

## Trang Tran

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### RESEARCH INTERESTS

Computational modeling of prosody for spoken language understanding, applications of language technology to health, clinical psychology, education

### EDUCATION

**University of Washington**, Seattle, WA Dec 2020

*PhD*, Electrical & Computer Engineering

- Thesis: *Neural Models for Integrating Prosody in Spoken Language Understanding*

**Bucknell University**, Lewisburg, PA

*M.S.*, Electrical Engineering

May 2014

- Thesis: *Noise-robust Voice Conversion*

*B.S.*, Electrical Engineering and *B.A.*, Economics

May 2012

### EXPERIENCE

**Reality Defender**

*Remote/New York, NY*

**Applied Scientist II - Audio**

Nov 2023 - present

- Developing and analyzing systems for audio deep fake detection and interpretation

**Institute for Creative Technologies (USC-ICT)**

*Los Angeles, CA*

**Postdoctoral Researcher**

Dec 2020 - Sep 2023

Multimodal Machine Learning for Motivational Interviewing (MI)

- Developed multimodal (text and speech) and context-aware models for predicting utterance intent codes in motivational interviews (MI)
- Analyzed dialog patterns for successful MI sessions, in terms of global therapist ratings and client behavioral change outcomes

**TIAL Lab, UW Electrical & Computer Engineering**

*Seattle, WA*

**Graduate Research Assistant**

Jun 2014 - Dec 2020

- **Neural Prosody Models for Spoken Language Understanding**
  - Developed a new convolutional neural network architecture for integrating acoustic-prosodic features into constituency parsing and dialog act (DA) recognition
  - Studied the effects of read vs. conversational speech in parsing performance, demonstrating style differences in speaker use of prosody
  - Analyzed the utility of prosodic features for correcting parse/DA errors, finding most benefits in disfluent regions, attachment errors, and DA statement types
  - Analyzed the effects of transcription errors on parsing/DA performance, showing a non-negligible effect of transcription errors on the effective use of prosody
- **Characterization and Detection of Online Community Language and Online Community Endorsement**
  - Developed style and topic models for characterizing language of Reddit discussions, demonstrating that community endorsement is more correlated with style than topic
  - Contributed to the development of metrics and features for detecting community

endorsement on Reddit discussions

- **Other Projects**

- Studied disfluency patterns in children’s speech; helped extend an annotation system for children’s speech transcripts
- Investigated lexical difficulty features for text simplification based on analysis of reading by low-literacy adults and anomalies in prosodic and duration cues
- Studied acoustic models of stress and pitch patterns for use in language acquisition, intelligibility scoring, and stance classification

**Liulishuo (LingoChamp), LAIX Inc.**

*San Mateo, CA*

**Research Intern**

Jun 2018 - Sep 2018

Modeling Prosody for Second Language Learning

- Explored computational models for integrating acoustic-prosodic information (seq2seq vs. transformer architectures) in parsing for a second-language learning application
- Analyzed differences in native vs. non-native speech effects on parsing results, finding little correlation between parse scores and proficiency based on repeated speech

**Amazon Alexa Shopping Team**

*Seattle, WA*

**Applied Scientist Intern**

Jun 2017 - Aug 2017

Ranking Models for Amazon’s Choice

- Explored ranking algorithms and developed novel models for selecting Amazon’s Choice items
- Analyzed the utility of language features applied to Amazon’s Choice ranking models

**Toyota Technological Institute at Chicago (TTIC)**

*Chicago, IL*

**Visiting Graduate Intern**

Jun 2016 - Sep 2016

Syntactic Constituent Parsing of Speech

- Developed a many-to-one encoder-decoder neural network for constituency parsing of conversational speech, using transcripts and acoustic features

**Bucknell University, Electrical Engineering**

*Lewisburg, PA*

**Graduate Research Assistant**

Aug 2012 - May 2014

Speech Enhancement & Voice Conversion using Inventory Style Approaches

- Explored filter- and inventory-based speech enhancement, demonstrating better perceptual quality from inventory-based methods
- Developed an inventory-based noise-robust voice conversion system; studied speech processing methods for auditory focus improvement and voice transformation

## PUBLICATIONS

- [1] Yi Zhu, Chirag Goel, Surya Koppiseti, **Trang Tran**, Ankur Kumar, Gaurav Bharaj. 2024. “Learn from Real: Reality Defender’s Submission to ASVspoof5 Challenge.” In *ASVspoof 5 Workshop*, pp. ??–??.
- [2] Yi Zhu, Surya Koppiseti, **Trang Tran**, Gaurav Bharaj. 2024. “SLIM: Style-Linguistics Mismatch Model for Generalized Audio Deepfake Detection.” In *Proc. Neural Information Processing Systems (NeurIPS)*, pp. ??–??.

- [3] **Trang Tran**, Yufeng Yin, Leili Tavabi, Joannalyn Delacruz, Brian Borsari, Joshua Woolley, Stefan Scherer, Mohammad Soleymani. 2023. “Multimodal Analysis and Assessment of Empathy in Motivational Interviews.” In *Proc. International Conference on Multimodal Interaction (ICMI)*, pp. 406–415.
- [4] Leili Tavabi, **Trang Tran**, Brian Borsari, Joannalyn Delacruz, Joshua Woolley, Stefan Scherer, Mohammad Soleymani. 2023. “Therapist Empathy Assessment in Motivational Interviews.” In *Proc. International Conference for Affective Computing and Intelligent Interaction (ACII)*, pp. 1–8.
- [5] Brian Borsari, Leili Tavabi, **Trang Tran**, Mohammad Soleymani, Ben Ladd, Nadine Mastroleo, Joannalyn Delacruz, Molly Magill, Justin Walthers, Stefan Scherer. 2023. “Self-generated versus Agreement Change Language in Motivational Interviewing: Prevalence and Relationship to Therapist and Client Relational Factors.” In *Alcoholism-Clinical and Experimental Research, Meeting of the Research Society on Alcoholism (RSA)*, Vol. 47, S1, pp. 445.
- [6] Brian Borsari, Leili Tavabi, **Trang Tran**, Mohammad Soleymani, Ben Ladd, Nadine Mastroleo, Joannalyn Delacruz, Molly Magill, Justin Walthers, Stefan Scherer. 2023. “Self-generated versus Agreement Change Language in Motivational Interviewing: Relationship to Subsequent Self-reported Alcohol Use and Related Problems.” In *Alcoholism-Clinical and Experimental Research, Meeting of the Research Society on Alcoholism (RSA)*, Vol. 47, S1, pp. 446.
- [7] **Trang Tran**. 2022. “Post-Stroke Speech Transcription Challenge (Task B): Correctness Detection in Anomia Diagnosis with Imperfect Transcripts.” In *Proc. Workshop on Resources and Processing of linguistic, para-linguistic and extra-linguistic Data from people with various forms of cognitive/psychiatric/developmental impairments (RaPID-2022) — The Post-Stroke Speech Transcription (PSST) Challenge, International Conference on Language Resources and Evaluation (LREC)*, pp. 56–61.
- [8] Jenny Yeonjin Cho, Sara Ng, **Trang Tran**, Mari Ostendorf. 2022. “Leveraging Prosody for Punctuation Prediction of Spontaneous Speech.” In *Proc. Interspeech*, pp. 555–559.
- [9] **Trang Tran** and Mari Ostendorf. 2021. “Assessing the Use of Prosody in Constituency Parsing of Imperfect Transcripts.” In *Proc. Interspeech*, pp. 2626–2630.
- [10] Leili Tavabi, **Trang Tran**, Kalin Stefanov, Brian Borsari, Joshua Woolley, Stefan Scherer, Mohammad Soleymani. 2021. “Analysis of Behavior Classification in Motivational Interviewing.” In *Proc. Workshop on Computational Linguistics and Clinical Psychology: Improving Access (CLPsych)*, pp. 110–115.
- [11] **Trang Tran**, Morgan Tinkler, Gary Yeung, Abeer Alwan, Mari Ostendorf. 2020. “Analysis of Disfluency in Children’s Speech.” In *Proc. Interspeech*, pp. 4278–4282.
- [12] **Trang Tran**, Jiahong Yuan, Yang Liu, Mari Ostendorf. 2019. “On the Role of Style in Parsing Speech with Neural Models.” In *Proc. Interspeech*, pp. 4190–4194. [**Best Student Paper Nominee**]
- [13] Vicky Zayats, **Trang Tran**, Courtney Mansfield, Richard Wright, Mari Ostendorf. 2019. “Disfluencies and Human Speech Transcription Errors.” In *Proc. Interspeech*, pp. 3088–3092

- [14] **Trang Tran**, Shubham Toshniwal, Mohit Bansal, Kevin Gimpel, Karen Livescu, Mari Ostendorf. 2018. “Parsing Speech: A Neural Approach to Integrating Lexical and Acoustic-Prosodic Information.” In *Proc. Conf. of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL-HLT)*, pp. 69–81
- [15] **Trang Tran** and Mari Ostendorf. 2016. “Characterizing the Language of Online Communities and Its Relation to Community Reception.” In *Proc. Conf. Empirical Methods Natural Language Processing. (EMNLP)*, pp. 1030–1035
- [16] Gina-Anne Levow, Valerie Freeman, Alena Hrynkevich, Mari Ostendorf, Richard Wright, Julian Chan, Yi Luan, and **Trang Tran**. 2014. “Recognition of stance strength and polarity in spontaneous speech.” In *Proc. IEEE Spoken Language Technology Workshop (SLT)*, pp. 236–241.

## TEACHING AND MENTORING

### **Guest Lecturer, Institute for Creative Technologies**

*University of Southern California, Los Angeles, CA*

Jan 2021 - Sep 2023

- Developed material and taught guest lectures on natural language processing and speech recognition in the “Multimodal Probabilistic Learning of Human Communication” course
- Mentored student teams for a final project in multimodal dialog act prediction

### **Research Mentor and Supervisor, Institute for Creative Technologies**

*University of Southern California, Los Angeles, CA*

Dec 2020 - Sep 2023

- PhD students: Leili Tavabi
- Master’s students: Yuchen Zhang, Madeleine Thompson
- Undergraduate (REU) student interns: Alexander Billups, Geffen Cooper, Haley Miguel

### **Lead Teaching Assistant, Electrical & Computer Engineering**

*University of Washington, Seattle, WA*

Sep 2019 - Aug 2020

- Mentored junior teaching assistants (TAs): held teaching workshops and peer meetings and maintained teaching resources for department TAs
- Serve as a liaison between teaching assistants and faculty in the department, ensuring the well-being and quality of TAs

### **Teaching Assistant, Electrical & Computer Engineering**

*University of Washington, Seattle, WA*

Mar 2015 - Jun 2019

- Courses: Continuous Time Linear Systems (Winter 2016, Autumn 2016), Discrete Time Linear Systems (Spring 2015), Conversational Artificial Intelligence (Spring 2019)
- Responsibilities: assisted in course material development and revision; ran laboratory sections and software tutorial sessions; assisted students with homework assignments; graded assignments

### **Teaching Assistant, Electrical Engineering & Physics Departments**

*Bucknell University, Lewisburg, PA*

Aug 2008 - May 2014

- Courses: Fundamentals of Electrical Engineering, Circuit Theory I & II, Linear Systems and Signal Processing, Electronics I & II, Electrical Control Systems, Theory and Applications of Electromagnetics, Classical and Modern Physics I & II
- Responsibilities: assisted students with lab equipment, procedures, and homework prob-

lems; graded assignments

## **HONORS & AWARDS**

### **Grants and Fellowships:**

Clairmont L. Egtvedt Endowed Engineering Fellowship, 2020  
Grace Hopper Celebration of Women in Computing Scholarship, 2015  
Graduate Summer Research Fellowship, 2013  
Richard McGinnis International Engineering Study Scholarship, 2013  
Fremont International Student Scholarship, 2007-2012  
Bucknell Provost Office Grant for Undergraduate Research, 2009

### **Awards:**

Celebrate UW Womxn, 2020  
UW SWE Outstanding Female Engineer Award, 2020  
The Professor George Allison Irland Prize, 2012  
The Ernest and Josephine Christensen Award, 2012  
The Jeffrey James Harold Prize, 2008

### **Other Honors:**

- Honor societies: Phi Beta Kappa, Tau Beta Pi
- Dean's List all semesters 2007-2012, graduated summa cum laude

## **OUTREACH & SERVICE**

### **Action Editor (Area Chair)**

- ACL Rolling Review, 2021 – present

### **Virtual Platform Co-chair**

- ACII 2021

### **Academic Conference and Journal Reviewer**

- ACL: 2019 (secondary reviewer), 2020 - present
- EMNLP: 2019 - present
- NAACL: 2019 - present
- Interspeech 2023 - present
- ICMI 2021, 2022, 2023
- EACL 2021
- ACM Multimedia 2021
- SLT 2021
- ICASSP 2014 (secondary reviewer)
- ACL-SRW 2021, NAACL-SRW 2019
- ACII 2023
- Transactions of Affective Computing 2022-2023

### **Mentoring Committee**

*International Speech Communication Association — Student Advisory Committee (ISCA-SAC)*  
Nov 2021 - present

- Planning and co-organizing mentorship events (round tables and one-on-one) at Inter-speech conferences
- Recruiting and matching potential senior mentors with students in speech and language processing community for long-term mentorship support

### **Student Advisory Council Committee**

*Electrical and Computer Engineering (ECE) Department*

*University of Washington, Seattle, WA*

Jun 2019 - Aug 2020

- Co-led an initiative to establish ECE department's student advisory council, a platform for transparent communication between ECE students and leadership
- Organized town halls, recorded and summarized students' concerns, worked with ECE leadership to propose solutions and address students' concerns

### **Graduate Staff Assistant**

*University of Washington, Seattle, WA*

May 2016 - Jun 2017

- Organized an annual set of talks showcasing UW ECE students' research
- Assisted in reviewing graduate admission applications to the UW ECE graduate program
- Assisted in organizing prospective student visit day and new student orientation activities
- Represented UW ECE at conferences with a focus on recruiting underrepresented minorities (SWE, SACNAS, GHC, WiSE, NSBE)

### **Saturday School Tutor**

*Seattle World School, Seattle, WA*

Feb 2015 - May 2015

- Tutored middle & high school students with math and writing assignments
- Helped ESL (English as a Second Language) students with English reading exercises

### **Bucknell Brigade, Member**

*Bucknell Office of Civic Engagement, Lewisburg, PA*

Sep 2010 - May 2012

- Fund-raised for maintaining a health clinic in Managua, Nicaragua
- Traveled to assist with various tasks in the clinic

### **International Orientation Assistant and Leader**

*Bucknell International Student Services, Lewisburg, PA*

Aug 2008 - May 2012

- Prepared orientation activities and materials for incoming international students; trained junior International Orientation Assistants

## **SKILLS**

**Computing:** Python (pytorch, sklearn, tensorflow), MATLAB, Java, Bash

**Languages:** Vietnamese (native), English (fluent), French (conversational)