Jingyi Chen

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EDUCATION

The Ohio State University *2019-2025(expected)*
PhD in Computational Linguistics
Advisor: Dr. Micha Elsner and Dr. Andrew Perrault

The Ohio State University *2022-2024*
MS in Computer Science & Engineering, Speech Synthesis, Reinforcement Learning
Advisor: Dr. Andrew Perrault

Sichuan International Studies University *2015-2019*
BA in Linguistics

SELECTED PROJECTS

Controllable Text to Speech Model October 2024
Graduate Research Associate, *Columbus, OH*

- Develop a lightweight text to speech model that can generate high-quality, natural sounding speech in the style of a given speaker (gender, pitch, speaking style, etc).
- Implement LLM as reinforcement learning agent to control text to speech model.
- Work in progress

EMOCLONE: Speech Emotion Cloning August 2024
Intern at Amazon Prime Video, *Sunnyvale, CA*

- Developed a variational autoencoder-based end-to-end speech-to-speech model using adversarial learning techniques.
- Applied reinforcement learning methods to fintune the VAE model for controlling emotion expression, speaker voices, and language settings.
- Designed a novel loss function that integrates reward scoring to enhance fine-tuning efficiency and overall model performance.
- Implemented a new data streaming buffer to optimize data pipelining.
- Performed distributed training using data-parallel processing across a 2-node (8 GPUs) setup.
- Generate a dataset for emotional speech clone task that is an of magnitude larger than existing datasets
- Demo website: `https://delijingyic.github.io/emoclone_demo`

Optimizing Diffusion Speech Synthesis Models with Advanced Reinforcement Learning Techniques May 2024
Graduate Research Associate, *Columbus, OH*

- Investigating and developing advanced reinforcement learning techniques to enhance diffusion speech synthesis models.
- Leveraged PyTorch Lightning to construct and manage the complete pipeline, including data loading, training, and fine-tuning.
- Created a novel loss function that incorporates reward scoring to improve fine-tuning efficiency and model performance.
- Implemented a new data streaming buffer to streamline data pipelining and optimize data handling.
- Conducted training using distributed data-parallel processing across a 2-node (8 GPUs) setup.
- Paper: `https://arxiv.org/pdf/2405.14632`

A RL approach to the tradeoff between memory and prediction in morphological production Jan 2023
Graduate Research Associate, *Columbus, OH*

- Investigated reinforcement learning techniques to optimize transformer models for generating morphological attributes such as number, tense, and person in different languages.
- Develop a reinforcement learning approach to the tradeoff between memory and prediction in morphological production
- Funded by NSF-BCS-2217554; Principal Investigators: Dr. Micha Elsner and Dr. Andrea Sims.

Exploring How GANs Learn Phonological Representations Jan 2023
Graduate Research Associate, *Columbus, OH*

- Applied Generative Adversarial Networks (GANs) to examine phonological representations in language. Successfully trained two Convolutional Neural Network (CNN) models on large datasets of English and French words using an unsupervised learning approach.
- Focused on analyzing intermediate layers of CNNs to reveal linguistic representations extracted from speech data.
- Gained significant insights into CNNs' abilities for recognizing and representing phonological patterns, providing valuable contributions to computational linguistics and natural language processing (NLP).
- Accepted by **ACL 2023 (Area Chair Awards)**.
- Paper: `https://aclanthology.org/2023.acl-long.175.pdf`

SELECTED PUBLICATIONS

Jingyi Chen, Cong Phuoc Huynh, Najmeh Sadoughi, Zemian Ke, Zhu Liu, Micha Elsner, Andrew Perrault., "*EmoClone: Instant speech emotion cloning.*", Under Review.

Jingyi Chen, Ju-Seung Byun, Micha Elsner, Andrew Perrault., "*DLPO: Diffusion Model Loss-Guided Reinforcement Learning for Fine-Tuning Text-to-Speech Diffusion Models.*", Under Review.

Micha Elsner, **Jingyi Chen**, Andrea Sims., "*A reinforcement learning approach to the tradeoff between memory and prediction in morphological production.*", Under Review.

Jingyi Chen, Micha Elsner., "*Exploring How Generative Adversarial Networks Learn Phonological Representations.*", Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers), 2023

FELLOWSHIPS AND AWARDS

ACL 2023 Area Chair Awards (Linguistic Theories, Cognitive Modeling, and Psycholinguistics)	2023
The Center for Cognitive and Brain Sciences Summer Graduate Research Award	2022
Ilse Lehiste Memorial Fund Graduate Research Award	2021-2022
The Ohio State University Fellowship	2019-2020

ACADEMICAL SERVICES

Served as Reviewer for ICLR 2025, AAAI 2025

TECHNICAL SKILLS

Programming Languages	Python, Java, C, R, Praat, SQL
Deep Learning Frameworks	PyTorch, Pandas
Experience	Reinforcement Learning from Human Feedback (RLHF), Continuous online training (On-Policy and Off-Policy RL architecture tuning language model), Large scale distributed model training (data-parallel and model-parallel) techniques, Stable Diffusion, Scalable Diffusion Models with Transformers, Human-in-the-loop