

## Stephen J. Hutt

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CONTACT INFORMATION	3700 Walnut Street Philadelphia, PA, 19104, USA	650-460-0599 hutts@upenn.edu
EDUCATION	<b>University of Colorado, Boulder</b> , 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  <b>University of York</b> , 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  <b>University of California, Santa Cruz</b> , Santa Cruz, CA Exchange Year, Computer Science, 2012-2013	
RESEARCH INTERESTS	Machine Learning, Affective Computing, Adaptive Education, Evolutionary Computation, Non-Standard Computation, Human Computer Interaction	
RESEARCH EXPERIENCE	<b>Postdoctoral Researcher</b> August 2020 - Present Graduate School of Education, University of Pennsylvania Supervisor: Ryan Baker, Ph.D  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.  <b>PhD Researcher</b> January 2018 - August 2020 Institute of Cognitive Science, University of Colorado, Boulder Supervisor: Sidney D'Mello, Ph.D  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.  <b>PhD Researcher</b> 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**  
Department of Computer Science,  
University of York  
Supervisor: Dan Franks, Ph.D

September 2014 to July 2015

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. Kamentz, 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. 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
6. **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
7. **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
8. 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
9. 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

10. 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**
11. **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)
12. 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)
13. **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
14. 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
15. **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)
16. 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)
17. 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
18. **S. Hutt**, M. Gardener, D. Kametz, 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](https://doi.org/10.1145/3170358.3170395)
19. J. DeBenedetto, **S. Hutt**, L. Fause, 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](https://doi.org/10.1109/FIE.2017.8190443)

20. **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**
21. **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
22. **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
- WORKSHOP PAPERS
23. **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
24. 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
25. 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
26. B. M. Galla, R. N. Baelen, H. Fiore, **S. Hutt**, and A. Shenhav, *Compared to self-immersion, mindfulness reduces social media desires and boosts academic self-control in undergraduates*, International Symposium for Contemplative Research (ISCR), Arizona, USA, Nov. 2018
27. K. Krasich, R. McManus, **S. Hutt**, M. Faber, S. K. D’Mello, and J. R. Brockmole, *Gaze-based indices of mind wandering during real-world scene processing*. Annual Workshop on Object Perception, Attention, and Memory., Vancouver, BC, Canada., Nov. 2017
- INVITED PRESENTATIONS
28. J. L. Ocumpaugh, **S. Hutt**, A. Munshi, R. S. Baker, G. Biswas, and L. Paquette, *Quick red fox : Optimizing classroom interviews with srl and affect detection*, Learning Analytics Learning Network, Aug. 2021
- MANUSCRIPTS IN REVIEW
29. **S. Hutt**, A. E. B. Stewart, J. Gregg, S. Mattingly, and S. K. D’Mello, “Breaking free from the lab: Feasibility of longitudinal facial expression and eye-gaze tracking in the workplace,” *Behaviour Fesearch Methods*, In Review

30. B. Lira, A. L. Duckworth, M. Gardener, A. Quirk, C. Stone, A. Rao, **S. Hutt**, and S. K. D'Mello, "Using machine learning to identify personal qualities in college applications at scale," *Education Researcher*, In Review
31. 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 Review

FUNDING	<p>Department of Computer Science Student Travel Award <i>University of Colorado Boulder</i></p> <p>Department of Computer Science Student Travel Award <i>University of Colorado Boulder</i></p> <p>College of Engineering Student Travel Award <i>College of Engineering and Applied Sciences, University of Colorado Boulder</i></p> <p>Dean's Graduate Assistantship, CU Boulder <i>College of Engineering and Applied Sciences, University of Colorado Boulder</i></p> <p>SIGCHI Student Travel Grant <i>SIGCHI</i></p> <p>Social Responsibilities of Research Fellowship <i>John J. Reilly Center for Science, Technology, and Values</i></p> <p>Student Travel Scholarship <i>University of York</i></p>	<p>May 2019</p> <p>March 2018</p> <p>March 2018</p> <p>August 2017</p> <p>August 2016</p> <p>May 2016</p> <p>April 2011</p>
AWARDS	<p>Best Paper Award, AIED 2021</p> <p>Outstanding Service Award, Department of Computer Science</p> <p>Outstanding Service Award, Department of Computer Science</p> <p>James Chen Best Student Paper Award, UMAP 2017</p> <p>SIGCHI Student Scholar</p> <p>Outstanding Student Award</p>	<p>June 2021</p> <p>May 2019</p> <p>May 2018</p> <p>July 2017</p> <p>March 2017</p> <p>July 2011</p>
TEACHING EXPERIENCE	<p><b>Instructor</b></p> <p>Introduction to Artificial Intelligence Department of Computer Science, University of Colorado Boulder</p> <p>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</p> <p><b>Teaching Assistant</b></p> <p>Introduction to Computer Science Instructor: David Knox, Ph.D Department of Computer Science, University of Colorado Boulder</p> <p>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.</p>	<p>Spring '19</p> <p>Fall '17</p>

**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  
*Graduate School of Education, University of Pennsylvania*

Fall 2021

**MENTORSHIP****PhD. Students**

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

2020 - Present  
 2020 - Present  
 2020 - Present

**Masters Students**

Alexander White  
 Yiqiu Zhou  
 Tetsumichi Umada

2020 - 2021  
 2020 - 2021  
 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

**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 devolping solutions to complex education problems.

**Seasonal IT Assistant**  
*Bury & Knight*

July 2008 - April 2011

First line IT support to a variety of users. Duties included diagnosing a wide range of problems and reporting appropriately and Scheduling engineer time where appropriate.