

# SARA NG

Department of Linguistics  
University of Washington

sbng@uw.edu  
sarablalockng.github.io

## 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 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 (accepted)

- 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; <i>Research Assistant</i> PI: Richard Wright
Summer 2023	Meta Reality Labs; <i>Research Scientist Intern</i> Host: Christi Miller
Summer 2022	Meta Reality Labs; <i>Research Scientist Intern</i> Host: Christi Miller
2021-2022	US National Institutes of Health, grant NIH R01 DC006014; <i>Research Assistant</i> PI: Richard Wright
2021-2022	Google Federated Assistant, Federated Learning; <i>Software Engineering Intern</i> Host: Andrew Hard
2019-2020	US National Science Foundation, grant IIS-1617176; <i>Research Assistant</i> PIs: Mari Ostendorf, Richard Wright
Summer 2019	Google Core Assistant, Pygmalion; <i>Linguist Intern</i> Host: Katie Vadella
2017-2018	University of Washington Linguistics; <i>Departmental Research Assistant</i> PI: Sharon Hargus

## GRANTS AND AWARDS

2024	(Nominated) UW Excellence in Teaching Award <i>University of Washington</i>
2023	Excellence in Linguistic Research Graduate Fellowship <i>University of Washington</i>
2018	Travel Scholarship for Second Ethics in Natural Language Processing Workshop <i>North American Chapter of the ACL</i>
2017	Top Scholar Award <i>University of Washington Graduate School</i>
2017	UROP Small Research Grant <i>University of Utah Undergraduate Research Opportunities Program</i>
2013	President's Scholarship <i>University of Utah</i>

## SERVICE

2024	<b>Student volunteer</b> , Northwest Linguistics Conference (NWLC)
2024	<b>Reviewer</b> , NWLC
2022	<b>Peer mentor</b> , Undergraduate seminar on graduate school application process
2021	<b>Consultant</b> , High school entrepreneurship competition project
2021	<b>Editor</b> , University of Washington Working Papers in Linguistics
2020	<b>Student Volunteer</b> , Association for Computational Linguistics (ACL)
2020	<b>Organizing Committee Member</b> , NWLC
2020	<b>Reviewer</b> , NWLC
2020	<b>Proctor</b> , 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)