Jasmine Talia Stone

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Education

Columbia University, New York, NY: **Ph.D. Candidate; M.Phil.; M.A. Neurobio & Behavior** August 2021-Present
- Supervisor: Ashok Litwin-Kumar

University of Cambridge, Churchill College, Cambridge, UK: **M.Phil. Engineering** October 2021
- Supervisor: Guillaume Hennequin
- Supported by the Simpson Churchill Scholarship
- Thesis: *Scalable Gaussian Process Factor Analysis*

Yale University, New Haven, CT: **B.S. Computer Science**—GPA: 3.94 (4.0 and Distinction in Major) May 2020
- Phi Beta Kappa, Magna Cum Laude
- Thesis: *PsychRNN: An open-source Python package for training artificial recurrent neural networks on cognitive tasks.*

Liberal Arts and Science Academy (LASA), Austin, TX—GPA: 4.56 May 2016
- Presidential Scholar Semifinalist,
  International competition for Genetically Engineered Machines (iGEM) Gold Medal

Awards and Scholarships

Columbia Neurobio & Behavior Leadership and Service Award (for contributions to program and community) 2024
Hertz Finalist (one of 41&45 finalists for the prestigious Hertz Fellowship providing STEM Ph.D. funding) 2020/22
NSF GRFP (worth $138k over 3 years, awarded to ~2k students pursuing US research degrees annually) 2021
DOD NDSEG (Declined; worth $123.8k over 3 years + fees and tuition, awarded to 500 of 8k applicants) 2021
Churchill Scholar (awarded annually to 16 Americans, funds 1 year Masters at University of Cambridge) 2020
Saybrook Fellow's Prize (Yale's Saybrook College recognizes 2-3 seniors' intellectual achievement annually) 2020
Barry Goldwater Scholar (awarded annually to rising juniors and seniors for research excellence) 2019
Saybrook College Research Grant (awarded for independent research triannually by Yale's Saybrook College) Spring & Fall 2019
Saybrook College Mellon Senior Research Grant (supports seniors' research and presentation to peers) 2019
Cosyne Mentorship Grant (awarded by Cosyne, a premiere neuroscience conference, to sponsor attendance) 2019
National Center for Women in Technology (NCWIT) Collegiate Award Finalist (awarded to 74 nationally) 2019
Betty Stevens-Frecknall Scholarship (national award given to 2-8 people annually majoring in computing) 2018
Women Forward in Technology Scholarship (national award given to ~10 women annually) 2017
Benjamin F. Barge Prize (awarded annually by the Yale Math Department for excellence in mathematics) 2017
Eli Lilly / BDPA Scholarship (awarded to 3 nationally for academic and service excellence) 2017
Grace Hopper Conference Student Scholarship (awarded internationally by the Anita Borg Institute) 2017
Microsoft Scholarship Award Recipient (international award given for leadership and academic excellence) 2017
Aspirations in Computing Award, Central Texas Affiliate (awarded by NCWIT annually) 2014/15/16

Scientific Publications

*Amin, F., ***Stone, J. T.**, *König, C., Mancini, N., Murakami, K., Bidaye, S. S., Heim, M.-M., Owald, D., Majumder, U., Kadow, I. C. G., Pierzchlińska, A., Litwin-Kumar, A., Barnstedt, O., & Gerber, B. (2025). *Avoidance engages dopaminergic punishment in Drosophila*. bioRxiv. https://doi.org/10.1101/2025.07.07.663268 (* indicates equal contribution, under revision at Nature Neuroscience)

Jensen, K. T., Kao, T.-C., **Stone, J. T.**, & Hennequin, G. (2021, May 21). *Scalable Bayesian GPFA with automatic relevance determination and discrete noise models*. Advances in Neural Information Processing Systems (NeurIPS). https://openreview.net/forum?id=_IvXbsw3Zvu#public

*Ehrlich, D. B., *Stone, J. T., Brandfonbrener, D., Atanasov, A., & Murray, J. D. (2020). *PsychRNN: An Accessible and Flexible Python Package for Training Recurrent Neural Network Models on Cognitive Tasks*. ENeuro. https://doi.org/10.1523/ENEURO.0427-20.2020 (* indicates equal contribution)

Berens P., Freeman J., [and 25 others including **Stone, J.**] (2018). *Community-based benchmarking improves spike rate inference from two-photon calcium imaging data*. PLoS Comput Biol 14(5): e1006157. https://doi.org/10.1371/journal.pcbi.1006157

Stone, J., Bonnen, K., Huk, A., & Cormack, L. (2016). *Manual target tracking reveals a perceptual asymmetry between crossed and uncrossed disparities*. Journal of Vision, 16(12), 840-840.

Scientific Talks

A model of distributed reinforcement learning systems inspired by the Drosophila mushroom body. (2025) 20 min contributed plenary talk at the Multi-Disciplinary Conference on Reinforcement Learning and Decision Making (RLDM 2025), Dublin, Ireland. 1 of 13 selected from >370 submitted abstracts. https://youtu.be/uuDJ0yLLDbI

Reinforcement of valence through action. (2024) 30 min contributed talk at Maturation and plasticity in biological and artificial networks workshop, Cargèse, Corsica, France.

Moonwalking from experiment to theory and back. (2024) 10-15 min talk at Columbia University Neurobiology & Behavior PhD Program Retreat & Bootcamp, Glen Cove and New York, N.Y., USA.

Modeling Short-Term Plasticity in STG Rhythms. (2023) 5 min Blitz Talk at Dynamic Neural Networks Meeting, Washington, D.C., USA.

PsychRNN: An Accessible and Flexible Python Package for Training Recurrent Neural Network Models on Cognitive Tasks. (2020) 15 min talk at Neuromatch 3.0 (virtual). https://www.youtube.com/watch?v=OY_Ix-QwB4Y

Scientific Posters

Stone J. T., Litwin-Kumar A. (2025). *A model of distributed reinforcement learning systems inspired by the Drosophila mushroom body*. Poster presented at the Multi-Disciplinary Conference on Reinforcement Learning and Decision Making (RLDM 2025), Dublin, Ireland. Also presented as a poster at the Future of Bee and Fly Neuroethology, Modeling and Robotics, Berlin, Germany. Also presented as a poster at Computational and Systems Neuroscience Conference (COSYNE 2026), Lisbon, Portugal.

Stone J. T., Amin F., Bargeron B., Barnstedt O., Bidaye S., Gerber B., Grunwald Kadow I. C., Heim M., Kŏnig C., Majumder U., Mancini N., Owald D., Pierzchlinska A., Litwin-Kumar A. (2024). *Reinforcement of valence through action*. Poster presented at Computational and Systems Neuroscience Conference (COSYNE 2024), Lisbon, Portugal.

*Bravo I., ***Stone J.T.**, Kellendonk C. (2023). *Artificial neural network models predict rodent performance on trial structure variations in an attentional set shifting task*. Poster presented at Society for Neuroscience Meeting (SfN 2023), Washington, D.C., USA. (* denotes equal contribution).

Stone J. T., Sun, M., Litwin-Kumar A. (2023). *A model of mushroom-body-guided odor foraging policy*. Poster presented at Mushroom Body Meeting, Göttingen, Germany.

Stone J. T., Ehrlich D. B., Atanasov A., Brandfonbrener D., Murray J. D. (2019). *PsychRNN: An open-source Python package for training artificial recurrent neural networks on cognitive tasks*. Poster presented at Society for Neuroscience Meeting (SfN 2019), Chicago, IL, USA. Also presented as a poster at Neuromatch 2.0 (2020).

Berens, P., Theis, L., **Stone, J. T.**, et al. (2017). *Standardizing and benchmarking data analysis for calcium imaging*. Poster presented at Computational and Systems Neuroscience Meeting (COSYNE 2017), Salt Lake City, UT, USA.

Stone, J., Bonnen, K., Huk, A., & Cormack, L. (2016). *Manual target tracking reveals a perceptual asymmetry between crossed and uncrossed disparities*. Poster presented at Workshop on Natural Environments Tasks and Intelligence, Austin, TX, USA. Also presented as poster at Vision Sciences Society Symposium, St. Pete Beach, FL, USA.

Patents

Stone, J., et. al. 2020. NEUROMUSCULAR CONTROL OF AN AUGMENTED REALITY SYSTEM. U.S. 20200097081, filed Sept. 20, 2019, and issued Mar. 26, 2020. (Worldwide Patent)

Mao, Q., **Stone, J**. et. al. 2020. NEUROMUSCULAR CONTROL OF PHYSICAL OBJECTS IN AN ENVIRONMENT. U.S. 20200097083, filed Sept. 26, 2019, and issued Mar. 26, 2020. (Worldwide Patent)

Research

Columbia University, Neurobiology & Behavior: Prof. Ashok Litwin-Kumar's Lab 2022-Present

- Computationally investigating learning in dopaminergic areas of the Drosophila brain.

- Investigated the effect of different curricula / task-shaping protocols on learning in collaboration with Isabel Bravo in Prof. Christoph Kellendonk's Lab.

Meta Reality Labs: Research Scientist Intern, Neuromotor Interfaces: Computational Modeling (PhD) Summer 2025

- Designed and evaluated machine learning models for Meta Neural Band EMG gesture detection and classification, improving accuracy on a novel interaction by 6 percentage points.
- Streamlined data integration and enforced rigorous quality control measures to clean biosignals on 400+ users and ensure robust model training and validation.
- Explored and implemented multiple model architectures and training approaches, including deep learning and regularization techniques, to maximize accuracy.
- Effectively communicated technical findings and recommendations for detection metrics and model enhancements to cross-functional teams in talks and by authoring internal publications, supporting ongoing EMG biosensor advancements, shaping model architecture choices and product directions.
- Productionized novel interaction on Meta's infrastructure.

Columbia University, Neurobiology & Behavior: Prof. Bianca Marlin and Prof. Larry Abbott's Labs Summer 2022

- Investigated how an increase in odor receptors for a shock-paired odorant affects learning & downstream circuits.
- Using computational modeling, microscopy on tissue labeled in slice and on iDISCO-cleared tissue

Columbia University, Neurobiology & Behavior: Prof. Kanaka Rajan's Lab Summer 2022

- Investigated how curriculum learning can help us understand learning in biological systems.

Columbia University, Neurobiology & Behavior: Prof. Ashok Litwin-Kumar's Lab Spring 2022

- Computationally modeled the Drosophila Mushroom Body (MB) using connectome & behavioral data.

Columbia University, Neurobiology & Behavior: Prof. Rudy Behnia's Lab Fall 2021

- Investigated Drosophila MB Output Neurons response to visual stimuli with calcium imaging.
- Contributed figure with preliminary data Dr. Behnia's and Dr Litwin-Kumar's joint R34 application.

Cambridge University, Engineering: Prof. Guillaume Hennequin's Lab 2020-2021

- Implemented novel techniques to scale Gaussian Process Factor Analysis (GPFA) methods to work on an hour or more of electrophysiology data (previously only worked on ~30s of data).

Yale University, Psychiatry: Prof. John Murray's Lab 2017-2020

- Implemented new features, polished, documented, and released open-source package, PsychRNN, for modeling cognitive tasks using recurrent neural networks.

CTRL-Labs (now part of Facebook), Interactions Team: Intern Summer 2018/19

- Designed, implemented, executed, and analyzed multiple experiments with more than 80 human subjects to evaluate cursor control and gesture detection using CTRL-labs' neural interface.
- Decreased gesture detection latency by 80ms, built benchmarks to determine which gestures to ship.
- Collaborated with and organized work across multiple teams.
- Owned patent communication with an external legal team on one patent on which I am an inventor.
- Outreach: Organized and ran multiple recruiting events; Demoed at Microsoft Research.

Yale University, Applied Math: Prof. Gal Mishne's Lab Spring 2018

- Initiated and worked on computational vision project to automate whisker tracking and paw tracking of mice to facilitate data analysis and classification.

Janelia, Howard Hughes Medical Institute: Dr. Jeremy Freeman's Lab Summer 2016

- Compared calcium ion imaging analysis algorithms and modified them to be universally usable.
- Developed supervised learning algorithm for analysis.

University of Texas (UT), Neuroscience: Prof. Lawrence Cormack's & Prof. Alexander Huk's Lab 2014-2019

- Programmed, ran, and analyzed Matlab experiments for 3D motion tracking.

Technion – Israel Institute of Technology: Scitech Program Summer 2014

- Researched viability of amniotic epithelial stem cells: Best Presentation Award.

Teaching

Columbia University Center for Teaching & Learning (CTL): Lead Teaching Fellow 2023-24

- Developed, organized, and taught workshops on navigating difficult conversations in mentorship & assessing students' and mentee's understanding in real-time.
- Proactively liaised with students, faculty, administrators, and other stakeholders in my department to connect people with relevant resources at the CTL.
- Developed my teaching skills through participation in CTL workshops.

Columbia University Neurobiology & Behavior, Intro to Python for Neuroscientists: Instructor Fall 2022

- Developed curriculum and taught 24 graduate students, postdocs and research techs introductory Python with two other graduate student instructors.
- Led the first three lessons covering setting up a local python environment (Conda), text editor (VS Code), and version control (git); and the start of introductory python.
- Course materials are available on github: https://github.com/Columbia-Neuropythonistas/IntroPythonForNeuroscientists2022

Columbia University Center for Theoretical Neuroscience: Network Flow Journal Club 2022

- 1 hour lecture based on Ch 1 of *Spectral and Algebraic Graph Theory Incomplete Draft* by Spielman (Dec. 2019), and "A Primer on Laplacian Dynamics in Directed Graphs" by Veerman and Lyons (2020).

The Coding School: CodeConnects Teacher 2020-2022

- Taught 1:1 & developed curriculum for high school students learning Python and Data Science.
- Volunteered more than 60 teaching hours. 2020-2021
- TA'd (paid) for data science summer camp for 3 hours. Summer 2022

Neuromatch Academy (online school in computational neuroscience): Teaching Assistant July 2020

- Taught, advised on projects, & moderated 9 undergrads and graduates in a 3-week intensive course.

Yale Computer Science, Data Structures Class: Undergraduate Learning Assistant Fall 2017

- Held office hours for students taking Data Structures, a required class for the major.
- Clarified problem set specifications, graded exams.

SheCode: Volunteer Teaching Assistant 2017-18

- Guided middle/high school girls through first python modules.
- Individualized attention across approximately ten students at a time, each with specific needs.

Mentorship

Columbia University, Prof. Ashok Litwin-Kumar's Lab: Undergraduate Research Mentor

- Angelina Yan (informal mentor; connectome analysis). Spring 2026
- Austin Gibson (ARNI Amazon SURE fellow; curriculum learning in RNNs). Summer 2024
- Caroline Haoud (informal mentor; connectome analysis). 2022

Columbia Access to Doctoral Readiness (CADRE) Postbac Program: Near-Peer Mentor 2023-2025

- Mentored a postbac student on lab dynamics, classes, and PhD and fellowship applications.

Polygence: Research Mentor 2023-2025

- Mentor high school students on independent research projects.

Project SHORT: Pro-Bono Ph.D. and Fellowship Application Mentor 2020-2025

- Assist with school selection, edit CVs, and provide general advice to applicants with diverse experiences to combat socioeconomic and systemic inequalities in graduate admissions.

Ivy Tutors Network: Research Mentor 2024

- Mentored a high school student on an independent research project.

Goldwater Scholar Community Mentorship Program: Mentor 2022-2024

- Mentored an undergraduate applying to NSF GRFP (successful) and graduate school (admitted to top choice program)

Black Undergraduate Mentorship Program in Biology at Columbia University: Research Mentor 2021-2024

- Assist mentees with the summer research opportunity application process, editing CVs, and provide general advice on managing the application process. Assist and advise mentees on finding labs to join.

Cosyne Conference Undergraduate Travel Grant Program: Mentor Mar 2023

- Mentored undergraduate students attending the conference.

Service

STEM Starters, Zuckerman Institute, Columbia University: Volunteer March 2025

- Introduced elementary and middle schoolers to electricity in a hands-on, experimental activity.

Zuckerman Institute Trainee Advisory Committee 2022-2025

- Secured funding for tax workshops for incoming students, advocated for mentorship training for PIs, organize lunch for meetings.

NSF AI Institute for Artificial and Natural Intelligence: NeuroAI Activity Development 2024

- Developed artificial and biological neural network and neuroscience activities for K-12 and collaborated with the New York Hall of Science to get feedback on the activities for iteration.

Neuroethics Teacher Institute, Zuckerman Institute, Columbia University: Panelist July 2024

- Panel on generative AI in education for a program for middle school teachers.

Connectome Workshop, Gatsby Tri-Center Meeting: Co-organizer June 2024

- Developed Jupyter notebooks introducing participants to working with *Drosophila m.* connectome data.

Saturday Science, Columbia University Neuroscience Outreach: Volunteer Feb 2023

- Ran hands-on neuroscience activity booth for K-8 children.

Columbia University, Neurobiology & Behavior: Bootcamp Organizer Summer 2022

- Organized 7-day bootcamp for incoming Ph.D. students. Managed multiple teams, coordinated weekday faculty talks and panels, liaisoned with Co-Organizer on budget, food, and social events.

Cientifico Latino: Personal Statements Reviewer Fall 2022

- Gave feedback on two Ph.D. applicants' personal statements.

Girls Science Day, Columbia University: Group Leader Nov 2021

- Guided group of ~10 middle and high school girls on various scientific activities for 4 hours.

Zuckerman Institute Gender Inclusion: Book Club Organizer Fall 2021

- Organized fall book club.

Winston Churchill Foundation: Fellowship Awardee 2020-21

- Led efforts to incorporate Historically Black Colleges and Universities as participating institutions.

International Precollege Association for Research in STEM: Advisor Jun-Dec 2020

- Advised 5 mentors, addressed questions and concerns as they arose.

Yale School of Engineering & Applied Science: Student Review Committee for the Ackerman Award Apr 2020

- Selected by the Computer Science department to select the recipient for the Ackerman Award for Teaching & Mentoring.

Other Leadership

Yale Synchronized Swimming: Founding Member 2017-2020

- Initiated team formation by registering with national governing body of synchronized swimming.
- Recruited founding team members and leadership team.
- Advised leadership team on Club Sports relations, resources, and rules.

Yale Women's Water Polo: Travel manager (Elected) 2017-18

- Organized move-in fundraiser, raising over $800 for the team of approximately 14 people.
- Organized travel arrangements for 2 away competitions and a week-long training trip to Austin, TX; Obtained pool time; Organized scrimmages; Recruited two coaches for the duration of training trip; Arranged housing, transportation, and meals.
- Ensured travel complied with Yale Club Sports regulations.

Other Work Experience

Bespoke Education: Math Tutor 2024

- Tutor high school and college students in Calculus and Precalculus.

Google, Next Billion Users: Engineering Practicum Intern Summer 2017

- Designed and created an Android app focused on emerging markets.
- App enabled data collection on over 1,500 hotspots in India, Brazil and Indonesia, providing the dataset for a supervised learning algorithm that has greatly improved network quality reports.

Yale Symphony Orchestra: Stage Crew Spring 2017

- Set up and cleaned up chairs, stands and anything else needed for rehearsals and concerts.

Other Event Participation

Marine Biology Laboratory Neural Systems & Behavior Course Planned Summer 2026
Marine Biology Laboratory Methods in Computational Neuroscience Course Summer 2023
Jane Street's Software Development INSIGHT Program: Introduced to OCaml and trading. Jan 2017
HackMIT: Made therapy tool for patients and doctors using Firebase and Leap Motion. Fall 2016

Literary Publications

Stone, J. (2017) *My Brother's Sister.* Yale Herald, Literary Edition. https://medium.com/the-yale-herald/my-brothers-sister-36627117c2a7

Skills and Interests

Technology: Python, Git, JAX, TensorFlow, Jupyter Notebooks, MATLAB, C, Java, Racket, Cuda, OpenMPI, OpenMP.
Foreign Languages: Hebrew (conversational), Spanish (proficient).
Athletics: Cambridge Canoe Polo, Yale Women's Water Polo, Nationally Ranked Synchro Swimmer. 2006-Present
Violin: Columbia University, Cambridge University, & Yale Symphony Orch., Texas All-State Orchestra. 2002-Present