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. My research goals are to integrate the unique information found in speech prosody into modern methods for natural language processing and generation. I am primarily interested in computational models of prosody and dialogue management in dyadic and multiparty conversation. For example, I have used prosodic signals to recover punctuation in speech transcripts, and 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 develop methods for identifying listener behavior in a clinical environment.

I am 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 my dissertation research is in collaboration with the Hearing Aid Laboratory at Northwestern University and CLILLAC-ARP at Université Paris Cité.

Education

current University of Washington
Ph.D. candidate: Linguistics
Advised by Drs. Richard Wright and Mari Ostendorf
Masters of Science: Computational Linguistics

2013-2017 University of Utah
Honors Bachelor of Arts: Linguistics
Advisor: Dr. Abby Kaplan
Thesis: Musical Text-Setting as Evidence for Syllabification of Highly Moraic Structures in English
Bachelor of Science: Applied Mathematics
TESOL: Teaching English to Students of Other Languages Certificate

Publications

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

Papers in Preparation

— 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
    submitted to Linguistics Vanguard

— **Sara Ng**, Calvin Murdock, Vamsi Krishna Ithapu, Jeff Crukley, Christi Miller
Inferring Hearing Impairment through Dialogue Dynamics and Speech Content
    in preparation

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**

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

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

TEACHING

as Instructor of Record

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

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
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: Bias in ASR
LING 580: Voice Quality

GPA 3.9

GRANTS AND AWARDS

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

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**, Northwest Linguistics Conference (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

SKILLS

Computer Languages

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

Machine Learning

- pytorch
- tensorflow
- Scikit-learn

Linguistic Tools

- Praat
- NLTK
- Kaldi
- Electroglottography

Natural Languages

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