Benjamin Lipkin
Curriculum Vitae
September 2024

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Education:

2022 – Present	Massachusetts Institute of Technology, Cambridge, MA
	Degree: Ph.D. Cognitive Science
	Advisors: Dr. Evelina Fedorenko, Dr. Roger Levy
	Committee: Dr. Nancy Kanwisher, Dr. Jacob Andreas
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

Positions:

2024 – Present	Ph.D. Candidate Researcher, MIT
	Advisors: Dr. Evelina Fedorenko, Dr. Roger Levy
2023 – 2024	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 Associate, 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:

2024	Li J, Beeching E, Tunstall L, **Lipkin B**, Soletskyi R, Huang S, Rasul K, Yu L, Jiang AQ, Shen Z, Qin Z, Dong B, Zhou L, Fleureau Y, Lample G, Polu S. (preprint). NuminaMath: The largest public dataset in AI4Maths with 860k pairs of competition math problems and solutions. *preprint.*
2024	Ivanova AA*, Sathe A*, **Lipkin B***, Kumar U, Radkani S, Clark TH, Kauf C, Hu J, Pramod RT, Grand G, Paulun V, Ryskina M, Akyürek E, Wilcox E, Rashid N, Choshen L, Levy R, Fedorenko E, Tenenbaum J, Andreas J. (under review). Elements of World Knowledge (EWOK): A cognition-inspired framework for evaluating basic world knowledge in language models. *arXiv.*
2024	Ozernov-Palchik O*, O'Brien AM, Lee EJ, Richardson H, Romeo R, **Lipkin B**, Small H, Capella J, Nieto-Castañón A, Saxe R, Gabrieli JDE, Fedorenko E. (under

review). Precision fMRI reveals that the language network exhibits adult-like left-hemispheric lateralization by 4 years of age. *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*.

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:

2024   Regev T*, **Lipkin B***, Boebinger D, Paunov A, Kean H, Norman-Haignere S, Fedorenko E. (2024). Preserved functional organization of human auditory cortex in two individuals missing one temporal lobe from infancy. *iScience*.

2024   Shain C, Kean H, Casto C, **Lipkin B**, Affourtit J, Siegelman M, Mollica F, Fedorenko E. (2024). Distributed sensitivity to syntax and semantics throughout the language network. *Journal of Cognitive Neuroscience*.

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   Wolna A, **Lipkin B**, Fedorenko E. (2024). The extended language network: A large-scale characterization of language-responsive regions beyond the core fronto-temporal network. *Society for Neurobiology of Language (SNL).*

2024   Huybrechts M, Pongos A, Shain C, **Lipkin B**, Siegelman M, Wens V, Sjøgard M, Pantazis D, Blank I, Goldman S, De Tiege X, Fedorenko E, Bruffaerts R. (2024). Exploring language network neural oscillations at the single-trial level. *Computational Cognitive Neuroscience (CCN).*

2024   **Lipkin B**, Lionel Wong, Gabriel Grand, Joshua Tenenbaum. (2024). Modeling uncertainty in semantic parsing. *New England NLP Meeting (NENLP).*

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 (SNL).*

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 (HSP).*

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 (SNL).*

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 (SNL).* [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 (SfN).*

Open-Source Repositories (GitHub):

Lead	benlipkin/probsem (72★)
	benlipkin/linc (50★)
Contributor	outlines-dev/outlines (8.1k★)
	bigcode-project/bigcode-evaluation-harness (757★)
	project-numina/aimo-progress-prize (250★)

Open-Source Models (HuggingFace):

Contributor	bigcode/starcoder (2.77k♥)
	AI-MO/NuminaMath-7B-TIR (300♥)

Open-Source Datasets (HuggingFace):

Contributor	AI-MO/NuminaMath-CoT (157♥)

Invited Talks:

2023	Solving composite tasks with modular systems.
	BCS Seminar Series, MIT, Cambridge, MA.
2023	Functional programming and cognitive representation.
	Workshop on Intelligence & Representation, Isaac Newton Institute, Cambridge, UK.
2022	Probabilistic atlases of functional brain networks.
	Software Tools for Open Science, NIH Office of Data Science Strategy, Bethesda, MD.
2020	The neural encoding of speech errors in patients with perisylvian brain tumors.
	Phonetics and Phonology Forum, UC Berkeley, Berkeley, CA.

Invited Workshops:

2024	Mathematics of Intelligences: Naturalistic Approaches to Artificial Intelligence.
	Institute for Pure & Applied Mathematics, University of California, Los Angeles, CA.
2023	Santa Fe Institute: Workshop on Intelligence & Representation.
	Isaac Newton Institute, Cambridge, UK.

Fellowships:

2024 – Present	National Science Foundation (NSF) Graduate Research Fellowship (GRFP).
2023 – 2024	MIT Computationally Enabled Integrative Neuroscience 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 MIT News Dec. '22] |

Conference and Workshop Organizing:

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

Ad Hoc Journal Reviewing:

2024	Transactions on Software Engineering and Methodology (TOSEM).
2023	Developmental Cognitive Neuroscience.
2022	Nature Scientific Data.

Conference and Workshop Program Committee:

2025	Association for the Advancement of Artificial Intelligence (AAAI).
2024	NeurIPS Workshop on Mathematical Reasoning and AI (MathAI).
	International Conference on Machine Learning (ICML).
	Cognitive Science Society (CogSci).
	ICLR Workshop on Representational Alignment (ReAlign).
2023	Neural Information Processing Systems (NeurIPS).
	International Conference on Learning Representations (ICLR).
2022	Neural Information Processing Systems (NeurIPS).
	International Conference on Machine Learning (ICML). [Top 10%]

Teaching:

| 2024, 2025 | Teaching Assistant & Guest Lecturer: 9.39 Language in the mind and brain, MIT. |

Research Mentorship:

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

Additional Service & Volunteer:

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