Meghavarshini Krishnaswamy

Resume

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Education

PhD **Linguistics**, *University of Arizona*, Tucson Arizona, USA, 2019–Present

MS **Human Language Technology**, *University of Arizona*, Tucson, Arizona, USA, 2019–2021

MA **Linguistics**, *The English and Foreign Languages University*, Hyderabad, India, 2013–2015

BA (Hons.) **Lady Shri Ram College, University of Delhi**, *New Delhi, India*, 2010–2013

Academic Research Experience

GRA **Data Science Institute (educator and consultancy)**, *University of Arizona*, Fall 2023–Present

- Designed and lead technical workshops on natural language processing (NLP) and speech recognition [], python, command line interface, version control, and AI tools for research.
- Provided linguistic expertise and data processing pipelines for building and testing a quantum NLP language model for low-resource languages.
- Conducted technical consultations for data science research projects.

GRA **DARPA ASIST-ToMCAT Project (NLP)**, *Summer 2020-Fall 2022*

- Designed and enhanced existing unsupervised neural network models for detecting speech synchrony/entrainment [] using pytorch, and scikit-learn.
- Created data collection pipelines and conducted qualitative assessments for speech data.
- Managed human subject data collection and annotation tasks.
- Provided documentation, subject surveys, and materials for DARPA Principal Investigators (PIs) Meetings, and project manuals.
- Contributed to conference publications at NeurIPS and ICML (Soares et al., 2024, Pyarelal et al., 2023).

GRA **Douglass Phonetics Lab (applied linguistics)**, *University of Arizona*, Spring 2020–Fall 2020

- Coordinated the lab's ongoing phonetics experiments, and speech and linguistic response data collection.
- Initiated the migration of the lab's experiments to remote platforms (like Finding Five) in 2020 and set up the experiment builders.
- Provided training, technical support and code to undergraduate students for data annotation, acoustic data analysis and automation.
- Contributed code, documentation and graphs for the data exploration and statistical analysis in R. Published (Krishnaswamy and Warner, 2023)

RA **SPLANG Phonetics Lab (phonetics and psycholinguistics)**, *The English and Foreign Languages University, Hyderabad*

- Designed and conducted acoustic phonetics studies for languages such as Bengali, Mongolian, Malayalam and Hindi.
- Interfaced with language consultants to create relevant and accurate stimuli for speech perceptions studies.
- Co-authored and edited papers, conference posters, research proposals and presentations.
- Provided trainings for experimental modalities such as ultrasound, eye-tracking, and speech perception and production.
- Managed administrative tasks such as purchase requests, lab equipment setup, documentation for datasets, scheduling lab time and drafting the lab's budget and spending.

Education and Teaching Experience

Fellow **Teach for India**, *Hyderabad, India*, 2013-2015

- Trained and worked as a full-time teacher for Grade 5 (Maths and Environmental Sciences) and Grade 6 (English and Science).
- Conducted career orientations and soft-skills programs.
- Raised approximately 82,000 INR to improve school's resources (`https://www.ketto.org/fundraiser/mindswithoutfear`).

TA **Department of Linguistics**, *University of Arizona*, (Instructor on Record)

- **LING 314**. *Phonetics*, Spring 2023
- **LING/PSY 432**. *Psychology of Language (5-week online)* Summer 2022, 2023

Professional Research Experience

Fall, 2024 **Artistic Expression of Original Research**, *In-person* , Joined a 3-day science communication and art retreat, and created and presented a mixed-media installation for my doctoral research.

Spring, 2023 **Fellow, Data Science Institute**, *University of Arizona Health Sciences*, Awarded this 14-week fellowship and training for data management planning, research reproducibility and accessibility, and effective software documentation.

Spring, 2022 **Coqui "Hack the Planet" Hackathon**, *Remote* , Trained and evaluated a Voice Command Detector for playing Chess in Tamil and Hindi languages using the Mozilla Common Voice dataset and Coqui STT system.

Publications

Meghavarshini Krishnaswamy and Natasha Warner. Perception of Malayalam three-way stop contrast among American English speakers. In *Proceedings of the 20th International Congress of Phonetic Sciences*, pages 401–405, 2023. URL `https://www.internationalphoneticassociation.org/icphs-proceedings/ICPhS2023/full_papers/682.pdf`.

Paulo Soares, Adarsh Pyarelal, Meghavarshini Krishnaswamy, Emily Butler, and Kobus Barnard. Probabilistic modeling of interpersonal coordination processes. In *Forty-first International Conference on Machine Learning*, 2024. URL `https://proceedings.mlr.press/v235/soares24a.html`.

Adarsh Pyarelal, Eric Duong, Caleb Jones Shibu, Paulo Soares, Savannah Boyd, Payal Khosla, Valeria Pfeifer, Diheng Zhang, Eric S Andrews, Rick Champlin, et al. The ToMCAT dataset. In *Thirty-seventh Conference on Neural Information Processing Systems Datasets and Benchmarks Track*, 2023. URL `https://papers.nips.cc/paper_files/paper/2023/file/803d8d4b4a549d0d062fc704f8659ce3-Paper-Datasets_and_Benchmarks.pdf`.

Seema GP, Meghavarshini Krishnaswamy, Ramesh Mishra, and Indranil Dutta. Mismatched coarticulatory information hinders lexical access of coronal stops in Malayalam. In *Proceedings of the 20th International Congress of Phonetic Sciences*, pages 371–375, 2023. URL `https://www.internationalphoneticassociation.org/icphs-proceedings/ICPhS2023/full_papers/657.pdf`.

John Culnan, Seongjin Park, Meghavarshini Krishnaswamy, and Rebecca Sharp. Me, myself, and ire: Effects of automatic transcription quality on emotion, sarcasm, and personality detection. In *Proceedings of the Eleventh Workshop on Computational Approaches to Subjectivity, Sentiment and Social Media Analysis*, pages 250–256, 2021. URL `https://aclanthology.org/2021.wassa-1.26.pdf`.

Meghavarshini Krishnaswamy, Indranil Dutta, and Ushasi Banerjee. Active cavity expansion through lingual adjustments to place of constriction in voiced geminates. In *Proceedings of Meetings on Acoustics*, volume 33, page 060002. Acoustical Society of America, 2018. URL `https://asa.scitation.org/doi/pdf/10.1121/2.0001024`.

Skills

Programming

Python Pytorch, ScikitLearn, PyKaldi, SpaCy, Matplotlib, Pandas, Numpy, Notebooks

R ggplot, lme4, dplyr, gss

CLI tools Imagemagik, Kaldi, ffmpeg, Bash, grep, perl, ssh

Technology

Acoustics Praat (and Praat scripting), Audacity, Kaldi and OpenSMILE

Editing MS Office, GSuits, Markdown, knitR, and LaTeX