# 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.**, 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

11/2025 The cerebellar components of the human language network
*University of California, Berkeley (remote), Cognition and Action Lab (Ivry Lab)*

09/2025 Uncovering the cerebellum's role in language processing
*SHBT Retreat End-of-Summer Talks*

09/2025 The cerebellar components of the human language network
*Athinoula A. Martinos Center for Biomedical Imagine, MEG Core Seminar Series*

12/2024 The cerebellar components of the human language network
*MIT Department of Brain and Cognitive Sciences, CogLunch*

09/2024 The cerebellar components of the human language network
*SHBT Retreat End-of-Summer Talks*

07/2023 Neural populations in the language network differ in the size of their temporal receptive windows
*Research Opportunities in Humans (ROH) Young Investigators Meeting*

12/2022 Intracranial recordings reveal three distinct neural response patterns in the language network
*MGH-MIT inBRAIN Human Intracranial Neuroscience Symposium*

12/2022 Functional language localization in intracranial recordings
*MGH-MIT inBRAIN Human Intracranial Neuroscience Symposium*

## SELECTED COURSEWORK

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| 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

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