Liming Wang

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RESEARCH INTEREST

multimodal language acquisition, unpaired multimodal learning, generative models, statistical learning theory

EDUCATION

University of Illinois Urbana-Champaign — Urbana, IL
Doctor of Philosophy, Electrical and Computer Engineering, GPA: 4.0/4.0 — Jun 2020-Aug 2023
Thesis: Multimodal Spoken Unit Discovery with Paired and Unpaired Modalities
Advisor: Mark Hasegawa-Johnson

University of Illinois Urbana-Champaign — Urbana, IL
Master of Science, Electrical and Computer Engineering, GPA: 3.95/4.0 — Aug 2018-May 2020
Thesis: A Translation Framework for Discovering Word-like Units from Visual Scenes and Spoken Descriptions
Advisor: Mark Hasegawa-Johnson

University of Illinois Urbana-Champaign — Urbana, IL
Bachelor of Science, Electrical Engineering, GPA: 3.94/4.0 — Aug 2014-Aug 2018

HONORS & AWARDS

- Robert T. Chien Memorial Award for Electrical Engineering (2023)
- Best Presentation Award: CSL Student Conference (2022)
- Rambus Scholarship for Computer Engineering (2020)
- Full-Tuition Teaching Assistantship (2018-2020), Research Assistantship (2020-2023)
- UIUC Highest Honors (2018)
- Dean's List (2015 - 2018)

RESEARCH AND WORK EXPERIENCE

Massachusetts Institute of Technology — Cambridge, MA
Postdoctoral Associate, Spoken Language Systems Group — Sept 2023-
Meta AI — Menlo Park, CA
Research Intern, AI Speech Team — May 2022-Sept 2022
Beckman Institute, University of Illinois Urbana Champaign — Urbana, IL
Research Assistant, Statistical Speech Technology Group — Jan 2020-Aug 2023
University of Illinois at Urbana Champaign — Urbana, IL
Visiting Scholar, BLENDER Lab — Aug 2020-Aug 2023
University of Illinois Urbana Champaign — Urbana, IL
Teaching Assistant, ECE 110: Introduction to Electronics,
ECE 313: Probability with Engineering Applications and ECE 543: Statistical Learning Theory — Aug 2018-May 2020
Carnegie Mellon University — Pittsburgh, PA
Research Assistant, Language Technology Institute — Jun 2017-Aug 2017

SELECTED PUBLICATIONS

[1] Liming Wang*, Junrui Ni*, Heting Gao*, Kaizhi Qian, Yang Zhang, Shiyu Chang and Mark Hasegawa-Johnson. Unsupervised Text-to-Speech Synthesis by Unsupervised Automatic Speech Recognition. *Interspeech*, 2022.

[2] Liming Wang, Mark Hasegawa-Johnson and Chang Yoo. A Theory of Unsupervised Speech Recognition. *ACL*, 2023.

[3] Liming Wang, Junrui Ni, Heting Gao, Jialu Li, Kai Chieh Chang, Xulin Fan, Junkai Wu, Mark Hasegawa-Johnson and Chang D. Yoo. Speak, Decipher and Sign: Toward Unsupervised Speech-to-Sign Language Recognition. *ACL (Findings)*, 2023.

[4] Liming Wang, Siyuan Feng, Mark Hasegawa-Johnson and Chang D. Yoo. Self-supervised Semantic-driven Phoneme Discovery for Zero-resource Speech Recognition. *ACL*, 2022.

[5] Liming Wang, Xinsheng Wang, Mark Hasegawa-Johnson, Odette Scharenborg, Mark Hasegawa-Johnson and Najim Dehak. Align or Attend? Toward More Efficient and Accurate Spoken Word Discovery using Speech-to-image Retrieval. *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2021.

TEACHING
- "6.8620: Spoken Language Processing", Massachusetts Institute of Technology, spring 2024
- "ECE 543: Statistical Learning Theory", University of Illinois Urbana-Champaign, spring 2020
- "ECE 313: Probability with Engineering Applications", University of Illinois Urbana-Champaign, spring 2019
- "ECE 110: Introduction to Electronics", University of Illinois Urbana-Champaign, fall 2018

PROFESSIONAL SERVICES
- Reviewer: Interspeech, Transactions on Audio, Speech and Language Processing (TASLP), Audio imagination (NeurIPS 2024 workshop)

SEMINAR/INVITED TALK
- "Unsupervised Text-to-Speech Synthesis by Unsupervised Automatic Speech Recognition", invited speaker at the MIT spoken language systems seminar, fall 2022
- "A DNN-HMM-DNN Hybrid Model for Discovering Word-like Units from Spoken Captions and Image Regions", invited speaker at the MIT spoken language systems seminar, spring 2022

ALL PUBLICATIONS (JOURNAL)

[1] Liming Wang, Mark Hasegawa-Johnson. Multimodal Word Discovery with Spoken Descriptions and Visual Concepts. *Transactions on Audio, Speech and Language Processing*, 2019.

[2] Odette Scharenborg et al. Speech Technology for Unwritten Languages. *Transactions on Audio, Speech and Language Processing*, 2020.

ALL PUBLICATIONS (CONFERENCE)

[1] Liming Wang, Yuan Gong, Nauman Dawalatabad, Marco Vilela, Katerina Placek, Brian Tracey, Yishu Gong, Fernando Vieira, James Glass. Automatic Prediction of Amyotrophic Lateral Sclerosis Progression using Longitudinal Speech Transformer. *Interspeech*, 2024.

[2] Liming Wang, Mark Hasegawa-Johnson, Chang D. Yoo. Unsupervised Speech Recognition with N-skipgram and Positional Unigram Matching. *ICASSP*, 2024.

[3] Liming Wang, Junrui Ni, Heting Gao, Jialu Li, Kai Chieh Chang, Xulin Fan, Junkai Wu, Mark Hasegawa-Johnson and Chang D. Yoo. Speak, Decipher and Sign: Toward Unsupervised Speech-to-Sign Language Recognition. *ACL (Findings)*, 2023.

[4] Liming Wang, Mark Hasegawa-Johnson and Chang Yoo. A Theory of Unsupervised Speech Recognition. *ACL*, 2023.

[5] Junrui Ni, Liming Wang, Heting Gao, Kaizhi Qian, Yang Zhang, Shiyu Chang and Mark Hasegawa-Johnson. Unsupervised Text-to-Speech Synthesis by Unsupervised Automatic Speech Recognition. *Interspeech*, 2022.

[6] Liming Wang, Siyuan Feng, Mark Hasegawa-Johnson and Chang Yoo. Self-supervised Semantic-driven Phoneme Discovery for Zero-resource Speech Recognition. *ACL*, 2022.

[7] Liming Wang, Mark Hasegawa-Johnson. A Translation Framework for Multimodal Spoken Unit Discovery. *Asilomar Conference on Signals, Systems, and Computers*, 2021.

[8] Liming Wang, Shengyu Feng, Xudong Lin, Manling Li, Heng Ji, Shih-Fu Chang. Coreference by Appearance: Visually Grounded Event Coreference Resolution. *The Fourth Workshop on Computational Models of Reference, Anaphora andCoreference (CRAC)*, 2021.

[9] Liming Wang, Xinsheng Wang, Mark Hasegawa-Johnson, Odette Scharenborg, Mark Hasegawa-Johnson, Najim Dehak. Align or Attend? Toward More Efficient and Accurate Spoken Word Discovery using Speech-to-image Retrieval. *2021 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2021.

[10] Liming Wang, Mark Hasegawa-Johnson. A DNN-HMM-DNN Hybrid Model for Discovering Word-like Units from Spoken Captions and Image Regions. *Interspeech*, 2020.

[11] Liming Wang, Mark Hasegawa-Johnson. Multimodal Word Discovery with Phone Sequence and Image Concepts. *Interspeech*, 2019.

[12] Graham Neubig et al. XNMT: The eXtensible Neural Machine Translation Toolkit. *Proceedings of the 13th Conference of the Association for Machine Translation in the Americas*, 2018.

[13] Odette Scharenborg et al. Linguistic Unit Discovery from Multimodal Inputs in Unwritten Languages: Summary of the "Speaking Rosetta" JSALT 2017 Workshop. *International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2017.

ALL PUBLICATIONS (UNDER REVIEW)

[1] Liming Wang, Yuan Gong, Marco Vilela, James Glass. Can Diffusion Models Disentangle? A Theoretical Perspective. *Under review for ICLR 2025*.

[2] Junrui Ni, Liming Wang, Yang Zhang, Kaizhi Qian, Heting Gao, Mark Hasegawa-Johnson, Chang D. Yoo. Towards Unsupervised Speech Recognition without Pronunciation Models. *Under review*, 2024.