

COLTON CASTO

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Cambridge, MA

EDUCATION

- 2023 – Present **Harvard University**
Ph.D., Program in Speech and Hearing Bioscience and Technology (SHBT)
Advisors: Dr. Evelina Fedorenko, Dr. Nancy Kanwisher
Awards: Graduate Fellowship, *Kempner Institute for the Study of Natural and Artificial Intelligence*
- 2017 – 2021 **Princeton University**
A.B., Neuroscience, *magna cum laude*
Minors: Computer Science, Statistics and Machine Learning, Spanish
Awards: Brinster '43 Neuroscience Senior Thesis Prize

POSITIONS

- 2025 – Present Ph.D. Candidate Researcher, *Harvard University / Massachusetts Institute of Technology*
Advisors: Dr. Evelina Fedorenko, Dr. Nancy Kanwisher
- 2024 – 2025 Ph.D. Student Researcher, *Harvard University / Massachusetts Institute of Technology*
Advisors: Dr. Evelina Fedorenko, Dr. Nancy Kanwisher
- 2023 – 2024 Ph.D. Student Researcher (rotational), *Harvard University / Massachusetts Institute of Technology*
Advisors: Dr. Evelina Fedorenko, Dr. Nancy Kanwisher, Dr. Josh McDermott
- 2021 – 2023 Technical Research Associate, *Massachusetts Institute of Technology*
Advisor: Dr. Evelina Fedorenko
- 2018 – 2021 Undergraduate Research Assistant, *Princeton University*
Advisor: Uri Hasson
- 2019 – 2019 Visiting Research Assistant, *Newcastle University*
Advisor: Tim Griffiths

PUBLICATIONS

- Casto, C., Ivanova, A., Fedorenko, E., Kanwisher, N. (2025). What does it mean to understand language? *arXiv*.
<https://doi.org/10.48550/arXiv.2511.19757>
- Casto, C., Poliak, M., Tuckute, G., Small, H., Sherlock, P., Wolna, A., Lipkin, B., D'Mello, A.M., Fedorenko, E. (2025). The cerebellar components of the human language network. *bioRxiv*. <https://doi.org/10.1101/2025.04.14.645351>
- Wolna, A., Wright, A., Casto, C., Lipkin, B., Fedorenko, E. (2025). The extended language network: Language-selective brain areas whose contributions to language remain to be discovered. *bioRxiv*.
<https://doi.org/10.1101/2025.04.02.646835>
- Hosseini, E., Casto, C., Zaslavsky, N., Conwell, C., Richardson, M., Fedorenko, E. (2024). Universality of representation in biological and artificial neural networks. *bioRxiv*. <https://doi.org/10.1101/2024.12.26.629294>
- Regev, T.*, Casto, C.*, Hosseini, E., Adamek, M., Ritaccio, A., Willie, J., Brunner, P., Fedorenko, E. (2024). Neural populations in the language network differ in the size of their temporal receptive windows. *Nature Human Behavior* 8:1924-1942. <https://doi.org/10.1038/s41562-024-01944-2>
- Goldstein, A., Wang, H., Sheffer, T., Schain, M., Zada, Z., Niekerken, L., ..., Casto, C., ..., Devinsky, O., Flinker, A., Hasson, U. (2024). Information-making processes in the speaker's brain drive human conversations forward. *bioRxiv*.
<https://doi.org/10.1101/2024.08.27.609946>

- 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* 36 (7): 1427–1471. https://doi.org/10.1162/jocn_a_02164
- Goldstein, A., Zada, Z., Buchnik, E., ..., **Casto, C.**, ..., Devinsky, O., Hasson, U. et al. (2022). Shared computational principles for language processing in humans and deep language models. *Nature Neuroscience* 25: 369–380. <https://doi.org/10.1038/s41593-022-01026-4>

CONFERENCES

- Casto, C.**, Small, H., Poliak, M., Tuckute, G., Lipkin, B., Wolna, A., D’Mello, A.M., Fedorenko, E. (2025, July 5-11). The cerebellar components of the human language network. [GRS talk and poster presentation]. *Cerebellum Gordon Research Seminar (GRS) and Conference (GRC)*, Les Diablerets, Switzerland.
- Casto, C.**, Lipkin, B., Small, H., Poliak, M., Tuckute, G., D’Mello, A., Fedorenko, E. (2025, March 29-April 1). The cerebellar components of the human language network [Poster and Data Blitz presentation]. *Annual Meeting of the Cognitive Neuroscience Society*, Boston, MA.
- Hosseini, E., **Casto, C.**, Zaslavsky, N., Conwell, C., Richardson, M., Fedorenko, E. (2024, November 12-13). Universality of representation in biological and artificial neural networks [Poster presentation]. *NIH BRAIN Initiative NeuroAI Workshop*, Bethesda, MD.
- Hosseini, E., **Casto, C.**, Zaslavsky, N., Conwell, C., Richardson, M., Fedorenko, E. (2024, September 22-27). Universality of representation in biological and artificial neural networks [Poster presentation]. *The Assembly and Function of Neural Circuits*, Ascona, Switzerland.
- Casto, C.**, Lipkin, B., Small, H., D’Mello, A., Fedorenko, E. (2023, October 24-26). A detailed functional characterization of cerebellar language-responsive brain areas [Poster presentation]. *Annual Meeting of the Society for the Neurobiology of Language*, Marseille, France.
- Hosseini, E., Zaslavsky, N., **Casto, C.**, Fedorenko, E. (2023, August 24-27). Teasing apart the representational spaces of ANN language models to discover key axes of model-to-brain alignment [Contributed talk and poster presentation]. *Conference on Cognitive Computational Neuroscience*, Oxford, UK.
- Hosseini, E., **Casto, C.**, Richardson, M., Fedorenko, E. (2023, June 11). Functional language localization in intracranial recordings [Oral presentation]. *NIH BRAIN Initiative Research Opportunities in Humans (ROH) Consortium Meeting*, Bethesda, MD.
- Regev, T.*, **Casto, C.***, Hosseini, E., Adamek, M., Brunner, P., Fedorenko, E. (2022, October 6-8). Heterogeneous neural responses distributed across the high-level language network revealed by electrocorticography [Poster presentation]. *Annual Meeting of the Society for the Neurobiology of Language*, Philadelphia, PA.
- Regev, T., Jhingan, N., Kim, H.S., Kean, H., **Casto, C.**, Fedorenko, E. (2022, October 6-8). Neural representation of prosody [Poster presentation]. *Annual Meeting of the Society for the Neurobiology of Language*, Philadelphia, PA.

PRESENTATIONS

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| 11/2025 | The cerebellar components of the human language network
<i>University of California, Berkeley (remote), Cognition and Action Lab (Ivory Lab)</i> |
| 09/2025 | Uncovering the cerebellum’s role in language processing
<i>SHBT Retreat End-of-Summer Talks</i> |
| 09/2025 | The cerebellar components of the human language network
<i>Athinoula A. Martinos Center for Biomedical Imaging, MEG Core Seminar Series</i> |

12/2024	The cerebellar components of the human language network <i>MIT Department of Brain and Cognitive Sciences, CogLunch</i>
09/2024	The cerebellar components of the human language network <i>SHBT Retreat End-of-Summer Talks</i>
07/2023	Neural populations in the language network differ in the size of their temporal receptive windows <i>Research Opportunities in Humans (ROH) Young Investigators Meeting</i>
12/2022	Intracranial recordings reveal three distinct neural response patterns in the language network <i>MGH-MIT inBRAIN Human Intracranial Neuroscience Symposium</i>
12/2022	Functional language localization in intracranial recordings <i>MGH-MIT inBRAIN Human Intracranial Neuroscience Symposium</i>

SELECTED COURSEWORK

Neuroscience	Statistical Modeling and Analysis of Neural Data, Quantitative Inference in Brain and Cognitive Sciences, Laboratory Principles of Neuroscience
Machine Learning	Introduction to Machine Learning, Machine Learning for Predictive Analysis, Natural Language Processing, Deep Learning
Statistics	Fundamentals of Statistics, Introduction to Data Science, Research Projects in Data Science
General Sciences	Cellular & Molecular Biology, General Chemistry I & II, Introductory Physics I & II
Mathematics	Multivariable Calculus, Linear Algebra
Computer Science	Algorithms and Data Structures

SKILLS

Programming	Python (proficient), MATLAB (proficient), R (intermediate), Java (intermediate), Julia (beginner), GitHub, Adobe Illustrator, Microsoft Office
Languages	Spanish (conversational)