VARSHA M. ATHREYA, Ph.D.

vmysorea@stanford.edu | GitHub | LinkedIn

EDUCATION

Ph.D.	Auditory Neuroscience, Purdue University	2024
M.Sc.	Audiology, All India Institute of Speech and Hearing	2018
B.Sc.	Speech and Hearing, All India Institute of Speech and Hearing (AIISH)	2016

RESEARCH EXPERIENCE

Postdoctoral Scholar, Stanford University 2024 – Present

Advisor: Matthew Fitzgerald, Ph.D.

Collaborator: Malcolm Slaney, Ph.D.

- Creating pipelines to handle large-scale clinical datasets and leveraging machine-learning to improve clinical diagnosis and management.
- Developing models to understand relationships between audiogram configurations, speech perception outcomes, and hearing aid usage patterns.

Doctoral Student Researcher, Purdue University

Advisor: Hari Bharadwaj, Ph.D. 2020 - 2024

Collaborator: Michael G. Heinz, Ph.D. 2023 - 2024

- Elucidated the relative contributions of peripheral and central changes in aged auditory system leveraging human and animal models.
- Employed within-frequency and across-frequency behavioral and EEG (Chinchilla: novel mini-EEG cap) measures to characterize these changes.

Research Assistant, All India Institute of Speech and Hearing 2018 - 2019

Advisors: Hemanth N, Ph.D., Ajith Kumar U, Ph.D.

- Developed and tested a comprehensive computer-based tool to assess listening effort, fatigue, and semantic information processing in collaboration with a software engineer.

Master Thesis, All India Institute of Speech and Hearing 2017 – 2018

Advisor: Animesh Barman, Ph.D.

- Studied variability in temporal processing skills and speech perception in noise in young individuals with normal hearing sensitivity.
- Used behavioral measures of gap detection test, and electrophysiological auditory brainstem response (ABR) using Intelligent Hearing Systems (IHS).

Student Researcher, All India Institute of Speech and Hearing 2015

Mentors: Sandeep Maruthy, Ph.D., Nike Gnanteja, Ph.D.

- Studied behavioral measures of working memory, suprathreshold auditory skills (SPIN, concurrent vowel identification, acceptable noise levels) in individuals exposed to below-damage-risk criteria (DRC) environmental noise.

GRANT PREPARATION

Automatic Scoring of Human Speech Recognition Tests. PI: Matthew Fitzgerald, Malcolm Slaney 2025

Developed the research methodology for automatic speech recognition tool.

AWARDS AND HONORS

Selected Talk, Centennial Session, ASHA Convention	2025
Young Scientist Award, Computational Audiology, VCCA	2025
SLHS Outstanding Teaching Assistant, Purdue University	2023
Graduate Student Travel Support, Department of SLHS, Purdue University	2023
Wilson Scholarship, Purdue University	2021, 2020
Best Student Clinician, Department of Audiology, All India Institute of Speech and Hearing	2018

PUBLICATIONS

- **Athreya, V.M.**, Ward, K.M. & Fitzgerald, M.B. (2025). The Impact of Age, Sex, and Hearing Thresholds on Speech Recognition in Quiet and Noise. *American Journal of Audiology, 1-15.*
- Fitzgerald, M.B., **Athreya, V.M.**, Srour, M., Rejimon, J., Venkitakrishnan, S., Bhowmik, A.K., Jackler, R.K., Steenerson, K.K. & Fabry, D. A. (2025). Effectiveness of deep neural networks in hearing aids for improving signal-to-noise ratio, speech recognition, and listener preference in background noise. *Frontiers in Audiology and Otology*. *3*, 1677482.
- Maruthy, S., Gnanateja, G. N, Chengappa, P. C, Publius, S. & **Athreya, V. M.** (2018). Effect of below-damage-risk criteria environmental noise on auditory perception and working memory. *Indian Journal of Otology*, *24*(2), 98.

In review

- Fitzgerald, M.B., **Athreya, V.M.**, Halagur, A. S., Wageck, M., Ward, K. M., Megwalu, U.C., Vaisbuch, Y. Health literacy, hearing loss, and audiologic measures of speech recognition. *Ear and Hearing.*
- Antes, E.E., **Athreya, V.M.**, Rejimon, J.P., Tow, C., Musacchia, G.A., Fitzgerald, M. B. A Large-Scale Investigation of the Influence of Tinnitus on Clinical Measures of Speech Perception in Quiet and Noise. *American Journal of Audiology.*

Journal Abstract

- Mukesh, A., Verma, S., Athreya, V. M., Grama, A., & Heinz, M. G. (2025, October). Framework for Functional Clustering and Source-to-Sensor Reconstruction of Temporally Evoked Neural Features. In *2025 IEEE EMBS International Conference on Biomedical and Health Informatics (BHI) (pp. 1-8). IEEE.*
- Bharadwaj, H.M. & **Athreya, V. M.** (2023). Effects of age-related cochlear deafferentation and central gain on auditory scene analysis. *The Journal of the Acoustical Society of America, 154(4_supplement), A333-A333.*

Pre-print

Athreya, V. M. & Barman, A. (2022). Auditory Brainstem Response as an Objective Measure of Temporal Resolution. *bioRxiv*.

In preparation

- **Athreya, V. M.** & Bharadwaj, H. M. Temporal Processing and Aging: A Review.
- **Athreya, V. M.** & Bharadwaj, H. M. Age-Related Central Changes Alter Temporal Processing and Stream Segregation Aiding Speech Perception in Noise.
- **Athreya, V. M.,** Bharadwaj, H. M. & Heinz, M. Optimizing Anesthesia Protocol for Multi-Channel Mini-EEG Cortical Recordings in Chinchillas

TEACHING AND MENTORSHIP

Guest Lecture, *Auditory Perception*, Purdue University — Fall 2023
- Introduction to Psychoacoustics for 6 AuD students.

Invited Teaching Assistant, *Hearing Science*, Purdue University — Fall 2023
- Central Auditory Pathway for 100 undergraduates.

Teaching Assistant, *Assessment and Aural Rehabilitation Across the Lifespan*, Purdue University — Fall 2022, Fall 2021
- Co-developed and instructed laboratory sessions on audiometry, tympanometry, otoscopy, and hearing-aid fitting for 120 undergraduates.
- Conducted weekly labs and assessments, emphasizing hands-on learning and clinical competency.

Invited Teaching Assistant, Diagnostic Audiology: Physiological Tests, AIISH — Fall 2019, Fall 2018
- Instructed undergraduate students in the application of auditory brainstem response (ABR) testing for both clinical diagnostics and research training.
- Supervised hands-on lab sessions focused on physiological test protocols, data acquisition, and interpretation of electrophysiological recordings.

Mentorship
- Emily Saletan, Master of Arts Student in Music, Stanford University — Fall 2025
- Emily Antes, AuD Extern, Stanford University — 2024 – 2025
- Celia Tow, AuD Extern, Stanford University — 2024 – 2025

SELECTED TALKS♦ AND POSTER PRESENTATIONS*

Invited talks

♦ Center for Computer Research in Music and Acoustics, Stanford University (February 2024).

♦ The Gwilliams Laboratory of Speech Neuroscience (GLySN Lab), Stanford University (December 2023).

Efforts towards precision audiology leveraging machine-learning

♦**Athreya, V. M.,** Rejimon, J., Slaney, M., Fitzgerald. M. B. *Linking Data-Driven Audiometric Phenotypes to Speech Perception in Quiet and Noise.* Mid-Winter Meeting of the Association for Research in Otolaryngology, San Juan, Puerto Rico (February 2026).

♦[Selected] Fitzgerald. M. B., **Athreya, V. M.,** Rejimon, J., Slaney, M. *Innovations in Speech-in Noise Assessment: The Present and the Future.* ASHA Convention Centennial Session (November 2025).

***** Fitzgerald, M. B., **Athreya, V. M.,** Saletan, E., Rejimon, J., Munro, L., Slaney, M. *Automatic Scoring of Human Speech Recognition Tests.* Center for Digital Health Annual Symposium, Stanford University (October 2025).

♦ **Athreya, V. M.,** Slaney, M., Fitzgerald. M. B. *Linking Data-Driven Audiometric Phenotypes to Speech Perception in Quiet and Noise.* Computational Audiology, VCCA, Virtual (June 2025).

♦ Tow, C., **Athreya, V. M.,** Rejimon, J., Antes, E., Fitzgerald, M. B. *Repeatability of Clinical Speech Recognition Measures in Quiet and Noise.* American Academy of Audiology Conference, New Orleans (March 2025).

♦ Antes, E., **Athreya, V. M.,** Rejimon, J., Tow, C., Fitzgerald, M. B. *Influence of Tinnitus on Speech Perception in Quiet and Noise.* American Academy of Audiology Conference, New Orleans (March 2025).

♦ **Athreya, V. M.,** Moor, J., Slaney. M., Fitzgerald, M. B. *Factors Influencing Hearing Aid Adoption, Usage, and Retention.* Annual Scientific and Technology Conference of the American Auditory Society, Arizona (February 2025).

Mechanistic understanding of the auditory system

***** **Athreya, V. M.,** Singh, R., Bharadwaj, H. M. *Effects of Age on Within-Channel and Across-Channel Temporal Processing and Relationship to Speech Perception in Noise.* Mid-Winter Meeting of the Association for Research in Otolaryngology, Anaheim (February 2024).

♦ **Athreya, V. M.,** Singh, R., Bharadwaj, H. M. *Age effects on Temporal Processing and Auditory Figure-Ground Segregation, and Relationship to Speech Perception in Noise.* Mid-Winter Meeting of the Association for Research in Otolaryngology, Virtual (February 2022).

***** Singh, R., **Athreya, V. M.,** Bharadwaj, H. M. *Relationships Between Co-Modulation Masking Release, Speech-In-Noise Perception, and EEG Measures of Temporal-Coherence Processing.* Mid-Winter Meeting of the Association for Research in Otolaryngology, Virtual (February 2022).
*** Athreya, V. M.,** Barman, A. *Temporal Resolution: Behavioral measure and its neural correlates in individuals with normal hearing sensitivity.* Convention of the Indian Speech and Hearing Association, India (January 2021).
***** Maruthy, S., Gnanateja, G. N., Chengappa, P. C., Publius, S. A., & **Athreya, V. M.** *Effect of below-damage-risk criteria environmental noise on auditory perception and working memory.* Convention of the Indian Speech and Hearing Association, Mangalore (December 2015).

Cross-species EEG paradigm

*** Athreya, V. M.,** Sivaprakasam, A., Ginsberg, H., Bharadwaj, H. M., Heinz, M. *Pioneering Cortical Assays of Gap Detection to Explore Temporal Processing in Chinchilla using a Multi-Channel Mini-EEG Cap.* Mid-Winter Meeting of the Association for Research in Otolaryngology, Florida (February 2024).

CLINICAL EXPERIENCE

Student Audiologist, All India Institute of Speech and Hearing 2016 - 2018
- Assess, diagnose, and rehabilitate hearing disorders in pediatric, adult, and geriatric populations.

Extern (B.Sc. in Speech and Hearing) Spring 2016
- Assess, diagnose, and rehabilitate speech, language, and hearing disorders in pediatric, adult, and geriatric populations in 3 federal hospitals across India - District Hospital, Dharwad; Jawaharlal Nehru Medical College, Ajmer; Rajendra Institute of Medical Sciences, Ranchi

PUBLIC OUTREACH AND PROFESSIONAL ACTIVITIES

Peer reviewing
- American Journal of Audiology
- Ear and Hearing

Conferences
Member, Scientific Committee, Convention of the Indian Speech and Hearing Association, Mysuru 2018
- Responsible for the selection, announcement, and categorization of abstracts submitted from across the world to the conference. Served as the moderator of a scientific session.

Diversity, Equity, and Inclusion
Auditory Neuroscience Association at Purdue (ANAP), Purdue University 2020 - 2024
- Incumbent president and former treasurer at ANAP – a group intended at bringing together students, staff, and faculty in the field of auditory neuroscience for peer discussions, mentorship, and potential collaborations. Organized monthly discussions, journal clubs, and meetings.

Charter Member, Human Library, Mysuru 2018 - Present
- Founded Human Library – Mysuru Chapter intended at challenging stereotypes and prejudices through dialogue. This chapter is part of the registered international Human Library organization headquartered in Copenhagen.

Community Engagement
Volunteer, National Service Scheme (NSS), All India Institute of Speech and Hearing 2012 - 2018
- Attended camps to survey, diagnosis, and management of communication disorders in remote and tribal populations in over 4 cities across India.
- Organized and participated in over 10 awareness drives about Mental Health, Autism Spectrum Disorders, Tinnitus and Noise.