# Yu Lei

(+86) 135-6890-2648 leiyu2648@gmail.com Personal Website @torpedo2003

## RESEARCH INTERESTS

**Current Research Areas (2024–Present):** Personalized Image Generation • Preference Optimization for Generative Models • World Models and Physical Consistency

**Previous Research Areas (2022–2024):** Medical Image Segmentation • Weakly Supervised Learning

**Related Competition Award:** Ranked first in Phase 2 of the Image-to-Video Consistency Challenge at the CVPR 2026 VGBE Workshop; the final ranking is pending.

## EDUCATION

**Ph.D. Student in Computer Science and Technology** — **Sep. 2025 – Present**

*Institute of Computing Technology, Chinese Academy of Sciences (VIPL Group)* — Beijing

Advisor: Prof. Liang Li

*Research Areas: AIGC, Video Generation, World Models*

**B.Eng. in Artificial Intelligence** — **Sep. 2021 – Jun. 2025**

*College of Computer Science, Sichuan University* — Chengdu

Advisors: Prof. Lituan Wang and Prof. Lei Zhang

*Honors: National Scholarship, Baosteel Scholarship (only six undergraduate recipients), Outstanding Graduate*

## RESEARCH EXPERIENCE

**Research Intern** — **Feb. 2025 – Apr. 2026**

*China Telecom Artificial Intelligence Research Institute (TeleAI)* — Beijing

Advisors: Jinbin Bai and Kaidong Yu

- **Research Topics:** (1) safety alignment for personalized image generation; (2) preference optimization for visual generative models; (3) world models and physical consistency.
- **Major Contributions:** (1) Developed the PSAlign framework and constructed the Sage dataset, enabling user-specific safety control through cross-attention adapters; (2) contributed to the design of the TGO algorithm, which converts unpaired scalar feedback into threshold-guided pseudo-preference supervision, and conducted training, comparative experiments, and ablation studies across multiple categories of visual generative models; (3) contributed to the writing of a world-model survey paper and the maintenance of the Awesome World Models project, systematically organizing task settings, methodological taxonomies, evaluation benchmarks, and application scenarios for world models.
- **Publication Outcomes:** (1) **First-author** manuscript submitted to TMLR 2026; (2) **second-author** paper accepted by ICML 2026; (3) **second-author** survey paper released as an arXiv preprint.

**Research Assistant** **Sep. 2022 – Aug. 2024**

*Machine Intelligence Laboratory, Sichuan University* Chengdu

Advisors: Prof. Lituan Wang and Prof. Lei Zhang

- **Research Topic:** Scribble-supervised weakly supervised medical image segmentation.
- **Major Work:** Proposed the PCLMix framework, integrating heterogeneous dual decoders, dynamic Mix augmentation, and dual-consistency regularization to propagate sparse scribble supervision to global segmentation regions; introduced uncertainty-guided pixel-level contrastive learning to improve intra-class consistency and inter-class discriminability.
- **Publication Outcome: First-author** paper published as an oral presentation at ICIC 2024; **cited 10+ times**.

## PUBLICATIONS

### Under Review

[1] **Yu Lei**, Jinbin Bai, Qingyu Shi, Aosong Feng, Kaidong Yu. "Personalized Safety Alignment for Text-to-Image Diffusion Models." *Submitted to TMLR*, 2026. [arXiv] [Code] [Project]

### Published

[2] Jinbin Bai, **Yu Lei**, Qingyu Shi, Aosong Feng, Yi Xin, Zhuoran Zhao, Fei Shen, Kaidong Yu, Jason Li. "Threshold-Guided Optimization for Visual Generative Models." *International Conference on Machine Learning (ICML)*, 2026. [Paper]

[3] **Yu Lei**, Haolun Luo, Lituan Wang, Zhenwei Zhang, Lei Zhang. "PCLMix: Weakly Supervised Medical Image Segmentation via Pixel-Level Contrastive Learning and Dynamic Mix Augmentation." *International Conference on Intelligent Computing (ICIC), Oral*, 2024. [arXiv] [Code] [Springer]

### Preprints

[4] Jinbin Bai, **Yu Lei**, Hecong Wu, Yuchen Zhu, Shufan Li, Yi Xin, Xiangtai Li, Molei Tao, Aditya Grover, Mingxuan Yang. "From Masks to Worlds: A Hitchhiker's Guide to World Models." *arXiv preprint*, 2025. [arXiv] [GitHub]

## SELECTED OPEN-SOURCE PROJECTS

**PSAlign** • M-E-AGI-Lab/PSAlign • 8 stars, 1 fork

A personalized safety alignment framework for text-to-image diffusion models, with complete documentation.

**PCLMix** • torpedo2003/PCLMix • 8 stars

A weakly supervised medical image segmentation framework based on uncertainty-guided contrastive learning.

**Awesome World Models** • M-E-AGI-Lab/Awesome-World-Models • 92 stars

A curated collection of world-model research, accompanied by a survey paper.

## HONORS AND AWARDS

**Image-to-Video Consistency Challenge, Phase 2, 1st Place** • CVPR Workshop **2026–2026**

**Outstanding Graduate** • Sichuan University **2024–2025**

**National Scholarship** • Ministry of Education of the People's Republic of China **2023–2024**

**Baosteel Scholarship** • Top six undergraduate recipients, Sichuan University **2023–2024**

**First Prize, Global Final** • Huawei ICT Competition **2023–2024**

## SKILLS

**Programming Languages:** Python (PyTorch, TensorFlow, Hugging Face), C++, MATLAB, JavaScript

**Research Tools:** Git, Docker, Linux, LaTeX, Weights & Biases, Gradio

**Specializations:** Diffusion Models, Contrastive Learning, Preference Optimization, Medical Image Processing

*A complete publication list and recommendation letters are available at torpedo2003.github.io.*