Shiva Upadhye

Contact Information

Email: shiva.upadhye@uci.edu
3151 Social Sciences Plaza B, Irvine, CA 92617

Education

University of California, Irvine
Ph.D. in Language Science (Cognitive Psychology & Psycholinguistics) 2026
Advisor: Dr. Richard Futrell
Research interests: Computational Psycholinguistics; Cognitive Modeling; Language Production; LLM interpretability;

University of California, San Diego
B.S. in Cognitive Science, Machine Learning & Neural Computation 2020
Minor: Mathematics

Peer-Reviewed and Working Papers

Upadhye S. & Futrell, R. (2025). Back to the Future: The Role of Past and Future Context Predictability in Incremental Language Production. *Under Review.*

Upadhye S.* Li Y.*, Li J.* Attali, N. & Scontras G. (2025). GPT-2's Production and Comprehension of Scope Ambiguity (2025). *PragLM @ Conference on Language Modeling.*

Upadhye S. & Futrell, R. (2025). Examining Future Context Predictability Effects in Word-form Variation and Word Choice. *The Proceedings of the 47th Annual Meeting of the Cognitive Science Society.*

Upadhye S.,* Li J.,* & Futrell, R. (2025). SPACER: A Parallel Dataset of Speech Production And Comprehension of Error Repairs. *The 14th edition of the Workshop on Cognitive Modeling and Computational Linguistics.*

Upadhye S. & Futrell, R. (2023). Typing time PWI: A scalable paradigm for studying lexical production. *Proceedings of the 45th Annual Meeting of the Cognitive Science Society.*

Upadhye S., Bergen L., & Kehler, A (2020). Predicting Reference: What do Language Models learn about Discourse Models? *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing.*

Conference Presentations

Upadhye S.* Li Y.*, Li J.* Attali, N. & Scontras G. (2025). GPT-2's Production and Comprehension of Scope Ambiguity (2025). *PragLM @ Conference on Language Modeling.* Montreal, Quebec, Canada. (**Poster**)

Yeaton, JD.*, **Upadhye S.***, Yi, E., & Hickok, G. (2025). Speakers and typers adapt their planning strategies to meet sentence production demands. *17th Annual Meeting of the Neurobiology of Language.* Washington DC, USA. (**Poster**)

Upadhye S. & Futrell, R. (2025). Examining Future Context Predictability Effects in Word-form Variation and Word Choice (2025). *47th Annual Meeting of the Cognitive Science Society.* San Francisco, CA, USA. (**Talk**)

Upadhye S., Yeaton, JD., Yi, E., & Hickok, G. (2025). Typing Fluency reveals Psycholinguistic Dynamics of Sentence Production. *The 38th Annual Conference on Human Sentence Processing.* College Park, MD, USA. (**Poster**)

Upadhye S.*, Li J.* & Futrell, R. (2025). SPACER: A Parallel Dataset of Speech Production And Comprehension of Error Repairs. *The 38th Annual Conference on Human Sentence Processing.* College Park, MD, USA. (**Poster**)

Li Y., Li J., **Upadhye S.**, & Scontras, G. (2025). Language models prefer ambiguous utterances following informative contexts. *The 38th Annual Conference on Human Sentence Processing.* College Park, MD, USA. (**Poster**)

Yeaton, JD, **Upadhye, S.**, Futrell, R., & Hickok, G. (2024). The (Non-)Sentence Repetition Task: A novel assessment of expressive and receptive syntactic competence. *16th Annual Meeting of the Society for the Neurobiology of Language.* Brisbane, Australia. (**Poster**)

Upadhye S., Attali N. & Scontras, G. (2023). The role of world knowledge for interpreting aspect ambiguity. *Tenth Biennial Meeting of Experimental Pragmatics.* Paris, France. (**Poster**)

Li, J.*, **Upadhye, S.*** & Futrell, R. (2023) Bridging production and comprehension: A computational model of error generation and correction. *The 36th Annual Conference on Human Sentence Processing.* Pittsburgh, PA, USA. (**Poster**)

Upadhye S. & Futrell R. (2022). Information-theoretic analysis of disfluencies in speech. *NeurIPS 2022 Workshop on Information Theoretic Principles in Cognitive Systems.* New Orleans, LA, USA. (**Poster**)

Patents

Moslehi, B., Price, W., Moslehi, B., Off, J., Sourichanh, K., Cheng, Y., **Upadhye, S**., & Soutoudeh, V. (2025). *Dual cavity interferometer sensor system.* U.S. Patent No. US20250224295A1. US Patent & Trademark Office.

Other Experience

Data Analytics Engineer Oct 2020 - July 2021
Intelligent Fiber Optic Systems Corporation

- Developed calibration and signal processing solutions for fiber optic sensor systems in R&D applications.
- Assisted in the development of Small Business Innovation Research (SBIR) grants focusing on renewable energy applications of optical sensing systems.

Computational Neurosciences Intern Oct 2019 - Jan 2020
National Center for Microscopy and Imaging Research

- Developed software for automated segmentation of 3-D neuronal images for CDeep3m (Haberl et al. 2018).

Undergraduate Research Assistant/Independent Researcher Mar 2019 - June 2020
Computational Linguistics Lab (UC San Diego)

- Used computational methods and corpus analyses to investigate naturalistic forms of sluicing (a form of sentential ellipsis).
- Conducted independent research investigating lexico-semantic and discourse structure knowledge in language models.

Pedagogy & Mentorship

UC Irvine

Instructor 2025
Introduction to Linguistics (*Summer Session I*)

Teaching Assistant 2022 - Current
Introduction to Linguistics, Research methods in Psychology, Psychology of Language, Public Policy, Acquisition of Language

Graduate Mentor 2024 - Current
Mentees: Mackenzie Leigh Maxwell, Frankie Boren

UC San Diego

Instructional Assistant
Computational Linguistics 2020

Service and Awards

Program Chair and Organizer
Society for Computation in Linguistics (2024)

UCI Language Science Colloquium Planning Committee (2022, 2023)

Reviewer
Society for Computation in Linguistics (SCiL 2024)
California Meeting on Psycholinguistics (CAMP 2023-2025)
SoCal NLP (2022)

Awards & Fellowships
UCI Center for Theoretical Behavioral Sciences (CTBS) Travel Award (2025)
Simmons Institute Analytical Connectionist Summer School Travel Fellowship (2024; declined)
Intel Academic GPU Donation Program (2023) - Intel Arc A770 GPU
NeurIPS InfoCog Travel Award (2022)
UCI Division of Teaching Excellence & Innovation - Graduate Summer Fellowship (2022)
Graduate Dean's Fellowship, University of California, Irvine (2021 -)

Skills

Programming Languages, frameworks, and software: Python, R, MATLAB, Clojure, Julia, WebPP, PyTorch, HuggingFace, Praat

Research: Language modeling (Transformers, LSTMs); signal processing (sensor data, audio); experiment design (PCIbex, PsychoPy); statistical modeling (frequentist and Bayesian)