Jennifer Hu

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Academic Positions

2025–Present	**Johns Hopkins University** Assistant Professor, Department of Cognitive Science (primary appointment) Assistant Professor, Department of Computer Science (secondary appointment) Member, Data Science and AI Institute
2024–2025	**Johns Hopkins University** Assistant Research Professor, Department of Cognitive Science
2023–2025	**Harvard University** Research Fellow, Kempner Institute for the Study of Natural and Artificial Intelligence

Education

2018–2023	**Massachusetts Institute of Technology** Ph.D. in Cognitive Science Dissertation: "Neural language models and human linguistic knowledge" Advisor: Roger Levy Committee: Joshua Tenenbaum (chair), Christopher Potts, Evelina Fedorenko
2014–2018	**Harvard University** B.A. in Mathematics and Linguistics Secondary Field in Germanic Languages & Literatures Magna cum laude with Highest Honors

Experience

2022	**Allen Institute for Artificial Intelligence** Summer Research Intern (Mosaic Team) Advisor: Prithviraj Ammanabrolu
2017	**Stanford University Center for the Study of Language and Information** Summer Research Intern Advisor: Christopher Potts
2017	**Harvard University Program for Research in Science and Engineering** Research Fellow (Department of Computer Science) Advisor: Stuart Shieber

Publications

Journal Articles

[1] Jennifer Hu, Felix Sosa, and Tomer Ullman. "Re-evaluating Theory of Mind evaluation in large language models". *Philosophical Transactions of the Royal Society B* (2025).

[2] Jennifer Hu, Felix Sosa, and Tomer Ullman. "Shades of Zero: Distinguishing impossibility from inconceivability". *Journal of Memory and Language* (2025).

[3] Jennifer Hu, Kyle Mahowald, Gary Lupyan, Anna Ivanova, and Roger Levy. "Language models align with human judgments on key grammatical constructions". *Proceedings of the National Academy of Sciences* (2024).

[4] Jennifer Hu, Roger Levy, Judith Degen, and Sebastian Schuster. "Expectations over unspoken alternatives predict pragmatic inferences". *Transactions of the Association for Computational Linguistics* (2023).

[5] Jennifer Hu, Hannah Small, Hope Kean, Atsushi Takahashi, Leo Zelekman, Daniel Kleinman, Elizabeth Ryan, Alfonso Nieto-Castañón, Victor Ferreira, and Evelina Fedorenko. "Precision fMRI reveals that the language-selective network supports both phrase-structure building and lexical access during language production". *Cerebral Cortex* (2022).

Book Chapters

[1] Ethan Wilcox, Jon Gauthier, Jennifer Hu, Peng Qian, and Roger Levy. "Learning syntactic structures from string input". *Algebraic Structures in Natural Language*. Ed. by Shalom Lappin and Jean-Philippe Bernardy. Taylor & Francis, 2023.

Conference Papers

[1] Sonia K. Murthy, Tomer Ullman, and Jennifer Hu. "One fish, two fish, but not the whole sea: Alignment reduces language models' conceptual diversity". *Proceedings of the 2025 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies, Volume 1* (*Long Papers*). 2025.

[2] Siyuan Song, Jennifer Hu, and Kyle Mahowald. "Language Models Fail to Introspect About Their Knowledge of Language". *Proceedings of the Conference on Language Modeling*. 2025.

[3] Junyi Chu, Jennifer Hu, and Tomer Ullman. "The Task Task: Creative problem generation in humans and language models". *Proceedings of the Cognitive Science Society*. 2024.

[4] Jennifer Hu and Michael C. Frank. "Auxiliary task demands mask the capabilities of smaller language models". *Proceedings of the Conference on Language Modeling*. **Outstanding Paper Award**. 2024.

[5] Jennifer Hu, Felix Sosa, and Tomer Ullman. "Shades of Zero: Distinguishing impossibility from inconceivability". *Proceedings of the Cognitive Science Society*. 2024.

[6] Daniel Fried, Nicholas Tomlin, Jennifer Hu, Roma Patel, and Aida Nematzadeh. "Pragmatics in Grounded Language Learning: Phenomena, Tasks, and Modeling Approaches". *Findings of the Association for Computational Linguistics: EMNLP 2023*. 2023.

[7] Jennifer Hu, Sammy Floyd, Olessia Jouravlev, Evelina Fedorenko, and Edward Gibson. "A fine-grained comparison of pragmatic language understanding in humans and language models". *Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics*. 2023.

[8] Jennifer Hu and Roger Levy. "Prompting is not a substitute for probability measurements in large language models". *Proceedings of the 2023 Conference on Empirical Methods in Natural Language Processing*. 2023.

[9] Pei Zhou, Andrew Zhu, Jennifer Hu, Jay Pujara, Xiang Ren, Chris Callison-Burch, Yejin Choi, and Prithviraj Ammanabrolu. "I Cast Detect Thoughts: Learning to Converse and Guide with Intents and Theory-of-Mind in Dungeons and Dragons". *Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics*. 2023.

[10] Irene Zhou, Jennifer Hu, Roger Levy, and Noga Zaslavsky. "Teasing apart models of pragmatics using optimal reference game design". *Proceedings of the Cognitive Science Society*. 2022.

[11] Jennifer Hu, Noga Zaslavsky, and Roger Levy. "Competition from novel features drives scalar inferences in reference games". *Proceedings of the Cognitive Science Society*. 2021.

[12] Yiwen Wang, Jennifer Hu, Roger Levy, and Peng Qian. "Controlled Evaluation of Grammatical Knowledge in Mandarin Chinese Language Models". *Proceedings of the 2021 Conference on Empirical Methods in Natural Language Processing*. 2021.

[13] Jon Gauthier, Jennifer Hu, Ethan Wilcox, Peng Qian, and Roger Levy. "SyntaxGym: An Online Platform for Targeted Evaluation of Language Models". *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics: System Demonstrations*. Online: Association for Computational Linguistics, July 2020, pp. 70–76.

[14] Jennifer Hu, Sherry Yong Chen, and Roger Levy. "A closer look at the performance of neural language models on reflexive anaphor licensing". *Proceedings of the Society for Computation in Linguistics*. Vol. 3. 2020, pp. 382–392.

[15] Jennifer Hu, Jon Gauthier, Peng Qian, Ethan Wilcox, and Roger Levy. "A Systematic Assessment of Syntactic Generalization in Neural Language Models". *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics*. Online: Association for Computational Linguistics, July 2020, pp. 1725–1744.

[16] Ethan Wilcox, Jon Gauthier, Jennifer Hu, Peng Qian, and Roger Levy. "On the predictive power of neural language models for human real-time comprehension behavior". *Proceedings of the Cognitive Science Society*. 2020.

[17] Jennifer Hu, James Traer, and Josh H. McDermott. "Separating object resonance and room reverberation in impact sounds". *Proceedings of the Cognitive Science Society*. 2019.

[18] Will Monroe, Jennifer Hu, Andrew Jong, and Christopher Potts. "Generating Bilingual Pragmatic Color References". *Proceedings of the 2018 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies, Volume 1 (Long Papers)*. New Orleans, Louisiana: Association for Computational Linguistics, June 2018, pp. 2155–2165.

Workshop Papers

[1] Jennifer Hu and Michael Franke. *Deep and shallow thinking in a single forward pass*. *Workshop on Behavioral Machine Learning @ NeurIPS 2024*. 2024.

[2] Jennifer Hu, Roger Levy, and Sebastian Schuster. *Predicting scalar diversity with context-driven uncertainty over alternatives*. *ACL Workshop on Cognitive Modeling and Computational Linguistics*. 2022.

[3] Jennifer Hu, Roger Levy, and Noga Zaslavsky. *Scalable pragmatic communication via self-supervision*. *ICML Workshop on Self-Supervised Learning for Reasoning and Perception*. 2021.

Extended Abstracts

[1] Jennifer Hu, Roger Levy, and Sebastian Schuster. *Predicting scalar diversity with context-driven expectations*. *Proceedings of the Experimental Pragmatics Conference (XPRAG)*. 2022.

[2] Yiwen Wang, Jennifer Hu, Roger Levy, and Peng Qian. *Facilitative Effect Induced by Classifier-Noun Mismatch in Mandarin Chinese*. *The 35th Annual Conference on Human Sentence Processing*. 2022.

[3] Noga Zaslavsky, Jennifer Hu, and Roger Levy. *A Rate–Distortion view of human pragmatic reasoning*. *Proceedings of the Society for Computation in Linguistics*. 2021.

[4] Irene Zhou, Jennifer Hu, Roger Levy, and Noga Zaslavsky. *Empirical support for a Rate–Distortion account of pragmatic reasoning*. *Proceedings of the Cognitive Science Society*. Member abstract. 2021.

[5] Jennifer Hu, Hannah Small, Hope Kean, Atsushi Takahashi, Leo Zekelman, Daniel Kleinman, Elizabeth Ryan, Victor Ferreira, and Evelina Fedorenko. *Distributed and overlapping neural mechanisms for lexical access and syntactic encoding during language production*. *Proceedings of the Society for the Neurobiology of Language*. 2020.

[6] Ethan Wilcox, Jon Gauthier, Jennifer Hu, Peng Qian, and Roger Levy. *Benchmarking neural networks as models of human language processing*. *Proceedings of the 26th Architectures and Mechanisms for Language Processing Conference*. 2020.

[7] Ethan Wilcox, Jon Gauthier, Peng Qian, Jennifer Hu, and Roger Levy. *Evaluating the effect of model inductive bias and training data in predicting human reading times*. *Proceedings of the 33rd Annual CUNY Human Sentence Processing Conference*. 2020.

[8] Noga Zaslavsky, Jennifer Hu, and Roger Levy. *Emergence of pragmatic reasoning from least-effort optimization*. *Proceedings of Evolution of Language International Conferences*. 2020.

[9] Jennifer Hu. *A graph-theoretic approach to comparing typologies in Parallel OT and Harmonic Serialism*. *Proceedings of the 92nd Annual Meeting of the Linguistic Society of America*. Salt Lake City, UT, 2018.

Awards

2024 Outstanding Paper Award, COLM 2024
2024 Harvard University Hodgson Memorial Fund
2021 National Science Foundation Doctoral Dissertation Research Improvement Grant
2019 Computationally-Enabled Integrative Neuroscience Training Program
2019 National Science Foundation Graduate Research Fellowship
2018 Thomas T. Hoopes Prize
2018 Friends of Harvard Mathematics Prize
2017 Harvard College Research Program Grant
2017 Robert Fletcher Rogers Prize
2015 Detur Book Prize
2015 John Harvard Scholarship

Invited Talks

2025 "What AI can tell us about our own minds"
TEDxNewEngland

2025 *Title TBD*
Workshop: Pragmatic Reasoning in Language Models
COLM 2025

2025 *Title TBD*
Workshop: Visions of Language Modeling
COLM 2025

2025 "Pragmatics in minds and machines"
Experimental Pragmatics Conference (XPRAG)

2025 "Large language models and human linguistic knowledge"
Symposium: What Big Data Can (and Can't!) Tell Us About How Language Works
Annual Meeting of the American Association for the Advancement of Science

2024 "Cognitive evaluation of language models"
Tutorial: Experimental Design and Analysis for AI Researchers
NeurIPS 2024

2024 "How to know what language models know"
NYU NLP and Text-as-Data Speaker Series

2024 "How to know what language models know"
University of Oxford NLP Group

2024 "How to know what language models know"
Stanford NLP Group

2023 "Using artificial language models to test linguistic theories: Case studies and caveats"
Harvard Language and Cognition Reading Group

2023 "Neural language models and human linguistic knowledge"
Harvard Department of Psychology Cognition, Brain, and Behavior Seminar Series

2023 "Neural language models and human linguistic knowledge"
International Interdisciplinary Computational Cognitive Science Summer School

2023 "Cognitive benchmarking of neural language models: A case study in pragmatics"
Workshop: Advancing Cognitive Science and AI with Cognitive-AI Benchmarking

CogSci 2023

2022 "A targeted evaluation of human-like linguistic knowledge in neural language models"
Brown University BigAI Group

2022 "Investigating ad-hoc scalar implicatures"
University of Tübingen Department of Linguistics

2021 "Competition from novel features drives scalar inferences in reference games"
Harvard Language and Cognition Reading Group

2020 "Benchmarking neural networks as models of human language processing"
Google DeepMind

Teaching

Teaching assistant positions

2021 Language in the Mind and Brain (9.S52), MIT
2020 Computational Psycholinguistics (9.19/9.190), MIT
2018 Paradoxes and Infinities (PDOX), Johns Hopkins University Center for Talented Youth
2016 Linear Algebra and Real Analysis II (MATH 23B), Harvard
2015 Linear Algebra and Real Analysis I (MATH 23A), Harvard
2015 Vectors: A Tool for Teaching Algebra, Geometry, and Trigonometry (MATH S-323), Harvard

Invited guest lectures

2024 "Neural language models and human linguistic knowledge"
University of California Irvine

2022 "What do language models know about meaning?"
The Science of Intelligence (9.58), MIT

2020 "Language understanding in minds and machines"
Language, Structure, and Cognition (LING 83), Harvard

2016 "Testing synchronous tree-adjoining grammar analyses of linguistic phenomena"
Topics in Computational Linguistics (LING 98A), Harvard

Service

Organizing

2026 Dagstuhl Seminar on Social Intelligence in AI Systems
2025 NeurIPS Workshop on CogInterp: Interpreting Cognition in Deep Learning Models
2024 NeurIPS Tutorial on Experimental Design and Analysis for AI Researchers
2023 ICML Workshop on Theory of Mind in Communicating Agents
2022 NeurIPS Workshop on Meaning in Context: Pragmatic Communication in Humans and Machines

Reviewing

Conference editorial responsibilities:

- Area Chair for COLM (2025), EMNLP (2024), NAACL (2024)

Ad-hoc journal reviewing:

- Glossa (2024)
- Computational Linguistics (2024, 2025)
- Philosophical Transactions of the Royal Society B (2024)
- Nature Human Behaviour (2024)

- Proceedings of the National Academy of Sciences (2024)
- Cognitive Science (2024)
- Mind and Language (2024)
- Journal of Memory and Language (2023)
- Open Mind (2022)
- Linguistics and Philosophy (2021)
- Language, Cognition and Neuroscience (2021)

Ad-hoc conference reviewing:

- ACL (2021)
- EMNLP (2022)
- ARR (Oct 2021, Nov 2021, Jan 2022, Apr 2022)
- CogSci (2020–2025)

Ad-hoc workshop reviewing:

- BehavioralML Workshop (NeurIPS 2024)
- Workshop on Theory of Mind in Human-AI Interaction (CHI 2024)
- Workshop on Large Language Models and Cognition (ICML 2024)
- UnImplicit Workshop (NAACL 2022, EACL 2024)
- Workshop on Theory of Mind in Communicating Agents (ICML 2023)
- CoNLL (EMNLP 2020–2022)

Ad-hoc grant proposal reviewing:

- National Science Foundation (2023)

Advocacy

2020-2021	Member of MIT School of Science Graduate Council
2019-2021	Committee member of MIT Women's Advisory Group
2019-2021	Co-Chair of Graduate Women at MIT

Mentorship

Supervised undergraduates

2024-2025	Siyuan Song, UT Austin
2024-2025	Antara Bhattacharya, Harvard
2024	Jōsh Mysore, Harvard
2020-2022	Irene Zhou, MIT
2019	Eric Hong, MIT

Other mentorship

2023	Harvard Psychology PPREP Program
2022	MIT-Harvard Women in AI
2018-2019	Non-Resident Tutor at Mather House, Harvard University