Stephen J. Hutt

CONTACT INFORMATION	3700 Walnut Street Philadelphia, PA, 19104, USA	650-460-0599 stephen.hutt@me.com

EDUCATION

University of Colorado, Boulder, Boulder, CO

Ph.D., Computer Science, August 2020

Thesis Topic: *Scaling Up: Moving Automated Gaze-Based Engagement Detection Out Of the Lab*
Advisor: Sidney D'Mello, Ph.D

University of York, York, United Kingdom

M.Eng., *First Class Honours* Computer Science with Artificial Intelligence, July 2015

Thesis Topic: *Evolutionary Techniques for Developing Computer Poker Agents*
Advisor: Dan Franks, Ph.D

University of California, Santa Cruz, Santa Cruz, CA

Exchange Year, Computer Science, 2012-2013

RESEARCH INTERESTS

Machine Learning, Affective Computing, Adaptive Education, Evolutionary Computation, Non-Standard Comptutation, Human Computer Interaction

RESEARCH EXPERIENCE

Postdoctoral Researcher   August 2020 - Present
Graduate School of Education,
University of Pennsylvania
Supervisor: Ryan Baker, Ph.D

Conduct 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   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 be applied 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. 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 Adolesence*, 2020. DOI: `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`

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`

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`

CONFERENCE
PUBLICATIONS -
STRICTLY PEER
REVIEWED

5. **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*, In Press

6. **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*, In Press

7. 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.*, In Press

8. 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.*, In Press

9. 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.*, In Press

10. **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

11. 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

12. **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

13. 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

14. **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

15. 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

16. 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

17. **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

18. 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

19. **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

20. **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

21. **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

SELECTED CONFERENCE PRESENTATIONS

22. 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

23. 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

24. 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

25. 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

MANUSCRIPTS IN REVIEW

26. **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

27. A. L. Duckworth, M. Gardener, A. Quirk, B. Lira, C. Stone, A. Rao, **S. Hutt**, and S. K. D'Mello, "Using machine learning to identify motivational themes in college applications," *Education Researcher*, In Review

FUNDING

	SIGCHI Student Travel Grant *SIGCHI*	August 2016
	Social Responsibilities of Research Fellowship *John J. Reilly Center for Science, Technology, and Values*	May 2016
	Student Travel Scholarship *University of York*	April 2011

AWARDS		
	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		
	Graduate Part Time 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 devlopment 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 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

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

MENTORSHIP

Masters Students

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

Undergraduate Students

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

LEADERSHIP AND SERVICE

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
Student Lead, CS Orientation, CU Boulder, 2019
Student Lead, CS Open House, CU Boulder, 2019
Local Committee, International Conference on Multimodal Interaction 2018
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
Program Committee, Educational Data Mining 2017
Judge, N. Indiana Regional Science and Engineering Fair 2016

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

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 devloping solutions to complex education problems.

Seasonal IT Assistant   July 2008 - April 2011
Bury & Knight

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.