Benjamin Lipkin
Curriculum Vitae
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Contact:

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Education:

2022 – Present	Massachusetts Institute of Technology, Cambridge, MA Degree: Ph.D. Brain & Cognitive Sciences Concentration: Computation, Cognitive Science Advisor: Dr. Evelina Fedorenko, PhD.
2016 – 2020	University of Michigan, Ann Arbor, MI Degree: B.Sc. Neuroscience, High Honors Thesis: Decoding object color binding using multivariate pattern analysis. Advisor: Dr. David Brang, PhD.
2012 – 2016	Bronx High School of Science, Bronx, NY

Research:

2020 – 2022	Technical Research Associate, Fedorenko Lab, MIT, Cambridge, MA Worked on a wide variety of projects using neuroimaging, behavioral and corpus analytic approaches, and computational modeling to investigate the neural representations and computations underlying language and other hierarchically structured processes in the human brain and in state-of-the-art deep learning and symbolic models. Developed software along these goals using primarily Python, MATLAB, and R, among other tools.
2018 – 2020	Research Assistant, Brang Lab, University of Michigan, Ann Arbor, MI Processed and analyzed intraoperative electrocorticographic (ECoG) data from epilepsy and tumor patients to investigate articulation network dynamics and organization. Collected and analyzed fMRI data to assess predictive coding of visual information. Assisted in the creation, development, and maintenance of laboratory signal processing, statistical inference, and machine learning pipelines in MATLAB and Python.

2016 – 2018 Research Assistant, Becker Lab, University of Michigan, Ann Arbor, MI

Carried out behavioral experiments in rats investigating estradiol-mediated modulation of basal ganglia dopamine circuitry during psychostimulant drug administration. Assisted in animal surgery, immunohistochemistry, and statistical data analysis.

2014 – 2015 Research Assistant, Kandel Lab, Columbia University, New York, NY

Used SDS-PAGE to screen compounds for their effects on the aggregation of RNA binding protein TIA-1 in vitro and in COS-7 cells. Analyzed FRET data to investigate stress granule formation.

Published Manuscripts & Preprints:

2022 Srikant S*, **Lipkin B***, Ivanova A, Fedorenko E, O'Reilly, UM. (2022). Convergent representations of computer programs in human and artificial neural networks. *Advances in Neural Information Processing Systems (NeurIPS).*

2022 **Lipkin B**, Tuckute G, Affourtit J, Small H, Mineroff Z, Kean H, Jouravlev O, Rakocevic L, Pitchett B, Siegelman M, Hoeflin C, Pongos A, Blank I, Kline M, Ivanova A, Shannon S, Sathe A, Hoffman M, Nieto-Castañón A, and Fedorenko E. (2022). Probabilistic atlas for the language network based on precision fMRI data from >800 individuals. *Nature Scientific Data*, 9(1), 1-10.

2022 Shain C*, Paunov A*, Chen X*, **Lipkin B**, Fedorenko E. (preprint). No evidence of theory of mind reasoning in human language network. https://doi.org/10.1101/2022.07.18.500516

2021 Shain C, Kean H, **Lipkin B**, Affourtit J, Siegelman M, Mollica F, Fedorenko E. (preprint). Constituent length effects do not support syntactic abstraction in the human language network. https://doi.org/10.1101/2021.11.12.467812

2021 Aabedi A*, **Lipkin B***, Kaur J, Kakaizada S, Reihl S, Young JS, Lee AT, Krishna S, Chang EF, Brang D, Hervey-Jumper SL. (2021). Functional alterations in cortical processing of speech in glioma-infiltrated cortex. *PNAS*, 118(46): e2108959118.

2021 Malik-Moraleda S, Cucu T, **Lipkin B**, Fedorenko, E. (2021). The domain-general Multiple Demand system is more active in bilinguals than monolinguals during executive processing. *Neurobiology of Language*, 2(4): 647-664.

2021 Aabedi A, **Lipkin B**, Young JS, Krishna S, Kakaizada S, Kaur J, Berger M, Brang D, Hervey-Jumper SL. (2021). Spectro-temporal encoding of speech responses in glioma-infiltrated cortex. *Journal of Neurosurgery*, 135(2): 15.

Invited Talks:

2022	Brain-behavior correlations: Low reliability and statistical power. TEvLab, MIT, Cambridge, MA.
2022	Probabilistic atlases of functional brain networks. Software Tools for Open Science Workshop, NIH Office of Data Science Strategy, Bethesda, MD.
2021	Human and artificial neural representations of computer programs. TEvLab, MIT, Cambridge, MA.
2020	The neural encoding of speech errors in patients with perisylvian brain tumors. Phonetics and Phonology Forum, UC Berkeley, Berkeley, CA.

Conference Presentations:

2022	Srikant S*, **Lipkin B***, Ivanova A, Fedorenko E, O'Reilly, UM. (2022). Convergent representations of computer programs in human and artificial neural networks. *Neural Information Processing Systems*, New Orleans, LA
2021	Small H*, **Lipkin B***, Affourtit J, Pongos A, Fedorenko E. Differential selectivity of the left and right hemisphere language regions for non-linguistic processing. *Society for Neurobiology of Language.*
2019	**Lipkin B**, Plass J, Kakaizada S, Valdivia C, Sagher O, Hervey-Jumper SL, Brang D. Electrocorticographic recordings enable intraoperative language network mapping. *Society for Neuroscience*, Chicago, IL

Ad Hoc Reviewing:

2022	Conference on Neural Information Processing Systems (NeurIPS).
2022	Nature Scientific Data.
2022	International Conference on Machine Learning (ICML) **[Top 10%]**.

Awards & Fellowships:

2022	MIT Presidential Graduate Fellowship.
2022	Computationally Enabled Integrative Neuroscience Trainee.
2019	MCubed Scholars Research Fellowship.

Mentorship:

2021	Elsa Engeriser (UROP).

Volunteer:

2021 – Present	Greater Boston Food Bank. Boston, MA.
2018 – 2019	FEMMES Workshop. Ann Arbor, MI.
2017	Eisenhower Center for TBI. Ann Arbor, MI.

Affiliations:

2020 – Present	Society for the Neurobiology of Language (SNL).
2019 – Present	Cognitive Neuroscience Society (CNS).
2018 – Present	Society for Neuroscience (SfN).

Selected Coursework & Technical Experience:

Mathematics	Vector Calculus, Linear Algebra, Differential Equations, Probability
Statistics	Modeling & Inference, Bayesian Analysis, Probabilistic Programming
Engineering	Dynamic Systems & Control, Signal Processing, Reinforcement Learning
Computer Science	Data Structures & Algorithms, Software Engineering, Deep Learning
Languages	Python, MATLAB, R, Julia, JavaScript, C++, Unix Shell, SQL, LaTeX
Tools	Git, Docker, Singularity, Vagrant, TravisCI, CircleCI, Make, Slurm

References:

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David Brang, Ph.D.
Assistant Professor, Psychology
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