

# Shiva Upadhye

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## CONTACT INFORMATION

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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

## Additional Training

North American Summer School for Logic, Language, and Information 2016

## 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

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.\*** 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)**

**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).

	<ul style="list-style-type: none"> <li>Conducted independent research investigating lexico-semantic and discourse structure knowledge in language models.</li> </ul>	
<b>Pedagogy &amp; Mentorship</b>	<b>UC IRVINE</b> <b>Instructor</b> Introduction to Linguistics ( <i>Summer Session I</i> ) <b>Teaching Assistant</b> Introduction to Linguistics, Research methods in Psychology, Psychology of Language, Public Policy, Acquisition of Language <b>Graduate Mentor</b> Mentees: Mackenzie Leigh Maxwell, Frankie Boren <b>UC SAN DIEGO</b> <b>Instructional Assistant</b> Computational Linguistics	2025  2022 - Current  2024 - Current  2020
<b>Service and Awards</b>	<b>Program Chair and Organizer</b> Society for Computation in Linguistics (2024) <b>UCI Language Science Colloquium Planning Committee</b> (2022, 2023) <b>Reviewer</b> Society for Computation in Linguistics (SCiL 2024) California Meeting on Psycholinguistics (CAMP 2023-2025) SoCal NLP (2022) <b>Awards &amp; Fellowships</b> UCI Center for Theoretical Behavioral Sciences (CTBS) Travel Award (2025) Simmons Institute Analytical Connectionist Summer School Travel Fellowship (2024; declined) NeurIPS InfoCog Travel Award (2022) UCI Division of Teaching Excellence & Innovation - Graduate Summer Fellowship (2022) Graduate Dean's Fellowship, University of California, Irvine (2021 -)	
<b>Skills</b>	<b>Programming Languages, frameworks, and software:</b> Python, R, MATLAB, Clojure, Julia, WebPP, PyTorch, HuggingFace, Praat <b>Research:</b> Language modeling (Transformers, LSTMs); signal processing (sensor data, audio); experiment design (PCIbex, PsychoPy); statistical modeling (frequentist and Bayesian)	