

WEI BO

Buffalo, NY 14221 • (314) 665-4361 • weibo@buffalo.edu

Ph.D. graduate with a strong background in data science, biometrics, and smart health technologies. My research focuses on developing data-driven and AI-enabled methods for healthcare and intelligent sensing systems, with applications in speech and language disorders, neurodegenerative disease screening, and digital health monitoring. I have extensive experience applying advanced analytics, machine learning, and Internet-of-Things (IoT) technologies to design scalable and impactful health solutions. My work integrates theoretical research with practical implementation to improve the efficiency, safety, and accuracy of smart health systems. As a collaborative and interdisciplinary researcher, I work at the intersection of computing, engineering, and clinical science to translate technical innovations into practical tools that support early detection, diagnosis, and monitoring of health conditions.

Research Interest: smart health, embedded/mobile sensing, and related intelligent analytics/computing

Education

EDUCATION

- **University at Buffalo, the State University of New York (SUNY)** • 01/2021 – 08/2025
Ph.D., Computer Science & Engineering Supervised by Prof. Wenyao Xu
~ *Research Project:* Mobile Rehabilitation (mRehab) for stroke, ADRD and Hospice related analytics based on NHATS data, ADRD Screening based on voice biomarker or Clock Drawing Testing, Phoneme-level Mispronunciation (PLM) Detection, PLM-based voice-omics for SLI Screening in Children
~ *GPA:* 4.0
- **Washington University in St. Louis** • 01/2019 – 05/2020
Master, Information Systems Management
~ *Simple Research Projects:* Kaggle Project about Zip Code and Income, Risk Analysis of Self-Driving Cars, Data Analysis about ICD Code and Mortality, Pacman Project in Artificial Intelligence (AI), System Security Plan about Healthcare Industry (in cooperation with Magellan Health)
~ *GPA:* 4.0
- **Shanghai University of Finance and Economics** • 09/2010 – 06/2014
Bachelor, International Business
~ *Simple Research Projects:* Research on Effect Evaluation on Single-Sided Information Advertisement, Analysis of Strategic Adjustment and Improvement of Jiangling Motors Corporation for Market Changes and Competitors' Strategic Changes, Research on how Foreign Cosmetics Brands (Kaiserwin) Enter Chinese Market

Professional Activities

PUBLICATION

- (submitted) Xiaoyu Zhang, Ye Zhan, Chenhan Xu, Zhengxiong Li, Chuqin Huang, Yanda Cheng, Licheng Liang, **Wei Bo**, Jun Xia, Chi Zhou, Hongyue Sun, Wenyao Xu, Autonomous Robotic Inspection of Building Thermal Insulation via Subsurface mmWave Sensing
- (submitted) Xiaoyu Zhang, Chuhui Liu, Zhengxiong Li, Licheng Liang, **Wei Bo**, Shuwei Hou, Chi Zhou, Hongyue Sun, Wenyao Xu, Warden: Vision-based Process Control for Sustainable Building Material Production
- (submitted) Varun Shijo, Anarghya Das, **Wei Bo**, Wenyao Xu, PULSE: A Principled Framework for Multimodal Speech Sound Disorder Assessment Using Ultrasound Tongue Imaging
- (submitted) **Wei Bo**, Manav Kanaganapalli, Wenyao Xu, Event-Duration Distribution Modeling and Co-Adapted Ensembles for Speech-Based ADRD Screening
- (submitted) **Wei Bo**, Shuwei Hou, Long Cao, Ling-Yu Guo, Wenyao Xu, Speech Annotation and Transcription Enhancer (SATE): An Automated System for Child Language Sample Analysis
- (submitted) **Wei Bo**, Shuwei Hou, Long Cao, Anarghya Das, Alexander Gherardi, Ling-Yu Guo, Wenyao Xu, Automatic Multi-Level Speech Transcription and Annotation System for Language Sample Analysis
- (submitted) **Wei Bo**, Aditya Challamarad, Harry Lin, Wenyao Xu, GloVoAD: A Global Voice Dataset Empowering Language-Agnostic Models for ADRD Detection through Vocal Biomarkers Optimization
- Chhabria, Jatin, Ritik Verma, Sreyasee Das Bhattacharjee, Wenyao Xu, and **Wei Bo**. "AFairDNet: Actively Empowering Fair Multisensor Emotion Recognition with Chain-of-Thought on Diffused Biosignals." In IEEE-EMBS International Conference on Body Sensor Networks 2025.

- Gherardi, Alexander, **Wei Bo**, Ahmet Demirbas, Ye Zhan, and Wenyao Xu. "Hyperspectral reconstruction for mobile diabetic foot blood perfusion monitoring." *BMC Artificial Intelligence* 1, no. 1 (2025): 10.
- Zhang, Xiaoyu, Chuhui Liu, Yanda Cheng, Zhengxiong Li, Chenhan Xu, Chuqin Huang, Ye Zhan, **Wei Bo**, Jun Xia, and Wenyao Xu. "A Comprehensive Survey of Research Trends in mmWave Technologies for Medical Applications." *Sensors* 25, no. 12 (2025): 3706.
- Zhang, Xiaoyu, Zhengxiong Li, Yanda Cheng, Chenhan Xu, Chuqin Huang, Emma Zhang, Ye Zhan, **Wei Bo**, Jun Xia, and Wenyao Xu. "mmSkin: An Over-Gauze Wound Assessment System Using Radio Frequency Technologies." *IEEE Internet of Things Journal* (2025).
- Zhang, Xiaoyu, Zhengxiong Li, Yanda Cheng, Chenhan Xu, Chuqin Huang, Emma Zhang, Ye Zhan, **Wei Bo**, Jun Xia, and Wenyao Xu. "Through-dressing Wound Monitoring Based on The mmWave Sensor." In *Proceedings of the 3rd International Workshop on Human-Centered Sensing, Modeling, and Intelligent Systems*, pp. 41-46. 2025. (Best Paper Award Candidate)
- **Wei Bo**, Suzanne S. Sullivan, Xiaoyu Zhang, Mingchen Gao, Wenyao Xu, "A Telemedicine Analytic Framework for Fully and Semi-automatic Alzheimer's Disease Screening using Clock Drawing Test." *IEEE Journal of Biomedical and Health Informatics* (2024).
- **Wei Bo**, Matthew Rubino, Wenyao Xu, "A Mispronunciation-Based Voice-Omics Representation Framework for Screening Speech and Language Impairments in Children", *IEEE International Conference on Healthcare Informatics (ICHI'24)*, Orlando, FL, June 2024.
- Huijuan Zhang, **Wei Bo**, Wenyao Xu, Jun Xia, "Deep-learning-enhanced Three-dimensional Photoacoustic Tomography of Human Breast", *Frontiers in Optics (FiO)*, October 2022.
- Suzanne Sullivan, **Wei Bo**, Chin-Shang Li, Wenyao Xu, Yu-Ping Chang, "Predicting Hospice Transitions in Dementia Caregiving Dyads: An Exploratory Machine Learning Approach", *GSA Innovation in Age (GSA)*, Volume 6, Issue 6, August 2022.
- Huijuan Zhang, **Wei Bo**, Anthony Di Spirito, Chuqin Huang, Nikhila Nyayapathi, Emily Zheng, Tri Vu, Yiyang Gong, Junjie Yao, Wenyao Xu, Jun Xia, "Deep-E: A Fully-Dense Neural Network for Improving the Elevation Resolution in Linear-array-based Photoacoustic Tomography", *IEEE Transactions on Medical Imaging (TMI)*, Volume 41, Issue 5, May 2022, Pages 1279 – 1288.
- **Wei Bo**, Jeanne Langan, Lora Cavuoto, Sutanuka Bhattacharjya, Heamchand Subryan, Ming-Chun Huang, Wenyao Xu, "A Progressive Prediction Model Towards Home-based Stroke Rehabilitation Programs", *Elsevier Smart Health (SH)*, Volume 23, March 2022.

PRESENTATION & POSTER & BOOTH

- **Wei Bo**, Shuwei Hou, Varun Shijo, Chuihui Liu, Long Cao, Wenyao Xu, American Speech-Language-Hearing Association (ASHA) Convention, Nov 2025 (Washington D.C., USA) **(Booth)**
- **Wei Bo**, Shuwei Hou, Anarghya Das, Alexander Gherardi, Chuihui Liu, Wenyao Xu, AI in Healthcare 2.0: Opportunities, Challenges, Next Steps, Sep 2025 (Buffalo, NY, USA) **(Booth)**
- **Wei Bo**, Shuwei Hou, Wenyao Xu, "SATE: an Inclusive AI-Powered Speech Annotation and Transcription Enhancer Tool", UB Celebration of Student Academic Excellence (Buffalo, NY, USA) **(Poster)**
- **Wei Bo**, Wenyao Xu, "From Embedded Sensing to Intelligent Analytics: Converging Cyber - Physical Innovations for Early Disease Screening and Rehabilitation", NSF CPS Rising Star Workshop (Nashville, TN, USA) **(Poster)**
- **Wei Bo**, Matthew Rubino, Wenyao Xu, "A Mispronunciation-Based Voice-Omics Representation Framework for Screening Speech and Language Impairments in Children", *IEEE/ACM ICHI 2024* (Orlando, FL, USA) **(Invited Talk)**
- **Wei Bo**, "Summary of Speech Annotation and Transcription Enhancer (SATE)", *AI4ExceptionalEd - Year 1 Site Visit*, Mar 2024 (Buffalo, NY, USA) **(Invited Talk)**
- **Wei Bo**, Matthew Rubino, Wenyao Xu, "A Mispronunciation-Based Voice-Omics Representation Framework for Screening Speech and Language Impairments in Children", *AI4ExceptionalEd - Year 1 Site Visit*, Mar 2024 (Buffalo, NY, USA) **(Poster)**
- **Wei Bo**, Alexander Gherardi, Wenyao Xu, "NutraNurture: Nutritional Confidence During Pregnancy", Panasci TEC Competition, Feb 2024 (Buffalo, NY, USA) **(Pitch Talk)**
- **Wei Bo**, Harshavardhan Baira Reddy, Meiyun Lin, Wenyao Xu, "Investigate Digital Voice Biomarkers of Alzheimer Disease and Related Dementias", UB VPHS Aging Symposium, Dec 2023 (Buffalo, NY, USA) **(Poster)**
- **Wei Bo**, Timothy Scholtz, Wenyao Xu, "Speech to Text based Word and Phoneme Level: Transforming Speech Diagnosis: The Power of ASR Technologies", SEAS LSAMP/REU Research Symposium, Aug 2023 (Buffalo, NY, USA) **(Poster)**

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- **Wei Bo**, Dasang Dolma, Kevin Zhao, Korey Liu, Nicholas Salvemini, Wenyao Xu, “Non-Speech Sound Detection in Speech Recognition: Investigating methods to enhance the detection of non-speech sounds during automated speech recognition processes”, SEAS LSAMP/REU Research Symposium, Aug 2023 (Buffalo, NY, USA) (**Poster**)
- **Wei Bo**, Justin Amstadt, Joy Lee, Wenyao Xu, “Mispronunciation Detection And Diagnosis: Identifying deviations in speech from target pronunciation and analyzing the characteristics of these mispronunciations”, SEAS LSAMP/REU Research Symposium, Aug 2023 (Buffalo, NY, USA) (**Poster**)
- **Wei Bo**, Jeanne Langan, Lora Cavuoto, Sutanuka Bhattacharjya, Heamchand Subryan, Ming-Chun Huang, Wenyao Xu, “A Progressive Prediction Model Towards Homebased Stroke Rehabilitation Programs”, IEEE/ACM CHASE 2021 (Washington D.C., USA) (**Invited Talk**)

COMPETITION & CHALLENGE

- **Wei Bo**, Shuwei Hou, Wenyao Xu. NIH Replication Prize Track 2: Replication Exemplars, Dec 2025 (Team Leader, SATE)
- **Wei Bo**, Aditya Challamarad, Chi Mai, Wenyao Xu. NIH Replication Prize Track 1: Replication Ideas, Dec 2025 (Team Leader, ADRD)
- **Wei Bo**, Anarghya Das, Wenyao Xu. FuzeHub Commercialization Competition, Aug 2025. (Team Member, mRehab)
- **Wei Bo**, Wenyao Xu. SUNY Startup Summer School, June-July 2024 (Co-I, SATE).
- Shuwei Hou, **Wei Bo**, Lingyu Guo, Alison Hendricks, Wenyao Xu. Panasci Technology Entrepreneurship Competition (Panasci TEC) Feb-Apr 2025, Finalist.
- **Wei Bo**, Alexander Gherardi, Kritarth Dandapat, Puru Soni, Rui Li, Wenyao Xu. NY Health 2025 Special Projects Fund, Mar 2025 (PI, OralScan)
- **Wei Bo**, Alexander Gherardi, Kritarth Dandapat, Puru Soni, Rui Li, Wenyao Xu. IAA AppXcelerate Application, Jan-Mar 2025 (PI, Round 1 and Round 2, OralScan)
- Wenyao Xu, **Wei Bo**, Ye Zhan, Rui Li. 2025 NIA Start-Up Challenge, Dec 2024. (Contributor, OralScan)
- **Wei Bo**, Harry Lin, Aditya Challamarad, Wenyao Xu. 2025 NIA Start-Up Challenge, Dec 2024. (PI, ADRD)
- Alexander Gherardi, Kritarth Dandapat, Puru Soni, **Wei Bo**, Rui Li, Wenyao Xu. Russell L. Agrusa CSE Student Innovation Competition, UB, Nov 2024. (Team Member, OralScan)
- Alexander Gherardi, Kritarth Dandapat, Puru Soni, **Wei Bo**, Rui Li, Wenyao Xu. Aging Innovations Challenge, UB, Nov 2024. (Team Member, OralScan)
- **Wei Bo**, Alexander Gherardi, Kritarth Dandapat, Puru Soni, Rui Li, Wenyao Xu. Community Champions for Disability Health Challenge, Oct 2024. (PI, OralScan)
- **Wei Bo**, Wenyao Xu. NSF Regional I-corps Course, Oct 2024 (PI, VocalLens).
- **Wei Bo**, Ayush Srivastava, Anarghya Das, Puru Soni. Startup Boot Camp, UB, Sep 2024. (Team Leader, VocalLens)
- **Wei Bo**, Harry Lin, Johnson Schwede, Wenyao Xu. PREPARE: Pioneering Research for Early Prediction of Alzheimer's and Related Dementias EUREKA Challenge, Phase 1.
- **Wei Bo**, Alexander Gherardi, Sharon Cryan, Wenyao Xu. Panasci Technology Entrepreneurship Competition (Panasci TEC) 2024, round 1 and round 2.

HONORS & AWARD & GRANT

- 1st Place Award in Panasci Technology Entrepreneurship Competition (Panasci TEC 2025), winning \$25,000 in startup capital with valued \$40,000 service
- NSF CPS Rising Star.
- UB CSE PhD Research Award, 2024.
- 1st Place Award in NIA PREPARE Challenge Phase 1, winning \$50,000 funding, 2024.
- NSF Student Travel Award, IEEE/ACM Chase Conference, 2021.

TEACHING ASSISTANT

- CSE 574: Introduction to Machine Learning, Fall 2022
- CSE 560: Data Models and Query Languages, Spring 2022
- CSE 521: Operating Systems, Fall 2021
- CSE 111: Introduction to Quantitative Analysis and Reasoning with Computing, Spring 2021

MENTORING EXPERIENCE

- Long Cao (longcao@buffalo.edu) (Undergrad, CSE@UB, team member in SATE, 2025)
- Tram Truong (ngocyent@buffalo.edu) (Undergrad, School of Management@UB, team member in SATE, 2025)
- Manav Kanaganapalli (manavkan@buffalo.edu) (Undergrad, CSE@UB, team member in GloVoAD project, 2025)
- Bach Pham (bachpham@buffalo.edu) (Undergrad, CSE@UB, team member in SATE, 2025)
- Bach Pham (npham3@buffalo.edu) (Undergrad, CSE@UB, team member in SATE, 2025)
- Matthew Rubino (Undergrad, CSE@UB, Co-authored IEEE ICHI, 2024)
- Aditya Challamarad (Undergrad, CSE@UB, Team Member in GloVoAD project, 2024-2025)
- Harry Lin (Undergrad, CSE@UB, Team Member in NIA PREPARE Challenge Phase 1 and GloVoAD project, 2024-2025)
- Johnson Schwede (Undergrad, CSE@Middlebury College, Team Member, NIA PREPARE Challenge Phase 1, 2024)
- Harshavardhan Baira Reddy (Master, CSE@UB, Co-authored UB VPHS Aging Symposium, 2023)
- Meiyang Lin (Master, STL@UB, Co-authored UB VPHS Aging Symposium, 2023)
- Timothy Scholtz (Undergrad, CE@UB, Team Member, SEAS LSAMP/REU Research Symposium, 2023)
- Dasang Dolma (Undergrad, DSE@UC Berkeley, Team Member, SEAS LSAMP/REU Research Symposium, 2023)
- Kevin Zhao (Undergrad, CS@UW, Team Member, SEAS LSAMP/REU Research Symposium, 2023)
- Korey Liu (Undergrad, CSE@UB, Team Member, SEAS LSAMP/REU Research Symposium, 2023)
- Nicholas Salvemini (Undergrad, CSE@UB, Team Member, SEAS LSAMP/REU Research Symposium, 2023)
- Justin Amstadt (Undergrad, CS@West Valley University in Saratoga, Team Member, SEAS LSAMP/REU Research Symposium, 2023)
- Joy Lee (Undergrad, CE@UB, Team Member, SEAS LSAMP/REU Research Symposium, 2023)

REVIEWER & VOLUNTEER & ACTIVITIES

- IEEE International Conference on Healthcare Informatics (ICHI) (Reviewer, 2025)
- IEEE Internet of Things Journal (IOTJ) (Reviewer, 2025)
- Discover Neuroscience (Reviewer, 2025)
- Scientific Reports (Reviewer, 2025)
- ACM Transactions on Computing for Healthcare (Reviewer, 2024-2025)
- IEEE International Conference on Biomedical and Health Informatics (BHI) (Reviewer, 2024-2025)
- Elsevier Smart Health (Reviewer, 2023-2025)
- IEEE-EMBS International Conference on Body Sensor Networks (BSN) (Reviewer, 2023-2025)
- Community Engagement Studio (Team member of mRehab, August 2025)
- Community Engagement Studio (Team member of OralScan, Jan 2025)
- Bridges from Borders (AI Initiative Adviser, 2024 -)
- Western New York Invention Convention (Volunteer, 2021-2022)

Working Experience

UNIVERSITY AT BUFFALO • POSTDOCT • EMBEDDED SENSING AND COMPUTING LAB • 09/2025 – present

- Developed AI-driven methods for healthcare monitoring and disease screening using multimodal data, including speech signals, physiological responses, and medical imaging.
- Built intelligent sensing systems integrating mobile and embedded devices for scalable digital health applications and real-world health assessment.
- Led interdisciplinary collaborations with clinicians and healthcare researchers to translate computational models into practical clinical screening and monitoring tools.
- Contributed to multiple research publications, grant proposals, and prototype systems in AI-driven healthcare, smart sensing, and digital health technologies..

NEC LABORATORIES AMERICA, INC. • RESEARCH INTERN • OPTICAL NETWORKING SENSING. • 06/2025 – 08/2025

- Leveraged microphone and fiber acoustic signals to enhance the accuracy and robustness of event detection tasks through advanced AI and machine learning methods.

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- Developed and implemented cutting-edge deep learning models to analyze acoustic data, significantly improving detection performance and enabling practical applications for smart infrastructure, safety monitoring, and energy systems.
- Collaborated effectively within interdisciplinary teams to transition theoretical research into impactful real-world solutions, contributing to ongoing advancements in optical networking, intelligent sensing, and LLM-based multimodal analytics.
- Engaged actively in research discussions, knowledge dissemination, and contributed to potential publications and presentations in professional conferences.

UNIVERSITY AT BUFFALO • INTERN • OPTICAL & ULTRASONIC IMAGING LABORATORY. • 07/2020 - 12/2020

- Improved image reconstruction algorithm for breast cancer imaging based on Photoacoustic method.
- Used deep learning to improve the spatial resolution of medical images based on Photoacoustic Tomography technology.

ALL IN PAY Network Services Co., Ltd • BUSINESS MANAGER • FINANCIAL SERVICES DEPT. • 06/2014 - 05/2017

- Participated in development and testing/assessment of payment system for Haitong Securities (a top 3 securities company in China) that increased system stability and operational flexibility.
- Investigated financial ecological cycle of the market, creating forecasts that governed how to handle relevant data. Used data to establish new business program that ensured capital transaction security and veracity of reconciliation.
- Conducted marketing projects and executed new technical projects, including evaluating business processes and reconciliation liquidation process then issuing detailed business report.
- Developed payment products based on varied business requirements of financial institution clients, oversaw launch and captured feedback, and continued development to address issues and change requests.
- Based on client requirements, authored initial product requirement documents and technical interface documents for IT department.