

David Abel

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EDUCATION

- Ph.D.**, Computer Science (*In Progress*) May 2020 (*Expected*)
Brown University, *Providence, RI*.
Advisor: Prof. Michael L. Littman.
- M.A.**, Philosophy (*In Progress*) May 2018 (*Expected*)
Brown University, *Providence, RI*.
- M.S.**, Computer Science May 2015
Brown University, *Providence, RI*.
Advisor: Prof. Stefanie Tellex.
- B.A.**, Computer Science and Philosophy, *Magna Cum Laude* June 2013
Carleton College, *Northfield, MN*.
Advisors: Prof. David Liben-Nowell (Comp. Sci.), Prof. Anna Moltchanova (Philosophy).

PUBLICATIONS

Main Papers

Near Optimal Behavior via Approximate State Abstraction.

David Abel, D. Ellis Hershkowitz, Michael L. Littman.

ICML 2016.

Goal-Based Action Priors.

David Abel, D. Ellis Hershkowitz, Gabriel Barth-Maron, Stephen Brawner, Kevin O’Farrell, James MacGlashan, Stefanie Tellex.

ICAPS 2015.

Workshops & Symposia

Agent-Agnostic Human-in-the-Loop Reinforcement Learning.

David Abel, John Salvatier, Andreas Stuhlmüller, Owain Evans.

NIPS Workshop on the Future of Interactive Learning Machines, 2016.

Exploratory Gradient Boosting for Reinforcement Learning in Complex Domains.

David Abel, Alekh Agarwal, Fernando Diaz, Akshay Krishnamurthy, Robert Schapire.

ICML Workshop on Reinforcement Learning and Abstraction, 2016.

Reinforcement Learning as a Framework for Ethical Decision Making.

David Abel, James MacGlashan, Michael L. Littman.

AAAI Workshop on AI, Society, & Ethics, 2016.

Affordances as Transferrable Knowledge for Planning Agents.

Gabriel Barth-Maron, David Abel, James MacGlashan, Stefanie Tellex.

AAAI Symposium on Knowledge and Skill Transfer, 2014.

Toward Affordance-Aware Planning.

David Abel, Gabriel Barth-Maron, James MacGlashan, Stefanie Tellex.

RSS Workshop on Affordances in Vision for Cognitive Robotics, 2014.

Other Works

Improving Solar Panel Efficiency using Reinforcement Learning.

David Abel, Emily Reif, Michael L. Littman.

In Submission.

Learning to Plan in Complex Stochastic Domains.

David Abel. Advised by Prof. Stefanie Tellex.

Master's Thesis, Brown University. 2015.

Toward the Defense of Hypercomputation.

David Abel. Co-advised by Prof. Anna Moltchanova and Prof. Jason Decker.

Bachelor's Thesis (Received Distinction), Carleton College. May 2013.

TEACHING EXPERIENCE

Brown University

Designer & Instructor, Artificial Intelligence and Society (High School Summer at Brown) [*Forthcoming*]

Guest Instructor, First Byte of Computer Science 2017 (w/ Prof. Michael Littman)

Primary Instructor, First Byte of Computer Science 2016

Teaching Assistant, First Byte of Computer Science 2015 (w/ Prof. Michael Littman)

Teaching Assistant, Artificial Intelligence (w/ Prof. Stefanie Tellex)

Carleton College

Teaching Assistant, Data Structures – *CS Department*

Teaching Assistant, Logic – *Philosophy Department*

Teaching Assistant, 3x Intro to CS – *CS Department*

Grading Assistant, Intro to CS – *CS Department*

Volunteer Work & Guest Lectures

Guest Lecturer, *Microsoft Research Data Science Summer School* (Summer 2015)

Guest Computer Science Instructor, *Nathan Bishop Middle School* (CS Education Week: 2013, 2014)

Math Tutor, *OES Elementary School*

Chess Coach, *Vose Elementary School*

PROFESSIONAL EXPERIENCE

University of Oxford (Future of Humanity Institute), Oxford, England.

Summer 2016: Visiting Researcher in Artificial Intelligence, hosted by Dr. Owain Evans.

Microsoft Research, New York City, NY.

Summer 2015: Research Intern in Artificial Intelligence, mentored by Dr. Fernando Diaz.

Brown University, Providence, RI.

Summer 2014: Graduate Research Assistant in Humans to Robots Laboratory.

Qualcomm Inc, Boulder, CO.

Summers 2011, 2012: Engineering Intern in Android Test and DirectX Graphics groups.

Intel Corp, Hillsboro, OR.

Summers 2008, 2009, 2010: Software Engineering Intern in Intel's SSG and GPGPU groups.

SKILLS

Math

Extensive experience with probability, information theory, automata theory, and mathematical logic.
Some experience with graph theory, calculus, and linear algebra.

Programming Languages

Extensive experience with Python, Java, L^AT_EX.
Some experience with Matlab, Scheme, C, and Prolog.

Relevant Coursework (Brown)

Advanced Algorithms, Information Theory, Machine Learning, Cryptography, Gödel's Incompleteness Theorems, Reinforcement Learning, Computer Vision, Higher Order Evidence, Epistemology of Logic, Natural Language Processing for Robotics.

Relevant Coursework (Carleton)

Artificial Intelligence, Algorithms, Theory of Computation, Math of Computer Science, Natural Language Processing, Logic, Modal & Deontic Logic, Cosmology & Ethics, Metaphysics, Philosophy of Physics, Computer Organization & Architecture, Programming Languages, Operating Systems, Tour of Mathematics, Linear Algebra, Multivariable Calculus.

ACHIEVEMENTS AND HONORS

- ICML student Travel Award 2016.
- Brown University, awarded Open Graduate Fellowship for Masters in Philosophy.
- Brown University, nominated for Presidential Award for Excellence in Teaching.
- Brown University, nominated for Outstanding Academic Accomplishment by a Master's Student Award.
- Brown University, 2x nominated for Great Teaching Assistant Award.
- Brown University, Hack@Brown 2014 - Best Visualization of Data.
- Carleton College, Distinction in Major: Philosophy.
- Carleton College, Distinction in Philosophy Thesis: *Toward The Defense of Hypercomputation*.
- Carleton College, Distinction in Major: Computer Science.
- Carleton College, Distinction in Computer Science Capstone: *Noteworks*.