

Trang Tran

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RESEARCH INTERESTS

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

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

RESEARCH EXPERIENCE

Institute for Creative Technologies (USC-ICT)

University of Southern California, Los Angeles, CA

Postdoctoral Researcher

Dec 2020 - present

Multimodal Machine Learning for Motivational Interviewing (MI)

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

TIAL Lab, Electrical & Computer Engineering

University of Washington, 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] **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)*
- [2] 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)*

- [3] **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.
- [4] Jenny Yeonjin Cho, Sara Ng, **Trang Tran**, Mari Ostendorf. 2022. “Leveraging Prosody for Punctuation Prediction of Spontaneous Speech.” In *Proc. Interspeech*, pp. 555–559.
- [5] **Trang Tran** and Mari Ostendorf. 2021. “Assessing the Use of Prosody in Constituency Parsing of Imperfect Transcripts.” In *Proc. Interspeech*, pp. 2626–2630.
- [6] 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.
- [7] **Trang Tran**, Morgan Tinkler, Gary Yeung, Abeer Alwan, Mari Ostendorf. 2020. “Analysis of Disfluency in Children’s Speech.” In *Proc. Interspeech*, pp. 4278–4282.
- [8] **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**]
- [9] Vicky Zayats, **Trang Tran**, Courtney Mansfield, Richard Wright, Mari Ostendorf. 2019. “Disfluencies and Human Speech Transcription Errors.” In *Proc. Interspeech*, pp. 3088–3092.
- [10] **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.
- [11] **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.
- [12] 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 - present

- 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 - present

- PhD students: Leili Tavabi

- Master's students: Yuchen Zhang, Madeleine Thompson
- Undergraduate (REU) student interns: Alexander Billups, Geffen Cooper, Haley Miguel, Joey Cindas

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, Electrical Energy Conversion, Classical and Modern Physics I & II
- Responsibilities: assisted students with lab equipment, procedures, and homework problems; 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, 2023
- EMNLP: 2019, 2020, 2021, 2022
- NAACL: 2019
- ACM Multimedia 2021
- ICMJ 2021, 2022, 2023
- EACL 2021
- SLT 2021
- ICASSP 2014 (secondary reviewer)
- Interspeech 2023
- 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 Interspeech 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)