

Kaleigh Clary

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RESEARCH INTERESTS

I am interested in using counterfactual (causal) reasoning to characterize, evaluate, and explain the behavior of deep networks operating in complex systems, particularly for applications in reinforcement learning, fairness, and computational social science.

EDUCATION

University of Massachusetts Amherst

Ph.D. in Computer Science

2014 - Present

M.S. in Computer Science

2018

Hendrix College

B.A. in Computer Science, Mathematics

2014

RESEARCH EXPERIENCE

Research Assistant. KDL, University of Massachusetts Amherst Sept. 2014 - Present

Advisor: David Jensen. Developed methods for explaining the decisions and behavior of deep networks (XAI) using counterfactual reasoning, with a current focus on identifying independent mechanisms recognized by reinforcement learning agents.

Fellow. Data Science for Social Good

Summer 2018

Mentors: Rayid Ghani, Adolfo De Unane, and Elena Eneva. Partnered with AllianceChicago to support early diabetes screenings by identifying patients at risk of developing the disease in the next 3 years. Conducted fairness evaluations of score error rates across sensitive features including race, gender, age, and ethnicity, and location.

Research Intern. Human Language Technology Group, MIT Lincoln Laboratory Summer 2017

Mentor: Charlie Dagli. Developed geographic relational models of census tract data for detection of structural economic changes over time.

PUBLICATIONS

Akanksha Atrey, **Kaleigh Clary**, and David Jensen. Exploratory Not Explanatory: Counterfactual Analysis of Saliency Maps for Deep RL. *ICLR* 2020. (Poster)

Kaleigh Clary, Emma Tosch, John Foley, and David Jensen. Let's Play Again: Variability of Deep Reinforcement Learning Agents in Atari Environments. *Critiquing and Correcting Trends in Machine Learning Workshop, NeurIPS* 2018. (Spotlight talk)

Emma Tosch*, John Foley*, **Kaleigh Clary**, and David Jensen. ToyBox: Better Atari Environments for Testing Reinforcement Learning Agents. *Systems for ML Workshop, NeurIPS*. 2018.

Kaleigh Clary and David Jensen. A/B Testing in Networks with Adversarial Nodes. *Workshop on Mining and Learning with Graphs, KDD*. 2017. (Spotlight talk)

HONORS AND AWARDS

CICS Outstanding Synthesis Award	2018
Passed Ph.D. Qualifying Exam (Portfolio) with Distinction	Dec. 2017
CICS Victor Lesser Fellowship	2014
Barry M. Goldwater Scholarship and Excellence in Education Program	2013

TALKS AND PRESENTATIONS

Oral presentation (short). NeurIPS Critiquing and Correcting Trends Workshop. 7 December 2018. Montreal, QC.

Oral presentation (full). With DSSG-Alliance team. Data Science Chicago Meetup: Data Science for Social Good Happy Hour, IDEO. 8 August 2018. Chicago, IL.

Oral presentation (short). KDD Workshop on Mining and Learning with Graphs. 14 August 2017. Halifax, NS.

Poster presentation. New England Machine Learning Day, Microsoft Research. 12 May 2017. Cambridge, MA.

Lightning talk. Center for Data Science Career Mixer, University of Massachusetts Amherst. 13 October 2016. Amherst, MA.

Poster presentation. New England Machine Learning Day, Microsoft Research. 18 May 2015. Cambridge, MA.

TEACHING EXPERIENCE

Teaching Assistant. Research Methods for Empirical Computer Science. Prof. David Jensen. Fall 2019.

Teaching Assistant. Introduction to Computer Science. Prof. Gabe Ferrer. 2012-2014.

SERVICE AND PROFESSIONAL ACTIVITIES

Graduate Student Representative, UMass CICS	2020
Senior Ph.D. Student Panelist, CS Women	2019
Reviewer, Data Science for Social Good Fellowship	2019
CICS Social Committee co-chair	2015-2016
REU Alumni Panelist, UMass REU	2015
Volunteer, UMass Women in Engineering and Computing Career Day	2015
Volunteer, Hack the Dinos @ AMNH, featured in NYT article	2015
Volunteer, Computational Social Science Institute Seminar Series	2015
First Generation College Student Graduate Panelist	2014