

Chenrui Ma

+1-949-792-8518 | chenrum@uci.edu | cherry-Ma.com

 [LinkedIn](#) |  [Github](#) |  [Google Scholar](#)

Irvine, California - 92612, USA



OBJECTIVE

Seeking a PhD position focused on generative and understanding models for real-world data (images, videos, 3D, and multi-modality). Motivated to address challenges in generation, understanding, reasoning, efficiency, and fairness. Aiming to contribute to innovative projects at the intersection of generative algorithms/models and practical problem-solving in domains such as scientific research and industrial applications.

EDUCATION

- **University of California, Irvine** September 2025 – June 2026
Master of Science in Computer Science (Networked Systems)
Irvine, California, USA
◦ GPA: 4.00/4.00
- **University of California, Irvine** September 2024 – June 2025
Joint Education Student (UCI 3+2 Engineering program) in Computer Science
Irvine, California, USA
◦ GPA: 3.92/4.00
- **Central South University** September 2021 – June 2024
Bachelor of Science in Computer Science
Changsha, Hunan, China
◦ Grade: 86.8%, Rank: Top 35%

EXPERIENCE



- **Trustworthy ML/AI Group @ UCI**  September 2024 – Present
Research Assistant
Irvine, California, USA
◦ Developed advanced algorithms and models for generative modeling, understanding, and reasoning, with applications in computer vision and vision-language models.
◦ Proposed novel generative theory/algorithms for efficiency (one-step generation, multi-stage generation).
◦ Designed methods to address challenges of fairness in generative models and representation learning.
- **Teaching Assistant @ UCI** January 2026 – March 2026
Paid
Irvine, California, USA
◦ Assist the professor with teaching and grading, and organize course discussions.
- **Oak Ridge National Laboratory**  May 2025 – Present
Student Collaborator (remote)
Oak Ridge, Tennessee, USA
◦ Engineered generative and understanding models with a focus on improving efficiency and performance.

PUBLICATIONS

C=CONFERENCE, J=JOURNAL, S=IN SUBMISSION

- [C.1] **Chenrui Ma, et al. (2025). CAD-VAE: Leveraging Correlation-Aware Latents for Comprehensive Fair Disentanglement.** Accepted by AAAI 2026 *main track*.
- [C.2] **Xi Xiao, Chenrui Ma, et al. (2025). PROBE: Self-Supervised Visual Prompting for Cross-Domain Road Damage Detection.** Accepted by WACV 2026.
- [C.3] **Yingrui Ji, Chenrui Ma, et al. (2025). CIBR: Cross-modal information bottleneck regularization for robust clip generalization.** In ICANN 2026, pp. 247–259. Springer. 2025.
- [S.1] **Chenrui Ma, et al. (2025). Learning Straight Flows: Variational Flow Matching for Efficient Generation.** Submitted to CVPR 2026.
- [S.2] **Chenrui Ma, et al. (2025). Stochastic Interpolants via Conditional Dependent Coupling.** Submitted to ICLR 2026.
- [S.3] **Chenrui Ma, et al. (2025). Beyond Editing Pairs: Fine-Grained Instructional Image Editing via Multi-Scale Learnable Regions.**
- [S.4] **Xi Xiao, Chenrui Ma, et al. (2025). Prompting Vision Foundation Models with Cascaded Semantics .** Submitted to CVPR 2026.
- [S.5] **Xi Xiao, Chenrui Ma, et al. (2025). Not All Directions Matter: Toward Structured and Task-aware Low-Rank Adaptation for Large-scale Model.** Submitted to ACL 2026.
- [S.6] **Zhuxuanzi Wang, Chenrui Ma, et al. (2025). CTR-LoRA: Curvature-Aware and Trust-Region Guided Low-Rank Adaptation for Large Language Models.** Submitted to ICASSP 2026.
- [J.1] **Ding, Yingchao, Chenrui Ma, et al. (2024). SCS-YOLO: a defect detection model for cigarette appearance.** *Electronics*, 13(18): 3761.
- [J.2] **Huang, Yueming, Chenrui Ma, et al. (2024). Dense Object Detection Based on De-Homogenized Queries.** *Electronics*, 13(12): 2312.

PROJECTS

- **One-Step Generation Modeling (Flow/Diffusion)** August 2025 – present (on-going)
Tools: Flow/Diffusion theory, Consistency Models, Mathematics
 - Developed advanced one-step generation theory with proofs and analyses, together with corresponding algorithms and model parameterizations, enabling fast, stable, controllable, and robust one-step generation.
- **Enhance Efficiency and Performance for Generative Modeling (Flow/Diffusion)** June 2025 – September 2025 
Tools: Flow/Diffusion theory, Autoregressive Models, Mathematics
 - Proposed multi-stage generation framework with conditional dependent coupling with theoretical proofs and analyses, demonstrating consistency between theoretical predictions and experimental results.
 - Developed novel methods grounded in flow/diffusion theory to enhance efficiency and performance; achieved leading generation results on benchmark tasks, while maintaining scalability in efficient inference.
- **Instruction-driven Image Editing without Editing Pairs** April 2025 – June 2025
Tools: Flow/Diffusion theory, Autoregressive Models, Multi-modality Models (CLIP)
 - Leveraging supervision from VLMs that align textual and visual features, we train a flexible learnable region to localize the editing area and guide the editing process, achieving instruction-consistent image editing.
- **Enhance Fairness in Generative Modeling and Representation Learning** September 2024 – March 2025 
Tools: VAEs, Representation Learning, Information Theory, Mathematics
 - Developed a conditional mutual information framework for representation learning, enabling robust and fairness-aware learning, and achieving both fairness and high performance in generative and downstream tasks.

SKILLS

- **Programming:** Python (PyTorch), JAX, Java, Matlab, C/C++, Web (HTML, CSS, JavaScript)
- **Mathematical & Statistical Tools:** Generative Methods (Flow/Diffusion, Autoregressive, VAEs, GANs), Algorithms (graduate-level), Information Theory, Linear Algebra
- **DevTool:** Git (version control system), Linux (operating system), Docker (containerization tool), Slurm (cluster management and job scheduling system)

HONORS AND AWARDS

- **AAAI-2026 Scholarship** November 2025
Singapore
 - Awarded to students with outstanding academic performance for the year.
- **University-level Second Prize Scholarship (Top 20%)** September 2024
Central South University
- **University-level Third Prize Scholarship (Top 30%)** September 2023
Central South University
- **21st China Undergraduate Mathematical Competition in Modeling** September 2023
Changsha, Hunan, China
 - National Second Prize, Top 15% nationwide.
- **4th National College Student Mathematical Modeling Competition** July 2023
Changsha, Hunan, China
 - National First Prize, Top 5% nationwide.

ACADEMIC SERVICES

- **Conference Reviewer:**
CVPR 2026, AAAI 2026
- **Journal Reviewer:**
npj Digital Medicine

REFERENCES

1. **Dr. Yanning Shen**
Associate Professor, Department of EECS
University of California, Irvine
Email: yannings@uci.edu
Relationship: Advisor, Thesis Supervisor, and Course Instructor
2. **Dr. Tianyang Wang**
Assistant Professor, Department of Computer Science
University of Alabama at Birmingham
Email: tw2@uab.edu
Relationship: Advisor
3. **Dr. Xiao Wang**
research staff scientist, the Computational Science and Engineering Division
Oak Ridge National Laboratory
Email: wangx2@ornl.gov
Relationship: Collaborator