

# Atrey Desai

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## RESEARCH SUMMARY

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I am an undergraduate student in computer science and linguistics at the University of Maryland, College Park, advised by Professor Rachel Rudinger and Professor Jordan Boyd-Graber. I am broadly interested in developing **linguistically motivated evaluation methods** that probe deeper multimodal and spatio-temporal understanding and enhancing the **explainability** of LLMs in question-answering tasks.

## EDUCATION

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### University of Maryland, College Park

*B.S. in Computer Science, Honors Program*

College Park, Maryland

*Exp. Graduation: May 2027*

- **Selected Coursework:** Machine Learning, Natural Language Processing, Data Science, Algorithms, Computer Systems, Discrete Math, Linear Algebra
- **Graduate Coursework:** Natural Language Processing\*, Commonsense Reasoning\*

### University of Maryland, College Park

*B.A. in Linguistics, Minor in Korean Studies*

College Park, Maryland

*Exp. Graduation: May 2027*

- **Selected Coursework:** Syntax, Phonetics, Psycholinguistics, Language Processing\*

## PUBLICATIONS

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### Test-Time Reasoners Can Cheat on Multiple Choice Tests, but is that Bad?

*Under Review (ACL Rolling Review)*

Nishant Balepur, **Atrey Desai**, Rachel Rudinger

### A Preview of Computational Animal Linguistics

*Under Review (Computational Linguistics)*

**Atrey Desai**, Tirza Panunto, Lindsay Pike, Theron S. Wang, Tuan M. Dang, Hridayesh Lekhak, Kenny Q. Zhu

### Language Models Generate Multiple-Choice Questions with Artifacts

*MASC-SLL 2025*

**Atrey Desai**, Nishant Balepur, Rachel Rudinger

### Reinforcement Learning As End-User Trigger-Action Programming

*AAAI 2022 (IML Workshop), RLDM 2022*

Chace Hayhurst, Hyojae Park, **Atrey Desai**, Suheidy De Los Santos, Michael Littman

## RESEARCH EXPERIENCE

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### University of Maryland, College Park

*Undergrad Researcher | CLIP Lab (Dr. Rachel Rudinger, Dr. Jordan Boyd-Graber)*

May 2024 – Present

*College Park, MD*

- Validated robustness of LLM-generated MCQs for unintended artifacts to assess if questions are solvable without full context, providing a framework that improves the reliability of synthetic data for benchmark evaluation.
- Architected an adversarial benchmark to test VLM capabilities in detecting out-of-context (OOO) video-based misinformation on social media based on multimodal clues and user interactions.

### The University of Texas at Arlington

*Visiting Researcher | ACL2 Lab & National Science Foundation (Dr. Kenny Zhou)*

Feb. 2024 – Present

*Arlington, TX*

- Designed AniVoice-cat, a dataset of 26,000+ annotated cat vocalizations from 250+ hours of video and identified 57 unique cat phones, establishing a foundational resource for computational research in non-human communication.
- Improved transcription pipeline using PANNs and HuBERT models to 96% accuracy with 93% top-5 accuracy in action recognition, setting a new state-of-the-art for automated animal vocalization analysis.

### University of Maryland, College Park

*Researcher | FIRE Sustainability Analytics Lab (advised by Dr. Thanicha Ruangmas)*

Dec. 2023 – Aug. 2024

*College Park, MD*

- Developed Python pipeline for environmental impact assessments of U.S. emissions, enabling more efficient policy.
- Drafted a framework to guide evidence-based policymaking on climate restoration strategies

## Brown University

Dec. 2020 – June 2023

Researcher | Reinforcement Learning at Brown Group (Dr. Michael Littman)

Providence, RI

- Developed a custom RL environment that empowered non-technical users to programmatically solve complex tasks by defining reward functions and specifying agent behavior, reducing task setup time.
- Published and presented research at two top-tier workshops (AAAI, RLDM), demonstrating how human-readable interfaces enable fine-grained control during inference and improving AI-human interaction in robotics.

## WORK EXPERIENCE

### Learn Prompting

May 2025 – Present

Member of Technical Staff

San Francisco, CA

- Researching robustness of AI safety judges against CBRNE-related adversarial content; running Hackaprompt, the world's largest red-teaming hackathon, overseeing user engagement and technical challenges.

## SELECTED GRANTS

<b>SPIRE Research Grant</b> (\$3,000)	2025
<b>UMD President's Scholarship</b> (\$50,000)	2023
<b>NMSC National Merit Scholarship</b> (\$4,000)	2023
<b>Catherine Yang Scholarship</b> (\$1,000)	2023

## SELECTED HONORS

<b>Omicron Delta Kappa Top 10 Freshman</b>	2024
<b>CMSC &amp; ARHU Dean's List</b>	2023–2025

## MENTORSHIP

<b>OUR (Office of Undergraduate Research):</b> <i>Juan Cortés, Kemisola Benson, Vivian Akpala</i>	2025
<b>Technica Mentoring:</b> <i>Savya Miriyala, Tanya Grover, Jessica Ononye, Nakshatra Hiray</i>	2024

## PROFESSIONAL SERVICE

<b>Subreviewer</b>	2025
<i>ACL Rolling Review</i>	
<b>Computer Science Department Councilmember</b>	2025–Present
<i>Elected representative for 4,200+ CS undergraduates.</i>	
<b>FIRE Student Leadership Senior Councilmember</b>	2024–Present
<i>Represented 1000+ peers, ran events &amp; workshops, and reformed class curricula</i>	
<b>University Ambassador</b>	2024–Present
<i>Represented the CS Dept. &amp; CMNS College at admissions events and to official guests.</i>	
<b>NSF REU Seminar Panelist</b>	Nov. 2024
<i>Presented findings from UT ACL2 Lab and hosted panel on NSF-funded opportunities to 200+ faculty and students</i>	
<b>Technica Hackathon</b>	Oct. 2024
<i>Volunteer and mentor; world's largest hackathon for underrepresented genders in tech</i>	
<b>MSET Robotics Workshops</b>	2020–2022
<i>Organizer and curriculum designer; Taught robotics, programming, and computer modeling to underprivileged youth</i>	

## SKILLS

**Languages:** Python, Java, JavaScript/HTML/CSS, R, MATLAB  
**Libraries:** Huggingface (Datasets, Transformers), NLTK, PyTorch, Selenium, BeautifulSoup  
**Tools:** Git, Docker, GCP, Google Vertex AI, VS Code  
**Natural Languages:** English (Native), Gujarati (Native), Spanish (Intermediate), Korean (Beginner)  
**Clubs:** Stylus Literary Magazine (Former Associate Editor), Photography Club, Linguistics Club