Mello, "Gaze-based detection of mind wandering during lecture viewing," in *Proceedings of the 10th International Conference on Educational Data Mining. International Educational Data Mining Society.*, 2017
23. **S. Hutt**, C. Mills, S. White, P. J. Donnelly, and S. K. D'Mello, "The Eyes Have It: Gaze-based Detection of Mind Wandering during Learning with an Intelligent Tutoring System.," in *Proceedings of the 9th International Conference on Educational Data Mining. International Educational Data Mining Society.*, T. Barnes, M. Chi, and M. Feng, Eds., 2016, pp. 86–93

BOOK CHAPTERS

24. **S. Hutt**, R. S. Baker, J. Ocumpaugh, A. Munshi, J. M. A. L. Andres, S. Karumbaiah, S. Slater, G. Biswas, L. Paquette, N. Bosch, and M. van Velsen, "Quick red fox: An app supporting a new paradigm in qualitative research on aided for stem," in *Artificial Intelligence in STEM Education: The Paradigmatic Shifts in Research, Education and Technology*, In Press

WORKSHOP PAPERS

25. **S. Hutt**, S. Karumbaiah, and J. L. Ocumpaugh, "Optimizing philosophies for predictive models in learning analytics," in *LAK21: 11th International Learning Analytics and Knowledge Conference - Companion Proceedings*, LAK21, 2021, pp. 325–326

SELECTED CONFERENCE PRESENTATIONS

26. J. R. Brockmole, K. Krasich, **S. Hutt**, and S. K. D'Mello, *Attention-aware cyberlearning to detect and combat wandering minds*. 59th Annual Meeting of the Psychonomic Society., New Orleans, LA, USA, Nov. 2018
27. A. Quirk, **S. Hutt**, M. Gardner, A. Duckworth, and S. K. D'Mello, *Analyzing open-ended descriptions of extracurricular participation for evidence of character development*, Promoting Character Development Among Diverse Children and Adolescents: The Roles of Families, Schools, and Out-Of-School-Time Youth Development Programs, Philadelphia, PA, USA., Oct. 2018

	28. B. M. Galla, R. N. Baelen, H. Fiore, S. Hutt , and A. Shenhav, <i>Compared to self-immersion, mindfulness reduces social media desires and boosts academic self-control in undergraduates</i> , International Symposium for Contemplative Research (ISCR), Arizona, USA, Nov. 2018	
	29. K. Krasich, R. McManus, S. Hutt , M. Faber, S. K. D'Mello, and J. R. Brockmole, <i>Gaze-based indices of mind wandering during real-world scene processing</i> . Annual Workshop on Object Perception, Attention, and Memory., Vancouver, BC, Canada., Nov. 2017	
INVITED PRESENTATIONS	30. J. L. Ocumpaugh, S. Hutt , A. Munshi, R. S. Baker, G. Biswas, and L. Paquette, <i>Quick red fox : Optimizing classroom interviews with srl and affect detection</i> , Learning Analytics Learning Network, Aug. 2021	
FUNDING	Department of Computer Science Student Travel Award \$1,600 <i>University of Colorado Boulder</i>	May 2019
	Department of Computer Science Student Travel Award \$1,000 <i>University of Colorado Boulder</i>	March 2018
	College of Engineering Student Travel Award \$400 <i>College of Engineering and Applied Sciences, University of Colorado Boulder</i>	March 2018
	Dean's Graduate Assistantship, CU Boulder \$21,800 <i>College of Engineering and Applied Sciences, University of Colorado Boulder</i>	August 2017
	SIGCHI Student Travel Grant \$1,800 <i>SIGCHI</i>	August 2016
	Social Responsibilities of Research Fellowship \$1,500 <i>John J. Reilly Center for Science, Technology, and Values</i>	May 2016
	Student Travel Scholarship \$4,500 (paid in GBP) <i>University of York</i>	April 2011
AWARDS	Best Paper Award, AIED 2021	June 2021
	Outstanding Service Award, Department of Computer Science	May 2019
	Outstanding Service Award, Department of Computer Science	May 2018
	James Chen Best Student Paper Award, UMAP 2017	July 2017
	SIGCHI Student Scholar	March 2017
	Outstanding Student Award	July 2011
TEACHING EXPERIENCE	Instructor Introduction to Artificial Intelligence Department of Computer Science, University of Colorado Boulder	Spring '19

Designed and implemented the curriculum, assignments and examinations. Held weekly classes, managed course staff of four people, and mentored students during office hours. 106 students enrolled

Teaching Assistant

Fall '17

Introduction to Computer Science
Instructor: David Knox, Ph.D
Department of Computer Science,
University of Colorado Boulder

Taught two lab sections with approximately 30 students each, prepared weekly assignments and autograders, assisted with the development of examinations, and mentored students during office hours.

Teaching Assistant

Fall '15

Design and Analysis of Algorithms
Instructor: Danny Z. Chen, Ph.D
Department of Computer Science,
University of Notre Dame

Assisted with the development of written assignments and examinations. Mentored students during weekly office hours and review sessions. 94 students enrolled

Tutor

Fall '13 - Spring '15

Mathematics and Computer Science
Highcliffe School

PROFESSIONAL
MEMBERSHIP

Association for Computing Machinery
International Educational Data Mining Society
International Artificial Intelligence in Education Society
Cognitive Science Society
Society for Learning Analytics Research
ACM Special Interest Group on Computer-Human Interaction (SIGCHI)
ACM Special Interest Group on Computer Science Education (SIGCSE)

JOURNAL REVIEWS

Frontiers in Artificial Intelligence
International Journal of Artificial Intelligence in Education
Computers in Human Behaviour
Advances in Methods and Practices in Psychological Science
Journal of Research on Educational Effectiveness
Review of Research in Education
IEEE Transactions on Visualization and Computer Graphics
Consciousness and Cognition
IEEE Transactions on Learning Technologies
IEEE Transactions on Big Data

CONFERENCE
REVIEWS

International Conference on Educational Data Mining (EDM) 2017, 2018, 2019, 2020
International Conference on Artificial Intelligence in Education (AIED), 2017-2021
International Conference on Multimodal Interaction (ICMI) 2019, 2020
ACM Conference on Computer-Supported Cooperative Work and Social Computing 2019
ACM CHI Conference on Human Factors in Computing Systems 2019-2021

DISSERTATION
COMMITTEES

Juan Miguel Andres-Bray Fall 2021
Graduate School of Education, Univeristy of Pennsylvania

MENTORSHIP

PhD. Students

Juan Miguel Andres-Bray 2020 - Present
J. M. Alexandra Andres 2020 - Present
Joyce Zhang 2020 - Present

Masters Students

Alexander White 2020 - 2021
Yiqiu Zhou 2020 - 2021
Tetsumichi Umada 2019 - 2020
Phu Dang 2018
Sayali Sonawane 2018

Undergraduate Students

Alexander Tobias 2021 - Present
Frank Stinar 2019 - 2020
David Blair 2017 - 2019
Kendyll Kraus 2017
Jessica Hardey 2016 - 2017

High School Students

Jack Rogers 2019
Connor Malley 2019
Taylor Kovacs 2016-2017

ACADEMIC
SERVICE

Broader Research Community

Program Committee, International Conference on Multimodal Interaction 2021
Program Committee, Artificial Intelligence in Education 2021
Program Committee, International Conference on Multimodal Interaction 2020
Program Committee, Artificial Intelligence in Education 2020
Program Committee, Educational Data Mining 2020
Local Committee, International Conference on Multimodal Interaction 2018
Program Committee, Educational Data Mining 2017

Department and Institution Level

Student Lead, CS Orientation, CU Boulder, 2019
Student Lead, CS Open House, CU Boulder, 2019
Graduate Committee, Department of Computer Science, CU Boulder, 2017-2019
Chair, Computer Science Graduate Student Association, CU Boulder, 2018, 2019
Committee to review graduate degree requirements, Department of Computer Science, CU Boulder 2018
Founder Member, Computer Science Graduate Student Association, CU Boulder, 2018
Judge, N. Indiana Regional Science and Engineering Fair 2016

Community Service

Board of Directors, Rocky Mountain Arts Association, 2021 - Present
Board Treasurer, Rocky Mountain Arts Association, 2021, 2021 - Present

PROFESSIONAL
EXPERIENCE

Senior Timetabling Assistant & Curriculum Support March 2014 - July 2017
Highcliffe School

Worked with Senior & Middle Management to implement a curriculum model that satisfies national and internal constraints. Managed post-16 curriculum enrolment, insuring that all legal requirements were met and that students had a suitable program of study. Developed of a variety of online education solutions.

IT Technician & Timetabling Assistant July 2011 - March 2014
Highcliffe School

Worked with a wide variety of stakeholders to provide IT solutions. Communicated with users with a variety of skill levels and developing solutions to complex education problems.