

Rajvi Agravat

Neuroscientist

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Austin, TX

rajviagravat.github.io

I am a 3rd year Ph.D. student with 6+ years of experience in speech, auditory, and attention neuroscience, studying the neural basis of speech perception through implicit (stimulus-driven) and explicit (goal-directed) attention mechanisms. My research in naturalistic speech perception in cocktail party scenarios using direct brain recordings, will eventually help inform how we design hearing technologies, develop AI driven TTS and STT systems, and treat cognitive-linguistic disorders in humans.

Education

Ph.D. Neuroscience

The University of Texas at Austin

Expected: 05/2027

GPA: 3.83

B.S. Biology

New York Institute of Technology

2020

GPA: 3.89

Skills

Hypothesis Testing
Experimental Design
Stereo-EEG/EEG/fMRI
Digital Signal Processing
Acoustic Modeling
Psychoacoustics
Survey Design
Computational Modeling
Phonetics
Audio (Spectral) Analysis
Statistical Analysis
Data Visualization
Team Management
Scientific Communication

Software

Python/MNE-Python
Python Audio Libraries
R
Git
Adobe Suite

- Audition
- Illustrator

FreeSurfer
Audacity
Praat (acoustic analysis)
Sound Source Separation
LaTeX, HTML
G Suite
Microsoft Office
Qualtrics

Service

Mentorship

- SAGES Women in STEM + STEM Muse
- UT Neuro Undergrad Reading Program

Reviewer, *Biology Academic Conference for Emerging Scholars*

Experience

Auditory Neuroscience Researcher, UT Austin

May 2023 – Present

Hamilton Lab, PI: Dr. Liberty Hamilton

- Analyzed 500+ hours of high-dimensional direct brain recordings during naturalistic speech and music using encoding models to uncover insights on implicit attention, speech prioritization, and acoustic feature processing.
- Used source separation deep neural networks and encoding models to predict brain activity in response to speech and music stimuli.
- Designed game-based paradigms to integrate gaming and exercise to evaluate how cognitive load and explicit auditory attention change in dynamic environments, using scalp and intracranial EEG.
- Drafted IRB protocols while ensuring ethical compliance and patient data privacy.
- Collaborated with cross-functional teams at multiple universities and hospitals to develop study protocols for large-scale neurophysiological data collection and analysis.
- Presented 5 poster and 4 stakeholder presentations, with 1 publication currently in preparation.
- Led a team of 4 undergraduates in auditory neuroscience experimental design, data analysis and visualization in MNE-python, and advanced statistical analyses in R.
- Received a gift of \$40000 to conduct the explicit attention study and \$8000 in travel awards to present implicit attention research.

Graduate Research Assistant, UT Austin

Jan 2023 – May 2023

Developmental Cognitive Neuroscience Lab, PI: Dr. Jessica Church-Lang

- Analyzed high-dimensional fMRI data to investigate the development of executive function in children, revealing that earlier deficits in executive function predict later ADHD burden, eventually providing actionable insights for policymakers to guide classroom interventions.
- Managed big data and built a data processing pipeline to initiate large-scale data transfer using Texas Advanced Computing Center (TACC) in the Brain Imaging Data Structure (BIDS) format.

Research Assistant, The Rockefeller University

Aug 2020 – Jun 2022

Neurogenetics of Language Lab, PI: Dr. Erich Jarvis

- Mapped auditory-motor connectivity of vocalization circuits in mice using electron confocal imaging and iDISCO tissue clearing, contributing to foundational understanding of sensory circuit integration.
- Quantified vocal circuit connectivity and motor cortex function using neuronal tracing, cell density analysis (ImageJ, Imaris), and 3D modeling (Python).
- Presented findings at 2 international conferences with 1 publication in review.

Leadership

Graduate Teaching Assistant, UT Austin

Jan 2025 – Present

SLH350 Language and the Brain

- Guest lectured 160+ students on speech perception, language lateralization, and impact of diseases and disorders on the language network.
- Led interactive discussions integrating cognitive-linguistic current research to highlight the clinical relevance in stroke, aphasia, and other motor disorders.
- Held office hours to clarify lecture content and mentor students pursuing interests in neuroscience, speech-language pathology, and audiology.
- Improved student performance through exams, homework assignments, and InstaPolls and received positive mid-semester feedback, reflecting an enhanced understanding of course learning objectives.

Board Member, UT Austin

Nov 2023 – Present

Cellular to Clinical Applied Rehabilitation Research and Engineering

- Led the successful execution of 2 annual research days for 500+ attendees and presenters, facilitating interdisciplinary dialogue between scientists, engineers, and clinicians.
- Promoted awareness of rehabilitation innovations across domains such as speech, mobility, and limb function, supporting initiatives that bridge research and clinical application.
- Spearheaded logistics, including session transitions, speaker coordination, ensuring a smooth event and professional environment for scientific exchange.
- Presented original research on the implicit prioritization of speech over music in complex auditory scenes, contributing to the understanding of auditory perception in real-world environments.