

Zhongqi Yue

BUILDING TRUSTWORTHY MULTIMODAL AGENTS: POST-TRAINING | MULTIMODAL MODELS | CAUSAL INFERENCE

15+ top-tier publications (NeurIPS, ICLR, CVPR, ICCV), with 40% oral/highlight selections.

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Research Summary

My research lies at the intersection of *post-training for LLMs*, *multimodal LLMs*, and *causal inference*.

- My most recent project [EARL](#) proposes a new paradigm for post-training LLMs with external environments, which decouples environment interactions from language by internalizing them in an expanded action space.
- I proposed a diffusion-based unsupervised representation learning method (ICLR 2024) and subsequently pioneered the [Selftok](#) image tokenizer (**CVPR 2025 best student paper honorable mention**). I supervised multimodal data generation/selection (multiple **oral/highlight** papers), and directed large-scale multimodal LLMs pre-training and post-training on 150+ GPUs ([technical report](#)).
- Previously, I studied disentangled representation learning through contrastive objectives, and explored machine generalization problems (e.g., zero-/few-shot learning, domain adaptation) from a causal perspective.

Professional Experience

Wallenberg-NTU Presidential Postdoctoral Fellowship

PRINCIPAL INVESTIGATOR

Singapore & Sweden
01.2024-02.2026 (Expected)

- 2024 - 2025: with Prof. Hanwang Zhang at MReal Lab, Nanyang Technological University
- 2025 - 2026: with Assoc. Prof. Fredrik D. Johansson at Healthy AI Lab, Chalmers University of Technology

Sea AI Lab (SAIL)

RESEARCH INTERN

Singapore
10.2023 - 12.2023

- Supervisor: Asst Prof. Pan Zhou

Alibaba-NTU Singapore Joint Research Institute

ALIBABA PHD STUDENT

Singapore
08.2019 - 08.2023

- Advisor: Xian-Sheng Hua (IEEE Fellow)

Nanyang Technological University

PH.D IN COMPUTER SCIENCE

Singapore
08.2019 - 12.2023

- Advisor: Prof. Hanwang Zhang
- Thesis: Causal View of Generalization

Selected Publications

Expanding the Action Space of LLMs to Reason Beyond Language

Zhongqi Yue*, Weishi Wang*, Yundaichuan Zhan, Juncheng Li, Daniel Dahlmeier, Fredrik D. Johansson
NeurIPS 2025 Math-AI

Generative Multimodal Pretraining with Discrete Diffusion Timestep Tokens

Kaihang Pan*, Wang Lin*, **Zhongqi Yue***, Tenglong Ao, Liyu Jia, Wei Zhao, Juncheng Li, Siliang Tang, Hanwang Zhang
*CVPR 2025, **Best Student Paper Honorable Mention** 7/13008*

Selftok: Discrete Visual Tokens of Autoregression, by Diffusion, and for Reasoning

Bohan Wang, **Zhongqi Yue**, Fengda Zhang, S. Chen, Li'an Bi, J. Zhang, Xue Song, Kennard Yanting Chan, Jiachun Pan, Weijia Wu, Mingze Zhou, Wang Lin, Kaihang Pan, Saining Zhang, Liyu Jia, Wentao Hu, Wei Zhao, Hanwang Zhang
Technical Report 2025, Technical Lead

Object Fusion via Diffusion Time-step for Customized Image Editing with Single Example

Xue Song, **Zhongqi Yue**, Jiequan Cui, Hanwang Zhang, Jingjing Chen, Yu-Gang Jiang
*AAAI 2026, **Oral Presentation***

When are Radiology Reports Useful for Training Medical image Classifiers?

Herman Bergström, **Zhongqi Yue**, Fredrik D. Johansson
EurIPS 2025 MMRL4H & MedEurIPS, **Oral Presentation (Both Workshops)**

Mastering Collaborative Multi-modal Data Selection

Qifan Yu*, Zhebei Shen*, **Zhongqi Yue***, Yang Wu, W. Zhang, Y. Li, Juncheng Li, Siliang Tang, Yueting Zhuang
ICCV 2025, **Highlight 262/11239**

AnyEdit: Mastering Unified High-quality Image Editing for Any Idea

Qifan Yu*, Wei Chow*, **Zhongqi Yue***, Kaihang Pan, Y. Wu, X. Wan, Juncheng Li, S. Tang, Hanwang Zhang, Yueting Zhuang
CVPR 2025, **Oral Presentation 96/13008**

Exploring Diffusion Time-steps for Unsupervised Representation Learning

Zhongqi Yue, Jiankun Wang, Qianru Sun, Lei Ji, Eric I-Chao Chang, Hanwang Zhang
ICLR 2024

Self-Supervised Learning Disentangled Group Representation as Feature

Tan Wang, **Zhongqi Yue**, Jianqiang Huang, Qianru Sun, Hanwang Zhang
NeurIPS 2021, **Spotlight Presentation 260/9122; 2022 PREMIA Best Paper**

Transporting Causal Mechanisms for Unsupervised Domain Adaptation

Zhongqi Yue, Qianru Sun, Xian-Sheng Hua, Hanwang Zhang
ICCV 2021, **Oral Presentation 210/6236**

Other Publications

Selftok-Zero: Reinforcement Learning for Visual Generation via Discrete and Autoregressive Visual Tokens

Bohan Wang, Mingze Zhou, **Zhongqi Yue**, Wang Lin, Kaihang Pan, Liyu Jia, Wentao Hu, Wei Zhao, Hanwang Zhang
NeurIPS 2025

Counterfactual Evolution of Multimodal Datasets via Visual Programming

Minghe Gao*, **Zhongqi Yue***, W. Yan, Y. Hu, Wei Ji, Siliang Tang, Jun Xiao, Tat-Seng Chua, Yueting Zhuang, Juncheng Li
NeurIPS 2025

Benchmarking Multimodal CoT Reward Model Stepwise by Visual Program

Minghe Gao, Xuqi Liu, **Zhongqi Yue**, Y. Wu, S. Chen, Juncheng Li, Siliang Tang, Fei Wu, Tat-Seng Chua, Yueting Zhuang
ICCV 2025

Few-shot Learner Parameterization by Diffusion Time-steps

Zhongqi Yue, Pan Zhou, Richang Hong, Hanwang Zhang, Qianru Sun
CVPR 2024

Make the U in UDA Matter: Invariant Consistency Learning for Unsupervised Domain Adaptation

Zhongqi Yue, Qianru Sun, Xian-Sheng Hua, Hanwang Zhang
NeurIPS 2023 (WILDS 2.0 Leaderboard 1st Place)

Invariant Feature Regularization for Fair Face Recognition

Jiali Ma, **Zhongqi Yue**, Tomoyuki Kagaya, Tomoki Suzuki, Karlekar Jayashree, Sugiri Pranata, Hanwang Zhang
ICCV 2023

Random Boxes are Open-world Object Detectors

Yanghao Wang, **Zhongqi Yue**, Xian-Sheng Hua, Hanwang Zhang
ICCV 2023

Unbiased Multiple Instance Learning for Weakly Supervised Video Anomaly Detection

Hui Lv, **Zhongqi Yue**, Qianru Sun, Bin Luo, Zhen Cui, Hanwang Zhang
CVPR 2023

Counterfactual Zero-Shot and Open-Set Visual Recognition

Zhongqi Yue*, Tan Wang*, Qianru Sun, Xian-Sheng Hua, Hanwang Zhang
CVPR 2021

Interventional Few-Shot Learning

Zhongqi Yue, Hanwang Zhang, Qianru Sun, Xian-Sheng Hua
NeurIPS 2020

Academic Services

INVITED TALKS

2025. *Post-training LLM Agents with Expanded Action Space*. Invited talk at DSAI seminar, Chalmers.

2025. *Generative Multimodal Pretraining with Discrete Diffusion Timestep Tokens*. Oral presentation at CVPR.

2025. *AnyEdit: Mastering unified high-quality image editing for any idea..* Oral presentation at CVPR.

2025. *Large Language Models: How Machines Learned to Talk and Think*. Invited talk at Huawei Singapore Research Center.

2025. *The Rise of Multimodal LLM: How Machines Learned to See and Draw*. Invited talk at Huawei Singapore Research Center.

2024. *Tokenizer is Key to Next-Gen AR Modelling*. Invited talk at Huawei Singapore Research Center.

2024. *Visual Autoregressive Modelling*. Invited talk by NUS NExT Research Centre.

2024. *Visual Autoregressive Modelling*. Invited talk by Skywork AI.

2021. *Interventional Learning*. Invited talk by the Lab for Media Search (LMS) in NUS and NExT Research Centre.

2020. *Interventional Few-Shot Learning*. Invited talk by Jiantao Jiao's Lab in UC Berkeley.

TEACHING EXPERIENCE

Sem 1, AY2025-26	Neuro-Symbolic AI , Guest Lecturer	Chalmers
Sem 1, AY2023-24	Algorithm Design and Analysis , Assistant Lecturer	NTU
Sem 2, AY2022-24	Artificial Intelligence , Teaching Assistant	NTU
Sem 1, AY2021-22	Microprocessor System Design and Development , Teaching Assistant	NTU

PEER REVIEW

Conference & journal reviewer for NeurIPS, CVPR, ICCV, ICML, UAI, ECCV, IJCAI, ACM MM, TPAMI, TMLR, IJCV, T-RO.

Awards & Scholarships

2024-2026 **Wallenberg-NTU Presidential Postdoctoral Fellow**, NTU & WASP

2019-2023 **Alibaba Talent Program Scholar**, Alibaba Cloud

2015-2016 **NTU President Research Scholar**, Nanyang Technological University

2011-2017 **MOE SM2 Scholar** (200 candidates annually in China), MOE Singapore

2018 **Certified SCRUM Master**, SCRUM Alliance

2018 **AWS Certified Solution Architect & Developer**, Amazon Web Services

2017 **Shape The Future Global Innovation Winner** (2/300), Tata Communications

2017 **AWS Hack Day 2017 2nd Prize**, Amazon Web Services

2015-2017 **Dean's List and Academic Excellence Award**, Nanyang Technological University

Skills

Recently Used: Python, PyTorch, Tensorflow, \LaTeX ;

Previously Used: C++, Java, Javascript, Frontend & backend development.