Benjamin Lipkin
Curriculum Vitae
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Education:

2022 – Now	Massachusetts Institute of Technology, Cambridge, MA Degree: Ph.D. Cognitive Science Advisors: Dr. Evelina Fedorenko, Dr. Roger Levy
2016 – 2020	University of Michigan, Ann Arbor, MI Degree: B.Sc. Computational Neuroscience Advisor: Dr. David Brang
2012 – 2016	Bronx High School of Science, Bronx, NY

Research:

2023 – Now	Ph.D. Student Researcher, MIT Advisors: Dr. Evelina Fedorenko, Dr. Roger Levy
2022 – 2023	Ph.D. Student Researcher (Rotational), MIT Advisors: Dr. Roger Levy, Dr. Joshua Tenenbaum, Dr. Evelina Fedorenko
2020 – 2022	Technical Research Associate, MIT Advisor: Dr. Evelina Fedorenko
2018 – 2020	Research Assistant, University of Michigan, Ann Arbor, MI Advisor: Dr. David Brang
2016 – 2018	Research Assistant, University of Michigan, Ann Arbor, MI Advisor: Dr. Jill Becker
2014 – 2015	Research Assistant, Columbia University, New York, NY Advisor: Dr. Eric Kandel

Preprints:

2023	Shain C, Kean H, Casto C, **Lipkin B**, Affourtit J, Siegelman M, Mollica F, Fedorenko E. (under review). Graded sensitivity to structure and meaning throughout the human language network. *bioRxiv*.
2023	Bruffaerts R, Pongos A, Shain C, **Lipkin B**, Siegelman M, Wens V, Sjøgård M, Pantazis D, Blank I, Goldman S, De Tiège X, Fedorenko E. (under review). Functional identification of language-responsive channels in individual participants in MEG investigations. *bioRxiv*.
2023	Regev T*, **Lipkin B***, Boebinger D, Paunov A, Kean H, Norman-Haignere S, Fedorenko E. (under review). Preserved functional organization of human auditory cortex in individuals missing one temporal lobe from infancy. *bioRxiv*.

Conference Papers:

2023	Olausson TX*, Gu A*, **Lipkin B***, Zhang CE*, Solar-Lezama A, Tenenbaum JB, Levy R. (2023). LINC: A neuro-symbolic approach for logical reasoning by combining language models with first-order logic provers. *Proceedings of the Conference on Empirical Methods in Natural Language Processing (EMNLP)*. [Outstanding Paper Award]

2023 **Lipkin B**, Wong L, Grand G, Tenenbaum JB. (2023). Evaluating statistical language models as pragmatic reasoners. *Proceedings of the Annual Meeting of the Cognitive Science Society (CogSci)* & *Association for Computational Linguistics (ACL) Workshop on Natural Language Reasoning and Structured Explanations (NLRSE)*.

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)*.

Journal Papers:

2023 Li R, Ben Allal L, Zi Y, Muennighoff N, Kocetkov D, Mou C, Marone M, Akiki C, Li J, Chim J, Liu Q, Zheltonozhskii E, Zhou TY, Wang T, Dehaene O, Davaadorj M, Lamy-Poirier J, Monteiro J, Shliazhko O, Gontier N, Meade N, Zebaze A, Yee MH, Umapathi LK, Zhu J, **Lipkin B**, Oblokulov M, Wang Z, Murthy R, Stillerman J, Patel SS, Abulkhanov D, Zocca M, Dey M, Zhang Z, Fahmy N, Bhattacharyya U, Yu W, Singh S, Luccioni S, Villegas P, Kunakov M, Zhdanov F, Romero M, Lee T, Timor N, Ding J, Schlesinger C, Schoelkopf H, Ebert J, Dao T, Mishra M, Gu A, Robinson J, Anderson CJ, Dolan-Gavitt B, Contractor D, Reddy S, Fried D, Bahdanau D, Jernite Y, Ferrandis CM, Hughes S, Wolf T, Guha A, von Werra L, de Vries H. (2023). StarCoder: may the source be with you! *Transactions on Machine Learning Research (TMLR)*.

2023 Krishna S, Choudhury A, Keough MB, Seo K, Ni L, Kakaizada S, Lee A, Aabedi A, Popova G, **Lipkin B**, Cao C, Gonzalez CN, Sudharshan R, Egladyous A, Almeida N, Zhang Y, Molinaro AM, Venkatesh HS, Daniel AGS, Shamardani K, Hyer J, Chang EF, Findlay A, Phillips JJ, Nagarajan S, Raleigh DR, Brang D, Monje M, Hervey-Jumper SL. (2023). Glioblastoma remodeling of human neural circuits decreases survival. *Nature*.

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, Fedorenko E. (2022). Probabilistic atlas for the language network based on fMRI data from >800 individuals. *Nature Scientific Data*.

2022 Shain C*, Paunov A*, Chen X*, **Lipkin B**, Fedorenko E. (2022). No evidence of theory of mind reasoning in the human language network. *Cerebral Cortex*.

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. *Proceedings of the National Academy of Sciences (PNAS)*.

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*.

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*.

Conference Abstracts:

2024 Ivanova A*, Sathe A*, **Lipkin B***, Fedorenko E, Andreas J. (2024). Log probability scores provide a closer match to human plausibility judgments than prompt-based evaluations. *South NLP Symposium*.

2023 Casto C, **Lipkin B**, Small H, D'Mello A, Fedorenko E. A detailed functional characterization of cerebellar language-responsive brain areas. *Society for Neurobiology of Language*.

2023 Shain C*, Paunov A*, Chen X*, **Lipkin B**, Fedorenko E. No evidence of theory of mind reasoning in the human language network. *Human Sentence Processing*.

2023 Aabedi A, **Lipkin B**, Young JS, Hinkley L, Findlay A, Daniel A, Krishna S, Umbach G, Surapaneni A, Kaur J, Berger MS, Molinaro A, Brang D, Nagarajan S, Hervey-Jumper SL. Electrophysiological patterns of glioma-induced neural network remodeling are a general property of brain tumors regardless of subtype. *Clinical Neurosurgery*. [Oral Presentation]

2022 Ozernov-Palchik O*, O'Brien A*, Romeo R, Small H, **Lipkin B**, Capella J, Gabrieli J, Fedorenko E. A developmental investigation of the language network in the brain. *Society for Neurobiology of Language*.

2022 Aabedi A, **Lipkin B**, Young JS, Hinkley L, Findlay A, Daniel A, Krishna S, Umbach G, Kaur J, Berger MS, Molinaro A, Brang D, Nagarajan S, Hervey-Jumper SL. Electrophysiological patterns of glioma-induced neural network remodeling are conserved across tumor subtype. *Society for Neuro-Oncology*.

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*. [Oral Presentation]

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*.

Open-Source Datasets:

2023 **Lipkin B**, Blank I, Fedorenko E. Probabilistic atlases for the multiple demand (MD) and theory of mind (ToM) networks based on large-scale precision localizers. *FigShare Dataset*.

2023 **Lipkin B**, Affourtit J, Small H, Mineroff Z, Nieto-Castañón A, Fedorenko E. Large-scale fMRI datasets of functional 'localizers' for the language and Multiple Demand networks extend the evidence for reliable individual-level neural markers to another network, a larger pool of participants, and novel metrics. *FigShare Dataset*.

Invited Talks:

2023 Solving composite tasks with modular systems.
CogLunch, MIT, Cambridge, MA.

2023 Functional programming and cognitive representation.
Santa Fe Institute (SFI) GAINs Workshop, Isaac Newton Institute, Cambridge, UK.

2022 Optimization pressures on the neural representational geometry of language.
CogLunch, MIT, Cambridge, MA.

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, 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.

Fellowships:

2024 – Present National Science Foundation (NSF) Graduate Research Fellowship (GRFP).

2023 – 2024 MIT Computationally Enabled Integrative Neuroscience Fellowship.

2023	Santa Fe Institute Complexity GAINs Summer Fellowship.
2022 – 2023	MIT Presidential Graduate Fellowship.
2019	MCubed Scholars Research Summer Fellowship.

* Awards totaling >$300,000 in funding.

Awards:

2024	McGovern Institute Travel and Technology Award.
2023, 2024	MIT Quality of Life Award (2x).
2023	EMNLP Outstanding Paper Award.
2021, 2022	MIT SPOT Award (2x).

Media Coverage:

2022	"This is your brain. This is your brain on code." *MIT News & Communications of the ACM*. [Top 5 Viewed Dec. '22]

Conference and Workshop Organizing:

2024	Workshop Co-Organizer: Assessing Representation in Minds and Artificial Systems. *Santa Fe Institute (SFI), Santa Fe, NM.*
2024	Workshop Co-Organizer: Natural Language Reasoning and Structured Explanations. *Association for Computational Linguistics (ACL), Bangkok, Thailand.*
2024	Conference Local Organizing Committee. *Computational Cognitive Neuroscience (CCN), Cambridge, MA.*
2024	Workshop Student Liaison: New Horizons in Language Science. *National Science Foundation (NSF), Arlington, VA.*

Ad Hoc Reviewing:

2024	Conference:	International Conference on Machine Learning (ICML). Cognitive Science Society (CogSci). ICLR Workshop on Representational Alignment (ReAlign).
	Journal:	Transactions on Software Engineering and Methodology (TOSEM).
2023	Conference:	Neural Information Processing Systems (NeurIPS). International Conference on Learning Representations (ICLR).
	Journal:	Developmental Cognitive Neuroscience.
2022	Conference:	Neural Information Processing Systems (NeurIPS). International Conference on Machine Learning (ICML). [Top 10%]
	Journal:	Nature Scientific Data.

Teaching:

2024	Teaching Assistant & Guest Lecturer: 9.39 Language in the mind and brain, MIT.

Mentorship:

2023	Sofie Chung (UROP).
2023	Carol Jiang (UROP).
2021	Elsa Engeriser (UROP).

Selected Open-Source Contributing:

2024	outlines-dev/outlines
2023	bigcode-project/bigcode-evaluation-harness, outlines-dev/outlines
2022	huggingface/datasets, huggingface/evaluate, brain-score/language, brain-score/core

Additional Service & Volunteer:

2023 – 2024	MIT CogLunch Seminar Series Organizer.
2022 – Now	MIT Graduate Application Assistance Program Mentor.
2021 – Now	Greater Boston Food Bank Volunteer.