

# WENYI MO

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## EDUCATION

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### Renmin University of China

*M.S. in Artificial Intelligence*

- Advisor: Prof. Bing Su.

Beijing, China

*Sep. 2022 – Jun. 2025 (Expected)*

### South China University of Technology

*B.E. in Computer Science*

- GPA: 3.91 / 4.0; Rank: 3 / 169

Canton, China

*Sep. 2018 – Jun. 2022*

## RESEARCH INTERESTS

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My research interests primarily lie in multimodal learning, with a focus on enhancing user alignment in generative models and improving image controllability in text-based conditions. Recently, I have concentrated on generative models (such as autoregressive models and diffusion models) and their applications, including aligning individual preferences and text-to-image generation.

## PUBLICATIONS

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### Dynamic Prompt Optimizing for Text-to-Image Generation

*Proc. IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), Seattle, USA Jun. 16 - 20, 2024*

- **Wenyi Mo**, Tianyu Zhang, Yalong Bai, Bing Su, Ji-Rong Wen, Qing Yang
- [\[paper\]](#) [\[code\]](#)
- *TL;DR*: A reinforcement learning-based method for prompt optimization to improve text-to-image generation quality and user alignment.
- With Prompt Auto-Editing (PAE), we propose a two-stage training process that refines text prompts by adjusting modifiers, effect ranges, and weights. Our approach enables better semantic alignment and aesthetic quality in generated images, as validated by improvements in Aesthetic Score and PickScore over baseline methods on multiple datasets.

### Uniform Attention Maps: Boosting Image Fidelity in Reconstruction and Editing

*Proc. IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), Tucson, USA Feb. 28 - Mar. 4, 2025*

- **Wenyi Mo**, Tianyu Zhang, Yalong Bai, Bing Su, Ji-Rong Wen
- *TL;DR*: A tuning-free image editing technique that enhances fidelity in diffusion-based models using uniform attention maps.
- Our method replaces conventional cross-attention with uniform attention maps to achieve higher fidelity in image reconstruction. Additionally, we introduce an adaptive mask-guided editing process that preserves original image details while applying precise edits. Experimental results demonstrate significant improvements in PSNR and LPIPS metrics, showcasing our method's effectiveness in maintaining background consistency and target area accuracy.

### MetaMask: Revisiting Dimensional Confounder for Self-Supervised Learning

*Proc. Advances in Neural Information Processing Systems (NeurIPS), New Orleans, USA, **Spotlight** Nov. - Dec. , 2022*

- Jiangmeng Li, Wenwen Qiang, Yanan Zhang, **Wenyi Mo**, Changwen Zheng, Bing Su, and Hui Xiong.
- [\[paper\]](#) [\[code\]](#)

### Supporting Vision-Language Model Inference with Causality-pruning Knowledge Prompt

*Arxiv Preprint.*

2024

- **Wenyi Mo\***, Jiangmeng Li\*, Wenwen Qiang, Bing Su, and Changwen Zheng.
- [\[paper\]](#) [\[code\]](#)

## RESEARCH EXPERIENCE

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| <b>Research Intern</b><br><i>University of California, Santa Cruz</i> <ul style="list-style-type: none"><li>• Supervisor: Prof. Cihang Xie</li><li>• Research focus: Vision-Language Learning</li></ul>        | Mar. 2024 – Present<br><i>Remote</i>            |
| <b>Research Intern</b><br><i>ByteDance, Applied Machine Learning Group</i> <ul style="list-style-type: none"><li>• Supervisor: Dr. Yongfei Liu</li><li>• Research focus: Controlled Image Generation</li></ul> | Jan. 2024 – Mar. 2024<br><i>Shanghai, China</i> |
| <b>Research Intern</b><br><i>Du Xiaoman Technology</i> <ul style="list-style-type: none"><li>• Supervisor: Dr. Yalong Bai</li><li>• Research focus: Text-to-Image with Diffusion Model</li></ul>               | Sep. 2023 – Jan. 2024<br><i>Beijing, China</i>  |

## PROJECTS

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| <b>Prompt Optimizing for Text-to-Image Generation</b> <ul style="list-style-type: none"><li>• Proposed the Prompt Auto-Editing (PAE) method to dynamically optimize text prompts in text-to-image generation using reinforcement learning.</li><li>• Introduced a two-stage training process: initial fine-tuning followed by online reinforcement learning to automatically adjust prompt modifiers, effect ranges, and weights.</li><li>• Outperformed baseline methods on multiple datasets, with significant improvements in Aesthetic Score, CLIP Score, and PickScore. Achieved an Aesthetic Score of 6.12 (0.05 higher than human performance) and a PickScore of 73.9%, surpassing human-written prompts by 1.4%.</li></ul> | Sep. 2023 – Jan. 2024 |
| <b>Image Reconstruction and Editing using diffusion model</b> <ul style="list-style-type: none"><li>• Developed a tuning-free image editing method that enhances image reconstruction fidelity in diffusion-based models using uniform attention maps.</li><li>• Proposed an adaptive mask-guided editing technique to ensure consistency and precision during editing tasks.</li><li>• Achieved notable improvements in reconstruction on the CelebA-HQ dataset, with an SSIM of 0.839 and a reduced LPIPS of 0.041. On the PIE benchmark, demonstrated a 12.4% improvement in background consistency (measured by MSE) and a 1.4% enhancement in editing accuracy for target areas (measured by CLIP Score).</li></ul>            | Jan. 2024 - Sep. 2024 |

## SELECTIVE SCHOLARSHIPS AND AWARDS

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- **China National Scholarship:** Awarded to the top **1%** in the School of Computer Science. 2019
- **China National Encouragement Scholarship:** Awarded to the top **3%** in the School of Computer Science. 2021
- **Renmin University of China Scholarship,** 2024

## TEACHING EXPERIENCES

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- Teaching Assistant: RUC, Comprehensive Artificial Intelligence Design, 2023 Fall
- Teaching Assistant: RUC, Artificial Intelligence and Python Programming, 2023 Summer

## PAPER REVIEWS

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- **Conference Reviewer:** NeurIPS 2024, ICLR 2025, WACV 2025, AISTATS 2025.

## TECHNICAL SKILLS

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- Languages: Python, C/C++, LaTeX
- Frameworks: Pytorch