YE ZHU (SHE/HER)

Homepage
Google Scholar
yezhu@princeton.com

RESEARCH INTERESTS

Main Research: Multimodal Learning and Generation (Vision, Audio and Language), Computer Vision
Interdisciplinary: Machine Learning for Astrophysics

PROFESSIONAL APPOINTMENT

Princeton University, USA September 2023 - Now
Postdoctoral Research Associate in Computer Science.
Advisor: Prof. Olga Russakovsky.

EDUCATION

Illinois Institute of Technology, USA September 2023
Ph.D. in Computer Science.
Thesis: Multimodal Learning and Generation - Toward a Multisensory and Creative AI System. (Award for Excellence in Dissertation)
Advisor: Prof. Yan Yan.

Princeton University, USA September 2022 - June 2023
Visiting Ph.D. in Computer Science.
Advisor: Prof. Olga Russakovsky.

Shanghai Jiao Tong University (SJTU), China March 2019
M.S. in Mechanical Engineering.
French Engineering Diploma.

Ecole Polytechnique (X), France September 2016 - March 2017
Exchange Master Student in Engineering.

Shanghai Jiao Tong University (SJTU), China August 2016
B.S. in Mechanical and Automation.
Pre-enrollment before Chinese College Entrance Examination.

PUBLICATIONS

(* for equal contributions)

Preprints

[1] Yongqi Yang*, Zhihao Qian*, **Ye Zhu**, and Yu Wu. D^3: Scaling Up Deepfake Detection by Learning from Discrepancy. (arXiv preprint, arXiv:2404.04584), 2024. [*Paper*]

[2] **Ye Zhu**, Yu Wu, Duo Xu, Zhiwei Deng, Yan Yan, and Olga Russakovsky. Discovery and Expansion of New Domains within Diffusion Models. (arXiv preprint, arXiv:2310.09213), 2023. [*Paper*] [*Code*]

[3] Sai Wang*, **Ye Zhu***, Ruoyu Wang, Amaya Dharmasiri, Olga Russakovsky, and Yu Wu. DETER: Detecting Edited Regions for Deterring Generative Manipulations. (arXiv preprint, arXiv:2312.10539), 2023. [*Paper*] [*Project*]

***Computer Science* Conference and Journal Publications, 2020 - Now**

[1] **Ye Zhu**, Yu Wu, Nicu Sebe, and Yan Yan. Vision + X: A Survey on Multimodal Learning in the Light of Data. in *IEEE Transactions on Pattern Analysis and Machine Intelligence* (**TPAMI**), 2024. [*Paper*]

[2] William Yang, **Ye Zhu**, Zhiwei Deng, Olga Russakovsky. What is Dataset Distillation Learning?, in *International Conference on Machine Learning* (**ICML**), 2024. [*Paper*]

[3] Ruoyu Wang*, Yongqi Yang*, Zhihao Qian, **Ye Zhu**, and Yu Wu. Diffusion in Diffusion: Cyclic One-Way Diffusion for Text-Vision-Conditioned Generation, in *International Conference on Learning Representations* (**ICLR**), 2024. [*Paper*] [*Code*] [*Project*]

[4] **Ye Zhu***, Zhenhao Zhao*, Xiaoguang Zhu, Yuzhang Shang, and Yan Yan. Supplementing Missing Visions via Dialog for Scene Graph Generations, in *IEEE International Conference on Acoustics, Speech and Signal Processing* (**ICASSP**), 2024. [*Paper*] [*Code*]

[5] Bin Duan, Hao Tang, Changchang Sun, **Ye Zhu**, and Yan Yan. Mining and Unifying Heterogeneous Contrastive Relations for Weakly-Supervised Actor-Action Segmentation, in *Winter Conference on Applications of Computer Vision* (**WACV**), 2024. [*Paper*]

[6] **Ye Zhu**, Yu Wu, Zhiwei Deng, Olga Russakovsky, and Yan Yan. Boundary Guided Learning-Free Semantic Control with Diffusion Models, in *Conference on Neural Information Processing Systems* (**NeurIPS**), 2023. [*Paper*] [*Code*] [*Project*] [*Hugging face*]

[7] **Ye Zhu**, Yu Wu, Kyle Olszewski, Jian Ren, Sergey Tulyakov, and Yan Yan. Discrete Contrastive Diffusion for Cross-Modal Music and Image Generation, in *International Conference on Learning Representations* (**ICLR**), 2023. [*Paper*] [*Code*] [*Project*]

[8] Matthew Coleman, Olga Russakovsky, Christine Allen-Blanchette, and **Ye Zhu**. Discrete Diffusion Reward Guidance Methods for Offline Reinforcement Learning, in *International Conference on Machine Learning, Sampling and Optimization in Discrete Space (SODS) Workshop* (**ICML Workshop**), 2023. [*Paper*]

[9] Duo Xu, Jonathan Ta, Chia-Jung Hsu, and **Ye Zhu**. Denoising Diffusion Probabilistic Models to Predict the Number Density of Molecular Clouds in Astronomy, in *International Conference on Learning Representations Physics4ML Workshop* (**ICLR Workshop**), 2023. [*Paper*]

[10] **Ye Zhu**, Kyle Olszewski, Yu Wu, Panos Achlioptas, Menglei Chai, Yan Yan, and Sergey Tulyakov. Quantized GAN for Complex Music Generation from Dance Videos, in *European Conference on Computer Vision* (**ECCV**), 2022. [*Paper*] [*Code*] [*Project*]

[11] **Ye Zhu**, Yu Wu, Yi Yang, and Yan Yan. Saying the Unseen: Video Descriptions via Dialog Agents, in *IEEE Transactions on Pattern Analysis and Machine Intelligence* (**TPAMI**), 2022. [*Paper*] [*Code*]

[12] **Ye Zhu**, Yu Wu, Hugo Latapie, Yi Yang, and Yan Yan. Learning Audio-Visual Correlations From Variational Cross-Modal Generations, in *IEEE International Conference on Acoustics, Speech and Signal Processing* (**ICASSP**), 2021. [*Paper*] [*Code*]

[13] Xiaoguang Zhu, **Ye Zhu**, Haoyu Wang, Honglin Wen, Yan Yan, and Peilin Liu. Skeleton Sequence and RGB Frame Based Multi-Modality Feature Fusion Network for Action Recognition, in *ACM Transactions on Multimedia Computing Communications and Applications* (**TOMM**), 2021. [*Paper*]

[14] **Ye Zhu**, Yu Wu, Yi Yang, and Yan Yan. Describing Unseen Videos via Multi-Modal Cooperative Dialog Agents, in *European Conference on Computer Vision* (**ECCV**), 2020. [*Paper*] [*Code*]

[15] **Ye Zhu**, Yan Yan, and Oleg Komogortsev. Hierarchical HMM for Eye Movement Classification, in *European Conference on Computer Vision Workshop* (**ECCV Workshop**), 2020. [*Paper*]

***Astrophysics* Journal Publications, 2023 - Now**

[1] Duo Xu, **Ye Zhu**. Surveying Image Segmentation Approaches in Astronomy. in *Astronomy and Computing*, 2024. [*Paper*]

[2] Duo Xu, Jonathan Tan, Chia-Jung Hsu, and **Ye Zhu**. Denoising Diffusion Probabilistic Models to Predict the Density of Molecular Clouds, in *The Astrophysics Journal* (**APJ**), 2023. [*Paper*]

INDUSTRIAL INTERNSHIP

Snap Inc., Remote, USA May 2021 - August 2021
Research intern in Computer Vision, advised by Dr. Kyle Olszewski

· Project: Music generation conditioned on dance videos.

Bang & Olufsen, Struer, Denmark July 2018 - December 2018
Research intern in Computer Vision, advised by Dr. Sven Ewan Shepstone and Dr. Pablo Martinez-Nuevo

· Project: 3D indoor scene understanding via point clouds.

TALKS

CVPR Responsible Data Workshop, Seattle, USA June, 2024
- *DETER: Detecting Edited Regions for Deterring Generative Manipulations*

Talking to Machines Workshop, Riga, Latvia *(Remote)* May, 2024
- *GenAI as Content Creators and Beyond*

New York University, New York, USA April, 2024
- *Mining the Latent: A Tuning-Free Paradigm for Versatile Applications with Diffusion Models*

ByteDance *(Remote)* March, 2024
- *Mining the Latent: A Tuning-Free Paradigm for Versatile Applications with Diffusion Models*

MaVi Group, University of Bristol, UK *(Remote)* February, 2024
- *Mining the Latent: A Tuning-Free Paradigm for Versatile Applications with Diffusion Models*

AI forum, Bang & Olufsen, Copenhagen, Denmark October, 2023
- *Multimodal Learning and Generation*

Joint talk with Prof. Olga Russakovsky at ICML Workshop, Hawaii, USA July 2023
- *Art, Science and Challenges of Generative AI*

Wuhan University, Wuhan, China May 2023
- Topics on diffusion generative models, ML4Astrophysics.

Shanghai Jiao Tong University (SJTU), Shanghai, China May 2023
- Topic on diffusion generative models, ML4Astrophysics.

Guest course lecture, Princeton University, USA April 2023
- Guest lecture for the COS429 Computer Vision, topic on diffusion generative models.

Invited speaker for ZHIDX Tech, China *(Remote)* April 2023
- Topic on multimodal generation for music and images, live talk.

PIXL talk, Princeton University, USA April 2023
- Topic on diffusion generative models, ML4Astrophysics.

OUTREACH AND TEACHING

AI4ALL Program, Princeton University, USA July 2023
- Instructor for the NLP project.
- Mentor for high school students to create an emotionally supportive Chatbot.
- Media Coverage on AI4ALL Princeton

FEATURED HONORS AND AWARDS

NeurIPS 2023 Scholar Award, New Orleans, USA	2023
ICCV 2023 DEI Grant, Paris, France	2023
ICLR 2023 Financial Assistance Award, Kigali, Rwanda	2023
ACM-Women Scholarship [Coverage]	2023
Award for Excellence in Dissertation Research for the College of Computing, IIT, USA	2022
CVPR 2022 Travel Grant Award, New Orleans, USA	2022
Merrick Merit Fellowship, Texas, USA	2019
First Class Academic Excellence Scholarship for Graduate Students of SJTU, China	2018
First Class Academic Excellence Scholarship for Graduate Students of SJTU, China	2017
Meritorious Winne in Mathematical Contest in Modeling (MCM)	2015
Second Class Academic Excellence Scholarship for Undergraduate Students of SJTU, China	2015

PROFESSIONAL SERVICE

Workshop Organizer

CVPR 2024 ReGenAI Workshop (First Workshop on **Re**sponsible **Gen**erative **AI**)

Conference Reviewer

In Computer Vision: CVPR 2022-2024, ECCV 2022-2024, ICCV 2023, ACMMM 2021-2022, WACV 2023-2024

In Machine Learning: NeurIPS 2023-2024, ICLR 2024, ICML 2023-2024, AAAI 2023-2024

In Computer Graphics: SIGGRAPH 2024

In Signal Processing: ICASSP 2022

Journal Reviewer

IEEE Transactions on Image Processing (TIP), IEEE Transactions on Multimedia (TMM), Neurocomputimg, Knowledge-Based Systems

STUDENT ADVISOR

Matthew Coleman, Discrete Diffusion Reward Guidance for Offline RL	Undergrad, Princeton University
Amaya Dharmasiri, DETER dataset for Detecting Generative Manipulations	PhD student, Princeton University
William Yang, Dataset Disllation Analysis	PhD student, Princeton University
Ruoyu Wang, Cyclic Diffusion for Text-Visual Conditioned Generation	Undergrad, Wuhan University
Yongqi Yang, Cyclic Diffusion for Text-Visual Conditioned Generation	MS student, Wuhan University
Sai Wang, DETER dataset for Detecting Generative Manipulations	PhD student, Wuhan University

LINGUISTIC SKILLS AND OTHERS

Chinese (Native Proficiency)

English (Professional Proficiency)

French (Professional Proficiency, DALF & TCF C1 Diploma)

French-Chinese Translator for the European Science Magazine *Science&Vie*