YE ZHU (SHE/HER)

Homepage
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RESEARCH INTERESTS

Main Research: Multimodal Learning (Vision, Audio and Language), Generative Models, 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.
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.

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.

FEATURED PUBLICATIONS

Preprints

[1] **Ye Zhu**, Yu Wu, Nicu Sebe, and Yan Yan. Vision+X: A Survey on Multimodal Learning in the Light of Data. (arXiv preprint: arXiv:2210.02884), 2022. [*Survey Paper*]

[2] Yongqi Yang, Ruoyu Wang, Zhihao Qian, **Ye Zhu**, Yu Wu. Diffusion in Diffusion: Cyclic One-Way Diffusion for Text-Vision-Conditioned Generation. (arxiv preprint: arXiv:2306.08247), 2023. [*Paper*] [*Project*]

Computer Science Conference and Journal Publications, 2020 - Now

[1] **Ye Zhu**, Yu Wu, Zhiwei Deng, Olga Russakovsky, and Yan Yan. Boundary Guided Mixing Trajectory for Semantic Control with Diffusion Models, in *Conference on Neural Information Processing Systems* (**NeurIPS**), 2023. [*Paper*] [*Code*] [*Project*]

[2] **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*]

[3] 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*]

[4] 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*]

[5] **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*]

[6] **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**), 2021. [*Paper*] [*Code*]

[7] **Ye Zhu**, Yu Wu, Hugo Latapie, Yi Yang, 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*]

[8] Xiaoguang Zhu, **Ye Zhu**, Haoyu Wang, Honglin Wen, Yan Yan, 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*]

[9] **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*]

[10] **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, 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

Invited speaker at AI forum, Bang & Olufsen, Copenhagen, Denmark October, 2023
- Topics on Multimodel Learning and Generation.

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

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

Invited speaker at 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.

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

Guest speaker for the AI club, Bang & Olufsen, Denmark *(Remote)* November 2022
- Topic on multimodal learning and generation for audio and music data.

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 from NBC

CS4310 Computer Networks, Texas State University, USA 2019 and 2020
- Teaching Assistant

CS4328 Operating Systems, Texas State University, USA 2020
- Teaching Assistant

FEATURED HONORS AND AWARDS

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 State University, USA	2019
First Class Academic Excellence Scholarship for Graduate Students of SJTU, China	2017&2018
Meritorious Winne in Mathematical Contest in Modeling (MCM)	2015
Second Class Academic Excellence Scholarship for Undergraduate Students of SJTU, China	2015

PROFESSIONAL SERVICE

Conference Reviewer
In Computer Vision: CVPR 2022-2023, ECCV 2022, ICCV 2023, ACMMM 2021-2022, WACV 2023-2024
In Machine Learning: NeurIPS 2023, ICLR 2024, ICML 2023, AAAI 2023-2024
In Signal Processing: ICASSP 2022
Journal Reviewer
IEEE Transactions on Multimedia, Neurocomputimg, Knowledge-Based Systems

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*