

SARA NG

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SUMMARY

I am interested in the way humans create, modify, and perceive speech sounds, especially in the way that prosodic cues to convey pragmatic and discourse meaning. My research goals are to integrate the unique information found in speech prosody into modern methods for natural language processing and understanding, and to use computational methods to aid in the linguistic study of the role of prosody in dialogue management. For example, I have used prosodic signals to recover punctuation in speech transcripts, and have used computational techniques to model speaker entrainment and conversational dynamics. I have also investigated the differential use of perceptual speech cues by listeners with hearing loss, and developed methods for identifying listener behavior in a clinical environment.

I was previously a member of the Transformation, Interpretation, and Analysis of Language (TIAL) Lab in the Department of Electrical Engineering and the Phonetics Lab in the Department of Linguistics at the University of Washington, and maintain collaboration with the Hearing Aid Laboratory at Northwestern University and CLILLAC-ARP at Université Paris Cité.

EDUCATION

- 2017-2024 University of Washington
Ph.D.: Linguistics, conferred 16.08.24
Thesis: Prosody in Human Communication and Machine Understanding
Masters of Science: Computational Linguistics, conferred 18.08.24
General exam: Assessing the Stability of the Speech Cue Profile; Time series estimation of utterance pitch in two-party conversation
Advised by Drs. Richard Wright and Mari Ostendorf
- 2013-2017 University of Utah
Honors Bachelor of Arts: Linguistics, conferred
Advisor: Dr. Abby Kaplan
Thesis: Musical Text-Setting as Evidence for Syllabification of Highly Moraic Structures in English
Bachelor of Science: Applied Mathematics, conferred
TESOL: Teaching English to Students of Other Languages Certificate, conferred

PUBLICATIONS

- prep. **Sara Ng**, Calvin Murdock, Vamsi Krishna Ithapu, Christi Miller
Inferring Hearing Impairment through Dialogue Dynamics and Speech Content
- 2024 Nicolas Ballier, Léa Burin, Behnoosh Namdarzadeh, **Sara Ng**, Richard Wright, Jean-Baptiste Yunès
Probing Whisper Predictions for French, English and Persian Transcriptions
7th International Conference on Natural Language and Speech Processing (accepted)
- 2024 **Sara Ng**, Gina-Anne Levow, Mari Ostendorf, Richard Wright
Investigating the Influence of Stance-Taking on Conversational Timing of Task-Oriented Speech
INTERSPEECH
- 2024 **Sara Ng**, Valerie Freeman, Gina-Anne Levow, Mari Ostendorf, Richard Wright
Effects of Information Load and Pragmatic Load on the Hypo-Hyper Continuum
Fonetik 2024

- 2024 Marina Oganyan, Gina-Anne Levow, Robert Squizzero, Emily P. Ahn, **Sara Ng**, Ella Deaton, Richard A. Wright
Investigating the Acoustic Fidelity of Vowels across Remote Recording Methods
Linguistics Vanguard
- 2023 **Sara Ng**, Abigail Schwendiman Sleight
Properties of Constructed Language Phonological Inventories
University of Washington Working Papers in Linguistics
- 2022 Yeonjin Cho, **Sara Ng**, Trang Tran, Mari Ostendorf
Leveraging Prosody for Punctuation Prediction of Spontaneous Speech
INTERSPEECH
- 2022 Andrew Hard, Kurt Partridge, Neng Chen, Sean Augenstein, Aishanee Shah, Hyun Jin Park, Alex Park, **Sara Ng**, Jessica Nguyen, Ignacio Lopez Moreno, *and others*
Production federated keyword spotting via distillation, filtering, and joint federated-centralized training
INTERSPEECH
- 2021 **Sara Ng**, Gregory M. Ellis, Pamela E. Souza, Frederick J. Gallun, Richard A. Wright, Mari Ostendorf
Assessing the stability of the spectro-temporal cue weighting angle for listener categorization
Proceedings of Meetings on Acoustics
- 2021 Courtney Mansfield, **Sara Ng**, Gina-Anne Levow, Richard Wright, Mari Ostendorf
Revisiting Parity of Human vs. Machine Conversational Speech Transcription
INTERSPEECH

PRESENTATIONS

- 2021 Courtney Mansfield, **Sara Ng** Gina-Anne Levow, Mari Ostendorf, Richard Wright
What does parity mean? A detailed comparison of ASR and human transcription errors
Acoustical Society of America, **talk**
- 2018 **Sara Ng**, Joselyn Roriguez and Abby Kaplan
Musical Evidence for Syllabification Patterns of Highly Moraic Structures in English
Linguistic Society of America, **poster**
- 2017 Jenica Jessen, **Sara Ng** and Joselyn Rodriguez
Musical Evidence for Syllabification Patterns in English
University of Utah Student Conference in Linguistics, **talk**
- 2017 Jenica Jessen and **Sara Ng**
Musical Evidence for Syllabification Patterns of Highly Moraic Structures in English
Undergraduate Research Symposium, University of Utah, **poster**

PATENT APPLICATIONS

- 2023 **Sara Ng**, Melinda Anderson, Poornima Shankar, Setare Hajarolasvadi, Katherine Chase, Christi Miller
Use of Biometric Signals to Personalize Audio
Application No. 18 104701
- 2023 **Sara Ng**, Melinda Anderson, Poornima Shankar, Setare Hajarolasvadi, Katherine Chase
Modifying Audio for Presentation to a User Based on a Determined Location of an Audio System Presenting the Audio
Application No. 18 162847

2023 Christi Miller, **Sara Ng**, Calvin Murdock, Nils Thomas Fritiof Lunner, William Owen Brimijoin II, Vamsi Krishna Ithapu
Estimation Of Hearing Loss of a User from Interactions with a Local Environment by the User Identified from Captured Audio and Information Describing the Local Area
 Application No. 18 162847

RESEARCH POSITIONS

2023-2024 2023 UW Linguistics Fund Award; *Research Assistant*
 PI: Richard Wright

Summer 2023 Meta Reality Labs; *Research Scientist Intern*
 Host: Christi Miller

Summer 2022 Meta Reality Labs; *Research Scientist Intern*
 Host: Christi Miller

2021-2022 US National Institutes of Health, grant NIH R01 DC006014; *Research Assistant*
 PI: Richard Wright

2021-2022 Google Federated Assistant, Federated Learning; *Software Engineering Intern*
 Host: Andrew Hard

2019-2020 US National Science Foundation, grant IIS-1617176; *Research Assistant*
 PIs: Mari Ostendorf, Richard Wright

Summer 2019 Google Core Assistant, Pygmalion; *Linguist Intern*
 Host: Katie Vadella

2017-2018 University of Washington Linguistics; *Departmental Research Assistant*
 PI: Sharon Hargus

GRANTS AND AWARDS

2024 (Nominated) UW Excellence in Teaching Award
University of Washington

2023 Excellence in Linguistic Research Graduate Fellowship
University of Washington

2018 Travel Scholarship for Second Ethics in Natural Language Processing Workshop
North American Chapter of the ACL

2017 Top Scholar Award
University of Washington Graduate School

2017 UROP Small Research Grant
University of Utah Undergraduate Research Opportunities Program

2013 President's Scholarship
University of Utah

SERVICE

2024 **Student volunteer**, Northwest Linguistics Conference (NWLC)

2024 **Reviewer**, NWLC

2022 **Peer mentor**, Undergraduate seminar on graduate school application process

2021 **Consultant**, High school entrepreneurship competition project

2021 **Editor**, University of Washington Working Papers in Linguistics
 2020 **Student Volunteer**, Association for Computational Linguistics (ACL)
 2020 **Organizing Committee Member**, NWLC
 2020 **Reviewer**, NWLC
 2020 **Proctor**, North American Computational Linguistics Open Competition
 2020 **Consultant**, Undergraduate senior capstone in speech translation
 2019 **President**, Linguistics Society of the University of Washington (LSUW)
 2019 **Student Volunteer**, North American Chapter of the ACL
 2018 **Vice President**, LSUW

GRADUATE COURSEWORK

Computational

LING 566: Syntax for Computational Linguistics
 LING 567: Knowledge Engineering for NLP
 LING 570: Shallow Processing Methods for NLP
 LING 571: Deep Processing Methods for NLP
 LING 572: Advanced Statistical NLP
 LING 575: NLP Ethics
 LING 575: Spoken Dialogue Systems
 LING 575: Analyzing Neural Language Models
 LING 580: Bias in ASR
 ECE 511: Statistical Learning
 ECE 596: Conversational Systems and AI

Theoretical

LING 532: Sociolinguistics I
 LING 550: Intro. Phonetics
 LING 553: Experimental Phonetics
 LING 507: Syntactic Theory I
 LING 579: Semantic Theory II
 LING 580: Context and Speech Variation
 LING 580: Experimental Phonology
 LING 580: Voice Quality

GPA 3.9

TEACHING

as Instructor of Record

2024 Fall HNRS 217: Colloquium in Linguistics
 2024 Fall LING 311: Phonetics
 2024 Fall LING 411: Topics in Phonetics and Phonology
 2023 Winter LING 450/550: Introduction to Linguistic Phonetics
 2022 Spring LING 472: Introduction to Computational Linguistics
 2020 Summer LING 473: Basics For Computational Linguistics

Teaching Assistanceships

2020 Fall LING 450: Introduction to Linguistic Phonetics
 2019 Spring CSE 472: Introduction to Computational Linguistics
 2018 Fall LING 570: Shallow Processing Techniques for Natural Language Processing
 2018 Spring LING 269: Swearing and Taboo Language

Graderships

2020 Winter LING 451: Phonology I
 2019 Spring LING 452: Phonology II
 2019 Winter LING 451: Phonology I

Curriculum Development

2019 Winter Staff assistanceship converting LING 553 (Experimental Phonetics), LING 450 (Phonetics), and ASL Program course materials to online format

Guest Lectures

2019 25 Oct LING 550 (Phonetics): *Reading Spectrograms*
2019 21 Aug LING 473 (Compling Basics): *Formal Grammars & Parsing*
2019 23 May LING 200 (Intro. Linguistics): *What is Computational Linguistics?*

SKILLS

Computer Languages

- Python
- R
- Matlab
- HTML/CSS/JavaScript
- Java

Machine Learning

- pytorch
- tensorflow
- Scikit-learn

Linguistic Tools

- Praat
- NLTK
- Kaldi
- Electrolottography

Natural Languages

- French (basic)
- Spanish (basic)
- Toisan Chinese (heritage)