

ABOUT ME

I am a Ph.D. student in Computer Science. I'm broadly interested in deep learning and its applications, including **speech and language processing**, deep transfer learning, and speech-based health diagnosis. My recent work has focused on dementia detection from speech, specifically: i) Effective transfer learning of semantic and non-semantic information[9][8], ii) Explainable models[5] iii) Overcoming lack of domain-similar data in transfer learning[4], iv) Multi-modal learning with large language models[1]. Before Ph.D., my research focused on fine-grained image classification[10][11].

EDUCATION

University of Massachusetts Boston

Ph.D. in Computer Science, Advisor: Xiaohui Liang

Boston, MA, USA

Jan. 2021–Dec. 2024 (Expected)

Nanjing Forestry University

B.E. in Computer Science and Technology, Advisor: Ning Ye

Nanjing, Jiangsu, China

2016–2020

- Thesis: “Sample-wise Selection for Fine-grained Image Classification” (Best Bachelor Thesis Award)

WORK EXPERIENCE

University of Massachusetts Boston

Research Assistant

Boston, MA, USA

Sep. 2021–Current

- Project: Exploiting Voice Assistant Systems for Early Detection of Cognitive Decline (NIH Grant: 1R01AG067416-01)
- Keywords: Speech and language processing, human-computer interaction, AI for healthcare

KPMG Digital Ignition Centre

AI Intern

Nanjing, Jiangsu, China

Aug. 2019–Dec.2019

- Project: Table content extraction in uneditable PDF documents
- Keywords: Computer vision, AI for finance

PUBLICATIONS

I have >100 citations according to Google Scholar, and my h-index is 5.

1. **Youxiang Zhu**, Nana Lin, Xiaohui Liang, John Batsis, Robert Roth and Brian MacWhinney, Evaluating Picture Description Speech for Dementia Detection using Image-text Alignment, International Workshop on Multimodal Learning (Multimodal KDD), 2023.
2. Eli Kurtz, **Youxiang Zhu**, Tiffany Driesse, Bang Tran, John A Batsis, Robert M Roth, Xiaohui Liang, Early Detection of Cognitive Decline Using Voice Assistant Commands, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2023.
3. Xiaohui Liang, John A Batsis, Jing Yuan, **Youxiang Zhu**, Tiffany M Driesse, Josh Schultz, Voice-Assisted Food Recall Using Voice Assistants, 24th International Conference on Human-Computer Interaction, HCII 2022.

4. **Youxiang Zhu**, Xiaohui Liang, John A. Batsis, and Robert M. Roth, Domain-aware Intermediate Pretraining for Dementia Detection with Limited Data, Conference of the International Speech Communication Association (INTERSPEECH), 2022.
5. **Youxiang Zhu**, Bang Tran, Xiaohui Liang, John A. Batsis, and Robert M. Roth. “Towards Interpretability of Speech Pause in Dementia Detection Using Adversarial Learning.” In ICASSP 2022-2022 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), pp. 6462-6466. IEEE, 2022.
6. Bang Tran, **Youxiang Zhu**, Xiaohui Liang, James W. Schwoebel, and Lindsay A. Warrenburg. “Speech Tasks Relevant to Sleepiness Determined With Deep Transfer Learning.” In ICASSP 2022-2022 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), pp. 6937-6941. IEEE, 2022.
7. Xiaohui Liang, John A. Batsis, **Youxiang Zhu**, Tiffany M. Driesse, Robert M. Roth, David Kotz, and Brian MacWhinney. “Evaluating voice-assistant commands for dementia detection.” Computer Speech & Language 72 (2022): 101297.
8. **Youxiang Zhu**, Abdelrahman Obyat, Xiaohui Liang, John A. Batsis, and Robert M. Roth. “WavBERT: Exploiting Semantic and Non-Semantic Speech Using Wav2vec and BERT for Dementia Detection.” Conference of the International Speech Communication Association (INTERSPEECH), pp. 3790-3794. 2021.
9. **Youxiang Zhu**, Xiaohui Liang, John A. Batsis, and Robert M. Roth. “Exploring deep transfer learning techniques for Alzheimer’s dementia detection.” Frontiers in computer science (2021): 22.
10. **Youxiang Zhu**, Ruochen Li, Yin Yang, and Ning Ye. “Learning Cascade Attention for Fine-grained Image Classification.” Neural Networks (2020).
11. **Youxiang Zhu**, Weiming Sun, Xiangying Cao, Chunyan Wang, Dongyang Wu, Yin Yang, and Ning Ye. “TA-CNN: Two-way Attention Models in Deep Convolutional Neural Network for Plant Recognition.” Neurocomputing (2019).
12. Chunyan Wang, Yiqing Xu, Xuelin Wang, Li Zhang, Suyun Wei, Qiaolin Ye, **Youxiang Zhu**, Hengfu Yin, Manoj Nainwal, Luis, Tanon-Reyes, Feng Cheng, Tongming Yin and Ning Ye. “GEsture: an online hand-drawing tool for gene expression pattern search.” PeerJ (2018).

HONORS AND AWARDS

- University of Massachusetts Boston, College of Science and Mathematics Dean’s Doctoral Research Fellowship (support from Oracle), \$13,000 Fall 2023
- Best (First-class) Bachelor Thesis Award of Nanjing Forestry University and Jiangsu Province 2020
- Honorable Mention in Mathematical Contest in Modeling 2018
- First-class Scholarship of Nanjing Forestry University (Top 10%) 2018 and 2019

SKILLS

- **Programming:** Python, Java, Tensorflow, PyTorch
- **Research Fields:** Speech and language processing, Deep transfer learning, Large language models, Spoken language understanding, Speech-based health diagnosis, Multi-modal learning, In-context learning, Fine-grained image classification

TEACHING

- UMB CS697 Special Topics (Speech and Language Processing) Spring 2024
***Co-instructor** with Prof. Xiaohui Liang (The first Speech and Language Processing course at UMB)*

PROFESSIONAL SERVICES

- **Journal Reviewer**
 - IEEE Internet of Things Journal
 - Frontiers in Oncology, section Radiation Oncology
 - IEEE Signal Processing Letters
- **Conference Reviewer**
 - IEEE INFOCOM 2022
 - IEEE ICC 2022

LINKS

- **Github:** <https://github.com/billzyx>
- **Google scholar:** <https://scholar.google.com/citations?user=priGDB0AAAAJ&hl=en>