

SHUWEI HOU

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SUMMARY

I am a Ph.D. candidate in the University at Buffalo. My current research focuses on Representation Learning and Computational Modeling for Verbal Behavior. Specifically, I am interested in developing representation learning and modeling methods across the following three levels of human language: Acoustic, Linguistic, and Pragmatic, to model the relationship between verbal behavior and cognitive abilities, and to translate these insights into practical applications for both clinical and educational purposes.

EDUCATION

University at Buffalo, State University of New York Ph.D., Computer Science and Engineering	Jan 2023 - Present
University at Buffalo, State University of New York M.S., Data Science	Aug 2021 - Dec 2022
University at Albany, State University of New York B.S., Computer Science and Applied Mathematics	Aug 2020 - May 2021
Chongqing University of Posts and Telecommunications B.S., Software Engineering	Aug 2017 - May 2020

PUBLICATION

Hou, S., Bo, W., Cao, L., Shijo, V., Liu, C., Zhang, X., Das, A., Guo, L.-Y., and Xu, W. “*Speech Annotation and Transcription Enhancer (SATE): An Automated System for Child Language Sample Analysis*”, Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT), vol. 10, no. 3, Article 107, 37 pages, September 2026.

Hou, S., Bo, W., Shijo, V., Liu, C., Kanaganapalli, M. M., Guo, L.-Y., and Xu, W. “*Correct Then Detect: Zero-Shot FVMC Annotation for Child Language Sample Analysis*”, Interspeech, 2026.

Lin, Z., **Hou, S.**, Bo, W., Guo, L.-Y., and Xu, W. “*Privacy-Enhancing Federated Child Speech Recognition using Machine Learning*”, IEEE International Conference on E-health Networking, Application & Services (Healthcom), 2026.

Zhang, X., Liu, C., Li, Z., Liang, L., Bo, W., **Hou, S.**, Zhou, C., Sun, H., and Xu, W. “*Warden: Vision-based Process Control for Sustainable Building Material Production*”, **under review**, AAAI Conference on Artificial Intelligence (AAAI), 2027.

Shijo, V., Das, A., Bo, W., **Hou, S.**, Guo, L.-Y., Xia, J., and Xu, W. “*PULSE: A Principled Framework for Multimodal Speech Sound Disorder Assessment Using Ultrasound Tongue Imaging*”, The IEEE/ACM conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE).

Co-author, “*ASVspooF 5: Design, Collection and Validation of Resources for Spoofing, Deepfake, and Adversarial Attack Detection Using Crowdsourced Speech*”, Computer Speech & Language, vol. 95, 101825, 2026.

Ju, Y., Sun, C., Jia, S., **Hou, S.**, Si, Z., Datta, S. K., Ke, L., Zhou, R., Nikolich, A., and Lyu, S. “*DeepFake-O-Meter v2.0: An open platform for DeepFake detection*”, IEEE International Conference on Multimedia Information Processing and Retrieval (MIPR), 2024.

Sun, C., Jia, S., **Hou, S.**, and Lyu, S. “*AI-Synthesized Voice Detection Using Neural Vocoder Artifacts*”, IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW), 2023.

PATENTS

Zero-Shot Automated Finite Verb Morphology Composite (FVMC) Annotation via Task Decomposition into Grammar Error Correction and Obligatory Context Detection 2026

Invention disclosure, University at Buffalo (Tech ID 030-7805)

System and Method for Interactive Transcription Review and Editing with Synchronized Visual and Auditory Highlighting 2025

Invention disclosure, University at Buffalo (Tech ID 030-7757)

Speech Annotation and Transcription Enhancer 2025

Invention disclosure, University at Buffalo (Tech ID 030-7714)

Beamforming Device and Architectures for Large Language Model Enabled Personal Monitoring 2025

Invention disclosure, University at Buffalo (Tech ID 030-7686)

COMPETITION

Administration for Community Living (ACL) Caregiver AI Challenge 2026

Shuwei Hou, Wei Bo, Long Cao, Ling-yu Guo, Wenyao Xu

FuzeHub Commercialization Competition 2026

Shuwei Hou, Wei Bo, Wenyao Xu

National Institutes of Health (NIH) Replication Prize: Replication in Biomedical Research, Track 2: Replication Exemplars 2025

Shuwei Hou, Wei Bo, Ling-yu Guo, Wenyao Xu

SUNY Startup Summer School Demo Day (S4) Pitch Competition 2025

Shuwei Hou, Wei Bo, Wenyao Xu

Panasci Technology Entrepreneurship Competition (Panasci TEC) 2025

Shuwei Hou, Wei Bo, Ling-yu Guo, Wenyao Xu

Graduate Student Poster Competition 2024

Shuwei Hou, Chengzhe Sun

Text Command Understanding Task for Music Domain, CCKS 2018

Shuwei Hou

PRESENTATION, POSTER, BOOTH

American Speech-Language-Hearing Association (ASHA) Convention, Nov 2025 (Washington D.C.) (**Booth**)

AI in Healthcare 2.0 by LifeSciencesNY: Opportunities, Challenges, Next Steps, Sep 2025 (Buffalo, NY) (**Booth**)

UB Celebration of Student Academic Excellence, May 2025 (Buffalo, NY) (**Poster**)

TEACHING EXPERIENCE

CSE 574: Introduce to Machine Learning Jan 2025

Graduate & Undergraduate Teaching Assistant

CSE 574: Introduce to Machine Learning Aug 2024

Graduate & Undergraduate Teaching Assistant

MENTORING EXPERIENCE

Long Cao (longcao@buffalo.edu) – Undergraduate, CSE@UB	
Development of language analysis platform; confidence score optimization for ASR models	Spring 2025–Present
Johnson Schwede (jschwede@middlebury.edu) – Undergraduate, Middlebury College	
Testing and training of sentence segmentation models for Language Sample Analysis (LSA)	Jun 2025–Aug 2025
Hannah Joseph (hannahrjoseph2007@gmail.com) – Undergraduate, George Washington University	
Testing of grammatical analysis and annotation models	Jun 2025–Aug 2025
Manav Madhusudhana Kanaganapalli (manavkan@buffalo.edu) – Undergraduate, CSE@UB	
Testing and training of grammatical analysis and annotation models	Fall 2025–Spring 2026
Zihan Lin (zlin29@buffalo.edu) – Graduate, CSE@UB	
Federated learning for automatic speech recognition models	Fall 2025–Spring 2026
Thomas Roma (tcroma@buffalo.edu) – Undergraduate, CSE@UB	
Improving ASR model performance using synthetic data augmentation	Fall 2025–Spring 2026
Chi Mai (chimai@buffalo.edu) – Undergraduate, CSE@UB	
User interface design; end-to-end modeling for speech transcription and disfluency detection	Fall 2025–Present

HONORS & AWARD

First Place, Panasci TEC 2025 (Awarded \$25,000 prize)	Apr 2025
University at Albany Dean’s List	Aug 2020 - May 2021

REVIEWER

ACM Transactions on Computing for Healthcare	Dec 2024 - Present
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