Alana Jaskir

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Education

Brown University — Providence, RI
Ph.D. Cognitive Science, *GPA: 4.0/4.0* — 2018 - Present
Specialization in Computational Neuroscience

Fulbright Student Program — Rivne, Ukraine
English Teaching Assistant — 2017-2018

Princeton University — Princeton, NJ
B.A. Computer Science, *magna cum laude* — 2013-2017
Minor in Cognitive Science
Award: Outstanding Computer Science Senior Thesis

University College London — London, UK
Affiliate Student in Computer Science — Spring 2016

Honors and Awards

Carney Graduate Award in Brain Science — Brown University
Recognizes outstanding and productive mid- to late-stage Ph.D. candidates. Provides academic year stipend and professional development funds. — 2023-2024

Interactionist Cognitive Neuroscience Training Grant (T32) — Brown University
Competitive institutional training grant awarded to advanced pre-doctoral students pursuing research at the intersection of computational sciences, human cognitive neuroscience, and systems neuroscience. — 2021 - 2023

The Multi-disciplinary Conference on Reinforcement Learning and Decision Making (RLDM) Student Travel Award — 2019

NSF Graduate Research Scholarship (Honorable Mention) — 2017 & 2019

U.S. Fulbright Student Program Grantee — 2017-2018

Outstanding Computer Science Senior Thesis — Princeton University
Awarded by the Computer Science department — 2017

Thesis Research Grant — Princeton University
Awarded by the Office of the Dean of the College — Summer 2016

Computing Research Association (CRA) Research Scholar — Grace Hopper*
Travel award for conference and professional networking events for research-interested students — 2016

Conference Travel Award — Grace Hopper*
Awarded by Princeton Women in Computer Science — 2014

Mary R. Molina Education Scholarship — 2014-2015

Integrative Science Research Grant — Princeton University
Awarded by Lewis-Singler Institute for Computational Biology — Summer 2014

**Grace Hopper Celebration for Women in Computing*

Research Experience

Expediency and generalization in reinforcement learning — **Dissertation**
Committee: Michael J. Frank (advisor, CLPS, Carney Institute for Brain Science), Matthew Nassar (Neuroscience), David Badre (CLPS) — Brown University (expected) 2024

Replay as state abstraction in reinforcement learning — **Qualifying exam**
Committee: Michael J. Frank (advisor, CLPS, Carney Institute for Brain Science), Matthew Nassar (Neuroscience), David Badre (CLPS), George Konidaris (Computer Science) — Brown University 2021

Computational advantage of dopaminergic states for decision-making — **Master's project**
Committee: Michael J. Frank (advisor, CLPS, Carney Institute for Brain Science), Amitai Shenhav (CLPS), George Konidaris (Computer Science) — Brown University 2019

[Re] Better transfer learning with inferred successor maps — **NeurIPS Reproducability Challenge**, 2019
Submitted as final project for course "Learning and sequential decision making"
Instructor: Michael Littman | Course Grade: A

Learning to Learn: The Interaction Between Attention and Learning as a Mechanism for Dimensionality Reduction in the Brain — **Undergraduate thesis**, Princeton University, 2017
Advisor: Yael Niv (Princeton Neuroscience Institute and Psychology Department)
Second Reader: Barbara Engelhardt (Princeton Computer Science Department)

- **Outstanding Computer Science Senior Thesis Award**

Computational Memory Lab — **Research Assistant**, Princeton University, 2015-2016
Advisors: Luis Piloto (Princeton Neuroscience Institute, DeepMind), Ken Norman (Princeton Neuroscience Institute and Psychology Department)

- Applications of machine learning for decoding replay for memory/sleep task

State Representation and Generalization — **Literature Review**, Princeton University, 2015
Submitted as final project for course "Animal learning and decision making"
Instructor: Yael Niv | Course Grade: A

Niv Lab — **Research Assistant**, Princeton University, 2014
Advisors: Stephanie Chan (Princeton Neuroscience Institute), Yael Niv (Princeton Neuroscience Institute and Psychology Department)

- Role of hippocampal replay in constructing shortcuts in cognitive maps

Publications

Jaskir, A., Frank, M.J. (2023). "On the normative advantages of dopamine and striatal opponency for learning and choice." eLife. doi.org/10.7554/eLife.85107

Gallo, M., A.A. Hamid, **A. Jaskir**, J. Bretton, T. Pan, D. Ofray, M.J. Frank, C.I. Moore, K.G. Bath (in prep.). "Early life adversity alters dopamine signaling underlying diminished reward sensitivity and slowed reinforcement learning in mice".

Talks

"Expediency and generalization in human reinforcement learning" — 2023
Computational Cognitive Neuroscience Lab, UC Berkeley

"Replay as state-abstraction for reinforcement learning" — 2023
Max Planck UCL Centre for Computational Psychiatry

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

"Computational advantages of dopaminergic states for decision-making" — 2020
Brown University Unconference

"Computational advantages of motivational dopamine states for action selection" — 2019
New England Research on Decision Making (NERD)

Peer-reviewed conference posters

Jaskir, A., M.J. Frank (2023) "Generalization in reinforcement learning and the role of sleep". Society for Neuroscience, Washington D.C..

Jaskir, A., M.J. Frank (2023) "Sleep for creative insight in reward learning". Curiosity, Creativity, and Complexity, Columbia University.

Jaskir, A., M.J. Frank (2022) "Sleep's role in state-abstraction for sequential reinforcement learning". Society for Neuroscience.

Jaskir, A., M.J. Frank (2022) "Sleep's role in analogous transfer for sequential reinforcement learning". RLDM*.

Gallo, M., A.A. Hamid, **A. Jaskir**, T. Pan, D. Ofray, M.J. Frank, C.I. Moore, K.G. Bath (2022) "Early life adversity slows reinforcement learning and disrupts optimal decision making in adult mice". Society for Neuroscience.

Gallo, M., A.A. Hamid, **A. Jaskir**, T. Pan, D. Ofray, M.J. Frank, C.I. Moore, K.G. Bath (2022) "Early life adversity slows reinforcement learning and disrupts optimal decision making in adult mice". International Society for Developmental Psychobiology.

Gallo, M., A.A. Hamid, **A. Jaskir**, T. Pan, D. Ofray, M.J. Frank, C.I. Moore, K.G. Bath (2022) "Early life adversity slows reinforcement learning and disrupts optimal decision making in adult mice". Computational Psychiatry Course, New York, NY.

Gallo, M., A.A. Hamid, **A. Jaskir**, T. Pan, D. Ofray, M.J. Frank, C.I. Moore, K.G. Bath (2022) "Mouse model of early life adversity alters reinforcement learning and strategies for decision making". RLDM*, Providence, RI.

Gallo, M., A.A. Hamid, **A. Jaskir**, T. Pan, D. Ofray, M.J. Frank, C.I. Moore, K.G. Bath (2022) "Mouse model of early lie adversity alters reinforcement learning and strategies for decision making". Stress Neurobiology Workshop, Columbia, SC.

Gallo, M., A.A. Hamid, **A. Jaskir**, T. Pan, D. Ofray, M.J. Frank, C.I. Moore, K.G. Bath (2022) "Early life adversity diminishes reward sensitivity and slows reinforcement learning in mice". Winter Conference for Brain Research, Aspen, CO.

Gallo, M., A.A. Hamid, **A. Jaskir**, T. Pan, D. Ofray, M.J. Frank, C.I. Moore, K.G. Bath (2021) "Early life adversity alters reward learning and decision making mechanisms in mice". International Society for Developmental Psychobiology.

Gallo, M., A.A. Hamid, **A. Jaskir**, T. Pan, D. Ofray, M.J. Frank, C.I. Moore, K.G. Bath (2021) "Early life adversity alters reward learning and decision making mechanisms in mice". Society for Neuroscience, Chicago.

Jaskir, A., M.J. Frank (2019) Computational advantages of dopaminergic states for decision making. Motivation and Cognitive Control.

Jaskir, A., M.J. Frank. (2019) Computational advantages of dopaminergic states for decision making. Computational Cognitive Neuroscience (CCN). https://doi.org/10.32470/ccn.2019.1390-0

Jaskir, A., M.J. Frank (2019) The computational benefits of motivational dopamine states in the OpAL model. RLDM*.

Jaskir, A., M.J. Frank (2019) Simulating the benefits of motivational dopamine states. Winter Conference on Brain Research.

Jaskir, A., Y. Niv, (2017) Modeled learning weights predict attention and memory in a multidimensional probabilistic task. RLDM*.

**RLDM - The Multi-disciplinary Conference on Reinforcement Learning and Decision Making*

Ad-hoc reviewing

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

Skills

Programming (proficient):	Python, MATLAB, R, Javascript, Java, C/C++, Bash, Git, TeX
Programming (experience):	Tensorflow, Go, React JS, Node.js, OCaml
Software (proficient):	emergent (biological neural network simulator), Honeycomb (behavioral and neural task building)
Languages:	Intermediate French *IS Aix-en-Provence summer immersion, 2015* Beginner Ukrainian *Ukrainian Language and Cultural School, Lviv, two-week immersion, 2018*

Workshops & Tutorials

Kavli Summer Institute in Cognitive Neuroscience — UC Santa Barbara, 2022
Two-week course that trains attendees in cutting-edge methods and theoretical perspectives, including their translation to mental health challenges
Topics: Motivated Cognition, Attention

Computational Cognitive Modeling of Behavioral & Neural Data — Brown University, 2020-2023
Two-week course on various cognitive modeling approaches, e.g. reinforcement learning, Bayesian models, drift diffusion models

Representing states and spaces — Computational Cognitive Neuroscience (CCN), 2019
Instructors: Timothy Behrens (Oxford), Kim Stachenfeld (DeepMind)

Coursework

Recent Applications of Probability and Statistics	Applied Mathematics	Brown	2020
Learning and Sequential Decision Making	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
AI and Neural Computing	Computer Science	UCL	2016
Animal Learning and Decision-Making	Neuroscience	Princeton	2015
Reasoning about Computation	Computer Science	Princeton	2015
Introduction to Cognitive Science	Neuroscience	Princeton	2015
Algorithms and Data Structures	Computer Science	Princeton	2015
Fundamentals of Neuroscience	Neuroscience	Princeton	2014
Linear Algebra	Mathematics	Princeton	2014

**ORFE - Operations Research and Financial Engineering*

Mentorship

Damir Kulzhanov (2023), *Priyanka Solanky (2021 – 2023), Lise Vansteenkiste (2019)

**denotes thesis student*

Teaching Experience

Carney Institute for Brain Science's Computational Cognitive Modeling of Behavioral & Neural Data Workshop
Co-organizer, Lecturer — 2022 & 2023
Teaching Assistant — 2020 & 2021

Computational Cognitive Neuroscience — Brown University
Guest Lecturer, "Temporal Reinforcement Learning" — 2020/2021/2022
Instructor: Michael J. Frank

CLPS Inclusive Teaching Workshop — Brown University
Coordinator, Attendee — 2022
In collaboration with Sheridan Teaching center

Sheridan Teaching Certificate Course — Brown University
Semester course on inclusive teaching — 2021

Free Will and the Brain — Summer at Brown
Teaching Assistant — 2021
Instructor: Louis Gularte

Core Concepts in Cognitive Science — Brown University
Guest Lecturer, "Reinforcement Learning", Teaching Assistant — 2019
Instructors: Bill Warren, David Badre

Neuroeconomics: The Science of Decision-Making — Summer at Brown
Guest Lecturer, "Learning, Modeling, and the Brain" — 2019
Instructor: Amrita Lamba

U.S. Fulbright Student Program — Rivne, Ukraine
English Teaching Assistant — 2017-2018

Data Structures and Algorithms — Princeton University
Peer Tutor — 2015

Nambala Primary School — Arusha, Tanzania
Math and science teacher (volunteer) — 2015

Leadership

Carney Institute for Brain Science's Computational Cognitive Modeling of Behavioral & Neural Data Workshop
Co-organizer, Lecturer — 2022 & 2023

- Annual, summer two-week course on cognitive modeling frameworks (reinforcement learning, Bayesian inference, drift diffusion models), model validation and comparison, and applications, such as computational psychiatry.
- Approximately 30 students/year
- Designed and presented original lectures on beginner and advanced topics in reinforcement learning
- Led hands-on tutorials for reinforcement learning
- Handled administrative emails for guest speakers, budget, tech
- Established organizational procedures for workshop

The Multi-disciplinary Conference on Reinforcement Learning and Decision Making (RLDM) Providence, RI
Committee for conference networking events 2022

- Co-organized speed networking event for trainees and senior faculty.
- Collected and organized informational document for local food vendors and events for distribution to attendees

Structure Learning Reading Group Carney Institute for Brain Science
Co-founder, co-organizer 2019-2021

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

Brain Week Rhode Island Brown University
Volunteer Outreach Coordinator 2021

- Organized approximately 20 volunteers (undergraduate, graduate, post-doc, staff) into 3 outreach groups to create original content videos on brain-related concepts. Videos were shown to local schools in combination with virtual "meet-a-scientist" events.
- Head script writer and performer for video on auditory illusions.
- Organized and scheduled an additional 15 volunteers for 5 virtual meet-a-scientist events.

CLPS Departmental Diversity and Inclusion Action Plan (DIAP) Providence, RI
DIAP Graduate Student Representative 2020-2021

- Originator of representative role
- Created procedures and documentation process for grievances and graduate concerns
- Created a peer-buddy network to match incoming students with senior graduate students for community building (still in effect)
- Served as note-taker for monthly DIAP meetings and disseminated notes to broader department community
- Communication liason between graduate students and director of graduate studies.
- Drafted charges for creation of four DIAP subcommittees staffed by volunteer students and faculty
- Facilitated group discussions on current events

Community Engagement and Outreach subcommittee 2020-2021
Department Climate Committee 2019-2020

- Head writer for department climate statement, which synthesized survey feedback on values and goals for the department from students, postdoc, and faculty

Technovation Rivne, Ukraine
Co-organizer, group mentor 2017-2018

- Technovation is an international competition that equips young girls with coding skills to solve problems in their local communities.
- Organized in collaboration with local activists
- Year-long community project paired the standard Technovation curriculum with original monthly workshops (run in collaboration with Peace Corps volunteers) on empowerment, leadership, gender roles, and team building
- Coordinated and divided twenty-four girls into six teams and matched them with two volunteer mentors (one Ukrainian and one American volunteer) per team.
- Three teams attended the country-wide Technovation celebration in Kyiv and presented posters of their projects

Community Engagement

Leadership Alliance Brown University
Student mentor 2023

- Leadership Alliance promotes diversity in STEM by supporting students from underrepresented groups in summer research opportunities

College Day at Brown — Brown University
Volunteer — 2023

- Immersive, one-day experience for Rhode Island high school students to experience college-level classroom environment. Co-taught cognitive neuroscience material where students collected and interpreted experimental data

Leadership Alliance — Brown University
Graduate school fair volunteer — 2022

Brain Week RI — Brown University
Brain Fair volunteer — 2019

Princeton University Student Government's Big Sibs Program — Princeton University
Student mentor — 2015-2017

- Community-based outreach program for disadvantaged middle school students from the greater Princeton area. Program aimed at mentoring, empowering, and improving literacy of students.

Theatre Intime — Princeton University
Assistant technical director, light designer, performer, director — 2013-2017

Princeton Institute for Chocolate Studies — Princeton University
Chocolate maker — 2014-2017

- Bean-to-bar, not-for-profit, student chocolate production group

Additional Research Experience

MIT Lincoln Lab — **Summer Intern**
2017

- Implemented Kalman filter routine in object tracker for video analysis

Nelson Mandela African Institute of Science and Technology — **Research Assistant**
Princeton's International Internship Program — Arusha, Tanzania
2015

- Researched technical solutions to reduce illegal animal poaching in national parks
- Interfaced FLIR thermal camera with Raspberry Pi for data collection
- Basic drone/sensor assembly and hardware work