

Yizhe Zhu

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SUMMARY

- I am a leading researcher on Diffusion Image/Video Synthesis at Bytedance. From large-scale text-guided image/video generation and editing models to AIGC filters, I transferred the techniques to AIGC production on Tiktok and Douyin.
- 8+ years of combined research and engineering experience with deep expertise in computer vision, deep learning, machine learning, *etc.*
- In-depth knowledge of multi-modality problems (language and vision), deep generative model, disentangled representation learning, and self-supervised learning.
- Specialize in AIGC, with a particular focus on text-guided image/video generation and editing and launching AIGC productions on Tiktok and Douyin.

WORKING EXPERIENCE

ByteDance, Intelligent Creation Lab

Senior Research Scientist

Feb. 2022 - present

Research Scientist

Aug. 2020 - Feb. 2022

- Investigate, prototype, and implement solutions to transfer advanced technologies to ByteDance products.
- Product: Launched multiple AIGC filters on Tiktok and Douyin since 2020, AI portrait, AI Xianxia, AI stylization, AI self etc.
- Image Personalization: a) developed a pioneering finetune-free personalization model, used in AI portrait filter, 18.2M videos are created in Tiktok. b) developed [MoMA](#), a general object personalized image model.
- Image Generation: developed a pioneering large-scale text-to-image model, trained with 1000+ GPUs, and used billions of text-image pairs.
- Video Generation: a) developed [MagicVideo](#), an efficient text-to-video generation framework, to generate high-resolution video of 1024. b) developed [MagicDance](#) for 2D human pose and facial expression retargeting.

NEC Labs America, Inc.

Jun. 2019 - Dec. 2019

Research Intern

- Invented a Controllable Video Generation model with a Sequential VAE by disentangling appearance and motion representation in a self-supervised manner.

Hikvision Research Institute

Jun. 2018 - Sep. 2018

Research Intern

- Developed a conditional latent variable model to generate desirable image features based on class-level attributes, and an alternating back-propagation algorithm to optimize the model.
- Developed a multi-attention localization model for the object-part detection in a weakly-supervised manner, and provided enhanced visual features for Zero-Shot Learning.

EDUCATION

Rutgers University

Ph.D. in Computer Science

Specialties: Computer Vision, Machine Learning, Deep Learning

University of Missouri

Master of Science in Electronic & Computer Engineering

Specialties: Computer Vision, Image Compression

Shanghai University

Bachelor of Science in Electronics & Communication Engineering

Jan. 2015 - May 2020

Advisor: Prof. Ahmed Elgammal

Sep. 2013 - Dec. 2014

Advisor: Prof. Zhihai He

Sep. 2009 - Aug. 2013

SELECTED RESEARCH PUBLICATION

According to [Google Scholar](#), I have authored 18 peer-reviewed publications with a total of 1700+ citations and an h-index of 15.

1. Kunpeng Song, **Yizhe Zhu**, Bingchen Liu, Qing Yan, Xiao Yang, Ahmed Elgammal. MoMA: Multimodal LLM Adapter for Fast Personalized Image Generation. (ECCV under review) 2024 [Project Page](#)
2. Di Chang, Yichun Shi, Quankai Gao, Jessica Fu, Hongyi Xu, Guoxian Song, Qing Yan, **Yizhe Zhu**, Xiao Yang, Mohammad Soleymani. MagicDance: Realistic Human Dance Video Generation with Motions & Facial Expressions Transfer. (arXiv:2311.12052) 2023 [Project Page](#)
3. Daquan Zhou, Weimin Wang, Hanshu Yan, Weiwei Lv, **Yizhe Zhu**, Jiashi Feng. MagicVideo: Efficient Video Generation With Latent Diffusion Models. (arXiv:2211.11018) 2022 [Project Page](#)
4. Yufan Zhou, Bingchen Liu, **Yizhe Zhu**, Xiao Yang, Changyou Chen, Jinhui Xu. Shifted Diffusion for Text-to-image Generation. *International Conference on Computer Vision and Pattern Recognition (CVPR)* 2022
5. Bingchen Liu, **Yizhe Zhu**, Kunpeng Song, Ahmed Elgammal. Towards Faster and Stabilized GAN Training for High-fidelity Few-shot Image Synthesis. *International Conference on Learning Representations (ICLR)* 2021
6. **Yizhe Zhu**, Martin Renqiang Min, Asim Kadav, Hans Peter Graf. S3VAE: Self-Supervised Sequential VAE for Representation Disentanglement and Data Generation. *International Conference on Computer Vision and Pattern Recognition (CVPR)* 2020
7. Xingchao Peng, Zijun Huang, **Yizhe Zhu**, Kate Saenko. Federated Adversarial Domain Adaptation. *International Conference on Learning Representations (ICLR)* 2020
8. Bingchen Liu, **Yizhe Zhu**, Zuohui Fu, Gerard de Melo, Ahmed Elgammal. OOGAN: Disentangling GAN with One-Hot Sampling and Orthogonal Regularization. (**AAAI**) 2020
9. **Yizhe Zhu**, Jianwen Xie, Bingchen Liu, Ahmed Elgammal. Learning Feature-to-Feature Translator by Alternating Back-Propagation for Zero-Shot Learning. *International Conference on Computer Vision (ICCV)* 2019
10. **Yizhe Zhu**, Jianwen Xie, Zhiqiang Tang, Xi Peng, Ahmed Elgammal. Semantic-Guided Multi-Attention Localization for Zero-Shot Learning. *Neural Information Processing Systems (NeurIPS)* 2019
11. Zhiqiang Tang, Xi Peng, Tingfeng Li, **Yizhe Zhu**, Dimitris N Metaxas. AdaTransform: Adaptive Data Transformation. *International Conference on Computer Vision (ICCV Oral)* 2019
12. **Yizhe Zhu**, Mohamed Elhoseiny, Bingchen Liu, Ahmed Elgammal. A Generative Adversarial Approach for Zero-Shot Learning from Noisy Texts. *International Conference on Computer Vision and Pattern Recognition (CVPR)* 2018.
13. Zhiqiang Tang, Xi Peng, Shijie Geng, **Yizhe Zhu**, Dimitris Metaxas. CU-Net: Coupled U-Nets. *British Machine Vision Conference (BMVC Oral)* 2018.

14. **Yizhe Zhu**, Ahmed Elgammal. A Multilayer-Based Framework for Online Background Subtraction with Freely Moving Cameras. *International Conference on Computer Vision (ICCV)* 2017
15. Mohamed Elhoseiny*, **Yizhe Zhu***, Han Zhang, Ahmed Elgammal. Link the head to the beak: Zero Shot Learning from Noisy Text Description at Part Precision. *International Conference on Computer Vision and Pattern Recognition (CVPR)* 2017 (* means Co-first authors)

ACADEMIC SERVICES

Conference Reviewer: CVPR, ICCV, ECCV, ICLR, NeurIPS, AAAI	2018 ~ present
Journal Reviewer: TPAMI, IJCV	2018 ~ present

AWARDS, GRANTS, & HONORS

Student Travel Grant, US National Science Foundation (NSF)	2017 ~ 2021
Research Assistant Scholarship	2018 ~ 2020
Teaching Assistant Scholarship	2016 ~ 2017
Excellent Student Award in SHU	2012
Recognition Award from Shanghai Innovation Experiment Program for University Students	2012
The First Prize Scholarship in SHU	2010 ~ 2012