Trang Tran

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RESEARCH INTERESTS Computational modeling of prosody for spoken language understanding, applications of language technology to health, education, social science

EDUCATION

University of Washington, Seattle, WA — Sep 2020 (expected)
PhD Candidate, Electrical & Computer Engineering

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

TIAL Lab, Electrical & Computer Engineering
University of Washington, Seattle, WA

Graduate Research Assistant — Jun 2014 - present

- **Neural Prosody Models for Spoken Language Processing** [1,2,3]
  - Developing prosody and speaker models for dialog act prediction
  - Developed a new convolutional neural network architecture for integrating prosodic features with a parser for conversational speech, achieving gains over strong text-only baselines
  - 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 errors, finding most benefits in disfluent regions and attachment errors
  - Analyzed the effects of transcription errors on parsing 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** [4]
  - 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
- **Acoustic-Prosodic Cues to Oral Reading Intelligibility and Difficulty**
  - 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 for use in language acquisition and intelligibility scoring

Liulishuo (LingoChamp), LAIX Inc. *San Mateo, CA*
Research Intern Jun 2018 - Sep 2018
Modeling Prosody for Second Language Learning [1]

- 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 [3]

- Developed a many-to-one encoder-decoder neural network for constituency parsing of conversational speech, using both 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 [6]

- Explored filter- and inventory-based speech enhancement, demonstrating better perceptual quality from inventory-based methods
- Developed an inventory-based noise-robust voice conversion system

PUBLICATIONS

[1] **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]**

[2] Vicky Zayats, **Trang Tran**, Courtney Mansfield, Richard Wright, Mari Ostendorf. 2019, "Disfluencies and Human Speech Transcription Errors." In *Proc. Interspeech*, pp. 3088–3092

[3] **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

[4] **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

[5] 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.

[6] **Trang Tran**. 2014. "Noise-robust Voice Conversion." Master's Thesis, Bucknell University

TEACHING EXPERIENCE

Lead Teaching Assistant, Electrical & Computer Engineering
University of Washington, Seattle, WA September 2019 - present

- Mentor junior teaching assistants (TAs); hold teaching workshops and peer meetings; maintain 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 March 2015 - June 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 Scholarships:
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 socities: Phi Beta Kappa, Tau Beta Pi
- Dean's List all semesters 2007-2012, graduated summa cum laude

OUTREACH & SERVICE

Academic Conference Reviewer

- Conferences & Workshops: ACL 2020, ACL SRW 2020, NAACL 2019, NAACL SRW 2019, EMNLP 2019; Secondary reviewer for ACL 2019, ICASSP 2014

Student Advisory Council Committee
University of Washington, Seattle, WA June 2019 - present

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

Graduate Staff Assistant
University of Washington, Seattle, WA May 2016 - June 2017

- Organized an annual set of talks showcasing UW ECE students' research
- Assisted in reviewing graduate admission applications to the UW ECE graduate program
- 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 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)