Alana Jaskir

PhD Candidate in Cognitive Science
Department of Cognitive, Linguistic, and Psychological Sciences (CLPS)
Carney Institute for Brain Science
Brown University
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Education

2018 – Present **Brown University**, PhD Candidate, Cognitive Science
Advisor: Michael J. Frank (CLPS, Carney Center for Computational Brain Science)
GPA: 4.0/4.0

Preliminary Exam: Replay as state abstraction in reinforcement learning (in progress)
- *Committee: Michael Frank (CLPS), David Badre (CLPS), Matthew Nassar (Neuroscience), George Konidaris (Department of Computer Science)*

First Year Project: "Computational advantages of dopaminergic states for decision-making"
- *Committee: Michael Frank (CLPS), Amitai Shenhav (CLPS), George Konidaris (Department of Computer Science)*

2017 – 2018 **Fulbright Student Program**, English Teaching Assistant, Ukraine

2013 – 2017 **Princeton University, *magna cum laude***, B.A. in Computer Science, Certificate in Cognitive Science

Outstanding Computer Science Senior Thesis Award
Thesis: "Learning How to Learn: The Interaction Between Attention and Learning as a Mechanism for Dimensionality Reduction in the Brain"
- *Advisor: Yael Niv (Princeton Neuroscience Institute and Psychology Department)*
- *Second Reader: Barbara Engelhardt (Princeton Computer Science Department)*

2016 Spring **University College London,** Affiliate Student in Computer Science

Peer-reviewed Conference Posters

- Jaskir, A., Frank, M.J. (2019) Computational advantages of dopaminergic states for decision making. *Computational Cognitive Neuroscience (CCN).* https://doi.org/10.32470/ccn.2019.1390-0
- Jaskir, A., Frank, M.J. (2019) Computational advantages of dopaminergic states for decision making. *Motivation and Cognitive Control (MCC).*
- Jaskir, A., Frank, M.J. (2019) The computational benefits of motivational dopamine states in the OpAL model. *RLDM*.*
- Jaskir, A., Frank, M.J. (2019) Simulating the benefits of motivational dopamine states. *Winter Conference on Brain Research.*
- Jaskir A., Niv Y., (2017) Modeled learning weights predict attention and memory in a multidimensional probabilistic task. *RLDM*.*

**RLDM - Reinforcement Learning and Decision-Making Conference*

Publications

(in submission) Jaskir, A., Frank, M.J. "On the normative advantages of basal ganglia opponency in risky decision making." Updates at amjaskir.github.io.

Presentations

- "On the normative advantages of basal ganglia opponency in risky decision making." Verguts Lab, Ghent University, October 2020

- "Computational advantages of dopaminergic states for decision-making," *Brown University Unconference* 2020
- "Computational advantages of motivational dopamine states for action selection," *New England Research on Decision Making (NERD)*, June 2019
- "Computational advantages of dopaminergic states for action selection", Shenhav Lab Meeting, Brown University, June 2019

Attended Workshops

2020 "Computational Cognitive Modeling of Behavioral and Neural Data," Carney Institute for Brain Science, Brown University

2019 "Representing states and spaces", Tim Behrens & Kim Stachenfeld, CCN

Ad-hoc Reviewing

Neuron, Proceedings of the National Academy of Sciences, Nature Human Behaviour, npj Science of Learning

Honors and Funding

- **RLDM Conference Student Travel Award** 2019
- **National Science Foundation**, Graduate Research Scholarship - Honorable Mention 2017 & 2019
- **U.S. Fulbright Student Program Grantee** 2017-2018
- **Outstanding Computer Science Senior Thesis Prize**, financial award 2019
- **Sigma Xi,** nominated for membership 2019
- **Princeton Thesis research grant**, Office of the Dean of the College 2016
- **Computing Research Association Research Scholar**, Grace Hopper* 2016
- **International Internship Program (IIP) summer research grant** 2015
- **Princeton Women in Computer Science conference sponsorship,** Grace Hopper * 2014
- **HSF/Mary Molina Scholarship** 2014-2015
- **Lewis-Singler Institute summer research grant** 2014

*Grace Hopper Celebration for Women in Computing

Relevant Research Experience

2020 **PRELIMINARY EXAM | Brown University (in progress)**
Replay as state abstraction in reinforcement learning
Committee: Michael Frank (CLPS), David Badre (CLPS), Matthew Nassar (Neuroscience), George Konidaris (Computer Science)

2018 – 2019 **FIRST YEAR PROJECT | Brown University**
Computational advantages of dopaminergic states for decision-making
Committee: Michael Frank (CLPS), Amitai Shenhav (CLPS), George Konidaris (Computer Science)

2016 – 2017 **SENIOR THESIS | Princeton University**
Outstanding Computer Science Senior Thesis Award
Learning How to Learn: The Interaction Between Attention and Learning as a Mechanism for Dimensionality Reduction in the Brain
Advisor: Yael Niv (Princeton Neuroscience Institute and Psychology Department)
Second Reader: Barbara Engelhardt (Princeton Computer Science Department)

2015 - 2016 **RESEARCH ASSISTANT | Princeton University**
Applications of machine learning for decoding replay for memory/sleep task
Advisors: Luis Piloto, Ken Norman (Princeton Neuroscience Institute and Psychology Department)

2015 **COURSEWORK | Princeton Univeristy**

Literature review: State representation and stimulus generalization from psychological, neuroscientific, and computational perspectives

Class: Animal Learning and Decision Making
Professor: Yael Niv

2014 **RESEARCH ASSISTANT | Princeton University**

Role of hippocampal replay in constructing shortcuts in cognitive maps

Advisors: Stephanie Chan, Yael Niv

Leadership

2019-Present **Structure Learning Reading Group Co-founder (Funded)**

Monthly, interdisciplinary reading group focused on structure learning, or how to learn low-dimensional representations of higher dimensional environments that can be exploited for generalization. Computer science, neuroscience, psychology post-doctoral and graduate student attendees. Funding for supplies graciously provided by the Carney Brain Institute.

2019-2020 **CLPS Department Diversity and Inclusion Action Plan (DIAP)**

- DIAP Graduate Student Representative (elected)
- Community Engagement and Outreach subcommittee

Teaching

2020 **CLPS1492: Computational Cognitive Neuroscience** TA, *Professor: Michael Frank*

2020 **Carney Computational Modeling Workshop** TA, "Reinforcement Learning + Modeling Fitting", *Instructor: Andra Geana*

2019 **CLPS2001: Core Concepts in Cognitive Science** TA, Guest Lecture, "Reinforcement Learning", *Professors: Bill Warren, David Badre*

2019 **Neuroeconomics: The Science of Decision-Making** Invited Lecturer, "Learning, Modeling, and the Brain", *Summer at Brown*

2017-2018 **Fulbright English Teaching Assistant, Ukraine**

2015 **COS226: Data Structures and Algorithms** Peer Tutor

2015 **Nambala Primary School, Tanzania** Volunteer math and science teacher

Mentorship

2019 Lise Vansteenkiste, visiting researcher

Professional Development

2019 Brown University Womxn in STEM symposium

Relevant Coursework

-	Recent Applications of Probability and Statistics	Applied Mathematics	Brown	2020
-	Reinforcement Learning	Computer Science	Brown	2019
-	Machine Learning	Computer Science	Brown	2019
-	Computational Cognitive Neuroscience	CLPS	Brown	2018
-	Computational Neuroscience	Neuroscience	Princeton	2017
-	Computing and Optimization	ORFE	Princeton	2016
-	Probability and Stochastic Systems	ORFE	Princeton	2016
-	Animal Learning and Decision-Making	Neuroscience	Princeton	2015
-	AI and Neural Computing	Computer Science	UCL	2015
-	Algorithms and Data Structures	Computer Science	Princeton	2015

Community Engagement

2019	**Volunteer | Brain Week RI: Brain Fair**
2017-2018	**Co-Organizer | Technovation, Rivne, Ukraine** Technovation is an international competition that equips young girls with coding skills to solve problems in their local communities. Community project (organized in collaboration with local activists) paired Technovation curriculum with monthly workshops on empowerment, leadership, gender roles, and team building
2015-2017	**Princeton University Student Government's Big Sibs Program** Community-based outreach program for disadvantaged middle school students from the greater Princeton area. Program aimed at mentoring, empowering, and improving literacy of students.
2014-2017	**Princeton Institute for Chocolate Studies** Bean-to-bar, not-for-profit, student chocolate production group
2013-2017	**Princeton Student Theatre** Assistant Technical Director (Theatre Intime) Light Designer, Performer

Skills

Computer Science:	Python, MATLAB, Java, C/C++
Languages:	Intermediate/Advanced French: *IS Aix-en-Provence month immersion, 2015* Beginner Ukrainian: *Ukrainian Language and Cultural School, Lviv, two-weeks, 2018*

Other Research Experience

2017	**RESEARCH INTERN | MIT Lincoln Lab** Implemented Kalman filter routine in object tracker for video analysis
2015	**RESEARCH INTERN | Nelson Mandela African Institute of Science and Technology, Tanzania** Researched technical solutions to illegal animal poaching in national parks - *Interfaced FLIR thermal camera with Raspberry Pi for data collection* - *Basic drone/sensor assembly and hardware work*