

Shayan Doroudi

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Education

PhD in Computer Science Carnegie Mellon University Advisor: Emma Brunskill	<i>Expected Early 2019</i>
MS in Computer Science Carnegie Mellon University	December 2016
BS with Honors in Computer Science California Institute of Technology	June 2013

Positions

Visiting Student Researcher Stanford University Computer Science Department	2017 - 2018
Research Intern Microsoft Research Redmond Mentors: Eric Horvitz and Ece Kamar	2014 - 2015
Intern Course Manager Udacity	2012

Fellowships and Honors

Program in Interdisciplinary Education Research (PIER) Associate Carnegie Mellon University (Not funded)	2017 - Present
International Conference of the Learning Sciences (ICLS) Doctoral Consortium	2018
Human Computation (HCOMP) Doctoral Consortium	2017
Program in Interdisciplinary Education Research (PIER) Fellowship Carnegie Mellon University, Funded by Institute of Education Sciences	2015 - 2017
National Science Foundation (NSF) Graduate Research Fellowship Honorable Mention	2014
National Science Foundation (NSF) Graduate Research Fellowship Honorable Mention	2013

Paper Awards

Uncertainty in Artificial Intelligence 2017 Best Paper "Importance Sampling for Fair Policy Selection"	2017
Educational Data Mining 2017 Best Paper Nominee "The Misidentified Identifiability Problem of Bayesian Knowledge Tracing"	2017
Gordon McClure Memorial Communication Prize in History California Institute of Technology Awarded to best submitted undergraduate history paper each year. "Secrecy, Science, and Shi'ism"	2013

Publications

Journal Publications

Anupama J. Thugabere, Wei Li, Robert F. Johnson, Zibo Chen, Shayan Doroudi, Yae Lim Lee, Gregory Izatt, Sarah Wittman, Niranjan Srinivas, Damien Woods, Erik Winfree, & Lulu Qian. (2017). A cargo-sorting DNA robot. *Science*, 357(6356), eaan6558.

Conference Publications

All conference publications were accompanied by an oral presentation.

Shayan Doroudi & Emma Brunskill. Fairer but Not Fair Enough: On the Equitability of Knowledge Tracing. In *Proceedings of the 9th International Conference on Learning Analytics & Knowledge* (pp. 335-339). ACM.

- Short Paper

Shayan Doroudi, Philip S. Thomas, & Emma Brunskill. (2018). Importance Sampling for Fair Policy Selection. In *Proceedings of the Twenty-Seventh International Joint Conference on Artificial Intelligence*. ij-cai.org.

- Sister Conference Best Paper Track

Shayan Doroudi, Philip S. Thomas, & Emma Brunskill. (2017). Importance Sampling for Fair Policy Selection. In *Proceedings of the Thirty-Third Conference on Uncertainty in Artificial Intelligence*. AUAI Press.
Best Paper

Shayan Doroudi & Emma Brunskill. (2017). The Misidentified Identifiability Problem of Bayesian Knowledge Tracing. In *Proceedings of the 10th International Conference on Educational Data Mining* (pp. 143-149). International Educational Data Mining Society.

Nominated for Best Paper

Shayan Doroudi, Vincent Aleven, & Emma Brunskill. (2017). Robust Evaluation Matrix: Towards a More Principled Offline Exploration of Instructional Policies. In *Proceedings of the Fourth (2017) ACM Conference on Learning@Scale* (pp. 3-12). ACM.

Shayan Doroudi. (2017). Personalized Shi'ic Islamic Online Education: New Frontiers. In *E-Learning and Islamic Studies: Proceedings of the 2014 Conference Organised by the Islamic College and Middlesex University* (pp. 15-40). ICAS Press.

Shayan Doroudi, Kenneth Holstein, Vincent Aleven, & Emma Brunskill. (2016). Sequence Matters, But How Exactly? A Method for Evaluating Activity Sequences from Data. In *Proceedings of the 9th International Conference on Educational Data Mining* (pp. 70-77). International Educational Data Mining Society.

Shayan Doroudi, Ece Kamar, Emma Brunskill, & Eric Horvitz. (2016). Toward a Learning Science for Complex Crowdsourcing Tasks. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems* (pp. 2623-2634). ACM.

- Also presented as a poster in the Human Computation (HCOMP) 2016 Encore Track.

Zhaohan (Daniel) Guo, Shayan Doroudi, & Emma Brunskill. (2016). A PAC RL Algorithm for Episodic POMDPs. In *Proceedings of the 19th International Conference on Artificial Intelligence and Statistics* (pp. 510-518). Proceedings of Machine Learning Research.

Shayan Doroudi, Kenneth Holstein, Vincent Aleven, & Emma Brunskill. (2015). Towards Understanding How to Leverage Sense-making, Induction and Refinement, and Fluency to Improve Robust Learning. In *Proceedings of the 8th International Conference on Educational Data Mining* (pp. 376-379). International Educational Data Mining Society.

- Short Paper

In Submission

Shayan Doroudi, Vincent Aleven, & Emma Brunskill. Where's the Reward? A Review of Reinforcement Learning for Instructional Sequencing. In Submission to *International Journal of Artificial Intelligence in Education*.

Organized Workshops and Symposia

Kenneth Holstein & Shayan Doroudi. (2019). Fairness and Equity in Learning Analytics Systems (FairLAK). In *Companion Proceedings of the 9th International Conference on Learning Analytics & Knowledge*.

- Co-organized Workshop

Shayan Doroudi, Joseph Jay Williams, Juho Kim, Thanaporn Patikorn, Korinn S. Ostrow, Douglas Selent, Neil T. Heffernan, Thomas Hills, & Carolyn Rosé. (2018). Crowdsourcing and Education: Towards a Theory and Praxis of Learnersourcing. In *Proceedings of International Conference on the Learning Sciences*. International Society of the Learning Sciences.

- Co-organized and Chaired Symposium

Workshop Publications

Shayan Doroudi. (2018). Equity in AIED: Who Cares? Workshop: Ethics in AIED: Who Cares? 19th International Conference on Artificial Intelligence in Education.

Shayan Doroudi, Philip S. Thomas, & Emma Brunskill. (2017). Importance Sampling for Fair Policy Selection. 3rd Multidisciplinary Conference on Reinforcement Learning and Decision Making.

Shayan Doroudi, Kenneth Holstein, Vincent Aleven, & Emma Brunskill. (2016). Sequence Matters, But How Do I Discover How? A Method for Evaluating Activity Sequences from Data. Workshop: Educational Data Analysis Using LearnSphere. 9th International Conference on Educational Data Mining.

Book Reviews

Shayan Doroudi. (2016). *Desire of the Aspirant: On the Etiquette of the Teacher and the Student* by al-Shahīd al-Thānī (review). *Journal of Shi'a Islamic Studies* 9(4), 497-503. ICAS Press.

Invited Talks

All Student Models are Wrong But Some are Useful.
University of California Irvine, School of Education

December 2018

All Student Models are Wrong But Some are Useful.
Data Science in Education Group – San Francisco Bay Area.

October 2018

Where's The Reward?

June 2018

A Review of Reinforcement Learning for Instructional Sequencing.

Keynote Talk for Optimizing Human Learning: Workshop eliciting Adaptive Sequences for Learning (WeASeL). Montréal, Canada.

Teaching Experience

Carnegie Mellon University

15-780 Graduate Artificial Intelligence

Spring 2017

Teaching Assistant, taught three lectures on artificial intelligence and education.

15-780 Graduate Artificial Intelligence

Spring 2015

Teaching Assistant

California Institute of Technology

CS141a Distributed Computation Laboratory

Fall 2012

Teaching Assistant

IST4 Information and Logic

Spring 2012

Teaching Assistant

Professional Development

Future Faculty Program

Expected 2019

Eberly Center for Teaching Excellence, Carnegie Mellon University

Preparation for teaching as a faculty member, consisting of eight seminars on various aspects of effective teaching, teaching feedback consultations, and consultations on developing a teaching statement and course syllabus.

Service

Fall 2016-Spring 2017

Field-Based Experience for Program in Interdisciplinary Education Research

Performed classroom observations at the Neighborhood Academy, an independent high school for low-income students in Pittsburgh. Also occasionally helped remedial math students with math work.

Summer 2016-Spring 2017

Program in Interdisciplinary Education Research EdBag Coordinator

Coordinated a series of informal talks about education research throughout the 2016-2017 academic year at CMU.

Summer 2016

LearnLab Summer School Mentor - Educational Data Mining Track

Mentored four individuals from both academic and industry backgrounds on an educational data mining project over the course of a week.

Fall 2010-Spring 2011

Science Partners Program

Taught science to middle school students with autism spectrum disorders at McKinley School.

Spring 2010-Spring 2011

Served on Caltech Board of Control, a committee that handles undergraduate honor code violations.