ZIXUAN PAN

phone: +1 734-355-3317 | email: zxp@umich.edu | github: https://github.com/zxp46/

EDUCATION

University of Michigan Ann Arbor, MI, the United States
Bachelor, major in Computer Science Engineering GPA: 3.82/4 *Sep. 2021 – Present*

Joint Institute University of Michigan - Shanghai Jiaotong University Shanghai, China
Bachelor, major in Electrical and Computer Engineering GPA: 3.55/4 *Sep. 2019 – Aug 2021*

RELEVANT EXPERIENCE

Internship at Shanghai Jiaotong University XLANCE Lab Dec. 2020 – May. 2021
Shanghai Jiaotong University *Shanghai, China*

- Advised by Professor Kai Yu. Worked on a machine learning project about applying new generative model on text-to-speech synthesis (specifically in vocoder). I gained knowledge of signal processing, cutting-edge techniques in deep learning, and basic knowledge about text-to-speech synthesis.

Research Assistant at University of Michigan May. 2022 – Aug. 2022
University of Michigan *Ann Arbor, MI, the United States*

- Worked with Professor Andrew Owens on combining generative modelling with self-supervised video learning. I learned a lot about self-supervised video understanding, including temporal contrastive learning methods, multimodal methods, correspondence-aware methods. I'm also gratitude to be given tha chance of leading a project.

Instructional Aide at University of Michigan Aug. 2022 – Present
University of Michigan *Ann Arbor, MI, the United States*

- Working as teaching assistant for EECS 442/504: Foundations of Computer Vision. I am in charge of designing problem sets, holding discussion sessions and office hours. Still in progress.

NOTABLE PROJECTS

DAC: A Double Accelerating Contrastive Learning Framework

- Designed a new framework for contrastive learning, which takes masking and resizing as two different augmentations. Meanwhile, an asychronized contrastive loss for autoencoders is proposed. The model takes advantage of the augmentations and the adjusted autoencoder, enabling pretraining to become both better and faster.

Energy Based Models for Conditional Video Frame Generation

- Using energy based model for adjacent frame generation as well as learning a better frame representation. I proposed a new energy function for Contrastive Random Walk, aiming at realizing motion-aware conditional generation with videos.

Discovering Intrinsic Reward with Contrastive Random Walk

- Designed a new method to define intrinsic rewards in unsupervised Reinforcement Learning. Compared with previous methods, our method borrows ideas from the vision side, which encourages the model to learn better representation when defining intrinsic rewards.

FAD: Feature Alignment Discriminator for Abstractive Text Summarization

- Breaking the discrete nature for applying Generative Adversarial Networks in NLP with a feature matching discriminator. The discriminator is set for text summarization task the finetuning stage, telling generated text from ground truth ones. FAD performs better than using a single transformer (BART) as generator.

Vocoder Review

- Analysed and compared several vocoder models on different datasets. Models include GAN-based models (MelGAN, HifiGAN), flowed-based models (WaveFlow, WaveGlow), and neural harmonic vocoder. I compared their generation quality, training speed and synthesizing speed on both a clean dataset and a low-resolution dataset. I also analysed how these performance were related to different model structures.

TEACHING

- **EECS 442/504** at University of Michigan: Foundations of Computer Vision
- **VY 200** at Joint Institute, Shanghai Jiaotong University: Academic Writing II