Enshi Zhang

ezhan004@fiu.edu | Personal Website | Google Scholar | GitHub

Miami, FL | Open to Relocation Nationwide

Summary

I am a Ph.D. candidate in Computer Science at Florida International University with a focus on machine learning and artificial intelligence. My research spans generative AI, multimodal learning, NLP, and foundation models, with experience developing end-to-end ML pipelines, training and evaluating deep learning models, and working with complex real-world datasets.

Technical Skills

Programming & Tools: Python, Java, SQL, Git, Linux
ML Frameworks: PyTorch, Hugging Face Transformers, scikit-learn, NumPy, Pandas
ML Techniques: Deep Learning, Transformers, LLMs, Generative AI, Flow Matching, Multimodal Learning, Model Fine-tuning, Model Evaluation

Research Experience

Graduate Research Assistant | Florida International University

- Developed end-to-end machine learning workflows in Python using PyTorch and Hugging Face Transformers, including data preprocessing, model implementation, fine-tuning, training, and evaluation.
- Built and maintained research software and data infrastructure using Java, Flutter, SQL, and API integrations to support multimodal data collection, management, monitoring, and analysis.
- Designed and ran ML experiments, including baselines, ablation studies, performance evaluations, and error analysis; collaborated with interdisciplinary researchers and mentored undergraduate students.

Selected Research Projects

Generative Modeling with Flow Matching | NeurIPS 2026 Developed a PyTorch-based flow-matching framework for conditional speech generation from sparse and irregular longitudinal data. Designed temporal and progression-aware conditioning mechanisms, implemented model training and evaluation pipelines, and benchmarked generation quality, temporal consistency, and downstream predictive utility.

Multimodal Depression Detection with Adversarial Learning | EMNLP 2025 Developed a Transformer-based framework integrating speech, transcripts, and conversational context for depression detection. Designed a gated modality fusion mechanism and adversarial training strategy to reduce unintended dependencies on interviewer questions, improving model robustness and reliability.

Multimodal Learning and Dataset Development | ACL 2024 Built an end-to-end pipeline to process and integrate speech, text, physiological signals, and survey data from 150 participants. Developed a Transformer-based multimodal learning framework for emotion prediction and evaluated model performance across multiple prediction tasks. Publicly released the dataset and models.

Context-Aware NLP with Large Language Models | IEEE SLT 2024, NeurIPS 2024 Developed LLM-based approaches that leverage ASR transcripts and conversational context for speech emotion recognition. Designed and evaluated contextual input strategies, compared multiple LLMs, and analyzed their impact on prediction performance. Achieved first place in the IEEE SLT GenSEC Challenge.

Longitudinal Data Collection and Quality Analysis | ACM CSCW 2025 Developed a web portal and mobile applications for longitudinal health data collection and monitoring. Managed data collection for an 11-month study involving 150 participants and analyzed data completeness, participant engagement, and system usability to identify factors affecting data quality.

Education

Florida International University, Miami FL, USA — Aug 2021 – Present
Ph.D. in Computer Science — (expected graduation: Dec 2026)
Advisor: Dr. Christian Poellbauer

La Salle University, Philadelphia PA, USA — Aug 2017 – Aug 2018
Master in Business Administration

University of Kansas, Lawrence KS, USA — Aug 2012 – May 2017
B.S. in Mathematics & Accounting

Publications

L-Flow: Longitudinal Flow Matching for Progression-Aware Speech Biomarker Modeling — NeurIPS 2026
Enshi Zhang, Christian Poellabauer

Mitigating Interviewer Bias in Multimodal Depression Detection: An Approach with Adversarial Learning and Contextual Positional Encoding — EMNLP 2025
Enshi Zhang, Christian Poellabauer

MADSurv: An Uncertainty-Aware Framework for Multimodal Cancer Survival Analysis — ACM-BCB 2025
Enshi Zhang, Varun Sai Raigir, Christian Poellabauer, Adrian Kohut, John Michael Templeton, Ananda Mondal, Lexi Weintraub

Participant Engagement and Data Quality: Lessons Learned from a Mental Wellness Crowdsensing Study — ACM SIGCHI CSCW 2025
Enshi Zhang, Rafael Trujillo, Christian Poellabauer

A Multi-dilated Convolution Network for Speech Emotion Recognition — Scientific Reports 2025
Samaneh Madanian, Olayinka Adeleye, John Michael Templeton, Talen Chen, Christian Poellabauer, Enshi Zhang, Sandra L Schneider

Contextual Speech Emotion Recognition with Large Language Models and ASR-Based Transcriptions — NeurIPS Workshop 2024
Enshi Zhang, Christian Poellabauer

Improving Speech-based Emotion Recognition with Contextual Utterance Analysis and LLMs (emotion recognition challenge winner) — IEEE SLT 2024
Enshi Zhang, Christian Poellabauer

The MERSA Dataset and a Transformer-Based Approach for Speech Emotion Recognition — ACL 2024
Enshi Zhang, Rafael Trujillo, Christian Poellabauer

Predicting long-term sleep deprivation using wearable sensors and health surveys — Computers in Biology and Medicine 2023
Rafael Trujillo, Enshi Zhang, Christian Poellabauer

A study on mobile crowd sensing systems for healthcare scenarios — IEEE Access 2023
Enshi Zhang, Rafael Trujillo, Christian Poellabauer

Awards

Florida International University - *Dissertation Fellowship* — Mar 2026
ACM-BCB - *Student and Young Professional Award* — Oct 2025
IEEE SLT GenSEC Challenge - *Speech Emotion Recognition Winner* — Nov 2024
AUT Workshop on Speech Analysis for Neurodegenerative Diseases and Brain Injuries - *Best presentation award* — Feb 2024

Professional Service

Journal Reviewer: IEEE IoT, IEEE Sensors, ACM Computing Surveys, IEEE Transactions on Affective Computing, IEEE Transactions on Wireless Communications

Conference Reviewer: ACM-BCB, ISMAR, ICIS, ICWSM5, CHI, ICASSP, ACM MM, ICLR, NeurIPS

Mentor for Capstone and REU programs at FIU: Spring 2023, Summer 2024, Fall 2024, Spring 2025, Summer 2025, Fall 2025

Teaching

Teaching Assistant - Database Management, FIU	Summer 2025
Teaching Assistant - Discrete Mathematics, FIU	Spring 2024
Teaching Assistant - Data Structure, FIU	Spring 2022