

ABHINAV GUPTA

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I'm an undergraduate researcher at University of Southern California. I work on the development, analysis and applications of language models rooted in human cognition and understanding. My research interests include Natural Language Processing, AI for Understanding Human Thought, Cognitive Science, and Human-Computer Interaction.

I'm advised by Jesse Thomason, Toben H. Mintz and Maja Matarić.

EDUCATION

University of Southern California

May 2026

B.S. Computer Science, B.S. Cognitive Science, Specialization in AI Applications

Major GPA (Computer Science): 3.73, Major GPA (Cognitive Science): 3.82, Cumulative GPA: 3.56

Relevant Coursework: Natural Language Processing, Artificial Intelligence, Language and the Brain, Language Technologies, Cognitive Science, Psychology, Cognitive Processes, Algorithms, Theory of Computation, Data Structures, Probability & Statistics, and Discrete Mathematics

HONORS AND AWARDS

USC Dornsife Continuing Student Scholarship	August 2025 - Present
USC Center for Undergraduate Research Fellowship	May 2025 - August 2025
USC Cognitive Science Honors with Distinction in Research	Fall 2024 - Present
USC Provost Fellowship	May 2024 - August 2024
Undergraduate Research Associates Program Scholar	August 2023 - May 2024
Dornsife College of Letters, Arts and Sciences Dean's List	August 2022 - Present
Viterbi School of Engineering Dean's List	August 2021 - Present

RESEARCH EXPERIENCE

Undergraduate Researcher, Interaction Lab

December 2024 - Present

USC, Los Angeles, CA

Advised by Professor Maja Matarić

- Working in a team of 4 to investigate how large language models encode human social reasoning.
- Currently investigating LLMs' ability to predict human mental models in social decision-making using economic games (e.g., Prisoner's Dilemma).
- Conducting experiments on LLM behavior in strategic social contexts to analyze alignment and generalization.

Researcher, Language Development Lab

December 2023 - Present

USC, Los Angeles, CA

Advised by Professor Toben H. Mintz

- Lead a human study examining how individuals associate pseudo words with 11 different sensory and motor experiences
- Processed and visualized data from the experiment and performed correlation analysis using R and python

- Researcher, GLAMOR Lab** August 2023 - Present
USC, Los Angeles, CA
Advised by Professor Jesse Thomason
- Investigate whether computational word embeddings capture human-like sensorimotor associations
 - Developed a model to project contextual word embeddings to sensorimotor associations of words
 - Create a pipeline to use projection model for automated phonestheme detection and analyze human study results on a sub-lexical level
 - Paper accepted to SoCal NLP 2024, pending submission to ARR rolling review

- Undergraduate Researcher, CAIS++** Sep 2022 - Dec 2023
USC, Los Angeles, CA and University of Colombia
Advised by Professor Jonathan May and Professor Robin Jia
- Collaborated with the Muysc Cubun Research Group from Universidad Nacional de Colombia to develop an NLP-based system for Chibcha language translation, an extinct indigenous language with limited resources
 - As part of a team of 6, collected over 30,000 parallel entry data from internet sources, old scriptures, and books using custom-made web scraping tools
 - Paper accepted to SoCal NLP 2023

- Research Assistant, Signal Analysis and Interpretation Lab** August 2021- January 2022
USC, Los Angeles, CA
Advised by Professor Shrikanth Narayanan
- Analyzed emotional perception in over 20 video clips using deep learning models
 - Developed bias mitigation algorithms to correct for demographic-related distortions in emotion recognition systems

PUBLICATIONS AND PRESENTATIONS

- ACL 2026 (Pending Submission): “Can phonesthemes evoke sensorimotor experience?”
- SoCal NLP Symposium 2024: “Extracting Sensorimotor Associations of Phrases”
- SoCal NLP Symposium 2023: “Indigenous Language Translation with Sparse Data”

WORK AND TEACHING EXPERIENCE

- Math Peer Mentor** August 2025 - Present
USC Viterbi MESA University, Los Angeles, CA
- Mentoring freshmen in introductory calculus courses, providing study techniques and helping with homework problems
 - Spreading awareness about the program through social media and email outreach, classroom visits and coordinating with science clubs

Course Producer and Peer Mentor

January 2022-December 2024

Thomas USC Viterbi School of Engineering, Los Angeles, CA

- Tutored classes such as CSCI 270 (Algorithm Design), CSCI 170 (Discrete Mathematics), CSCI 102 (Intro to C++)
- Entrusted with grading tests and assignments, helping over 300 students with difficult topics, hosting discussions and curation of tests

Software Dev Engineering Intern

May 2023-August 2023

Amazon Inc, Los Angeles, CA

- Designed and implemented internal tool using Java, Python and AWS to automate podcast content management
- Engineered automation solutions to eliminate 10 hours of weekly manual tasks and improved content curation
- Developed technical documentation and presented project outcomes to cross-functional teams of 6 developers and 2 designers

LEADERSHIP AND INVOLVEMENT**Software Developer and Volunteer****Code the Change, Los Angeles, CA**

September 2022-July 2024

- Built software for non-profit organizations, focusing on improving accessibility and community engagement
- Applied computational tools to address social challenges such as developing community platform for victims of assault

Curriculum Lead and Project Member**USC Center for Artificial Intelligence in Society, Los Angeles, CA**

September 2021-January 2024

- Led a team of 7 students in developing and teaching a curriculum on applying Artificial Intelligence and Machine Learning for social good
- Advised an NLP project that was later presented to the club, providing technical mentorship and feedback
- Contributed to interdisciplinary discussions on leveraging AI for addressing real-world social challenges
- Collaborated on three projects exploring diverse applications of AI for social impact

Computer Science Tutor**Viterbi Impact Program, Los Angeles, CA**

September 2021-January 2022

- Taught computer science fundamentals to middle school students and teachers