Jiaojiao Fan

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🏠 https://sbyebss.github.io/

EDUCATION

Georgia Institute of Technology *January 6, 2020 - July 5, 2024*
PhD student in Machine Learning, Advisor: Dr. Yongxin Chen

Shanghai Jiao Tong University *September 14, 2015 - July 12, 2019*
Bachelor in Engineering

EXPERIENCE

NVIDIA *06/2024 - Present*
Research Scientist, Manager: Ming-Yu Liu Santa Clara, California

- **Led video camera motion filtering pipeline** for Cosmos video diffusion models to improve training data quality
- **Oversaw the human-scoring benchmark system** for Cosmos video diffusion models
- **Coordinated $O(k)$ scale high-quality SFT data curation** for Cosmos video diffusion models
- **Architected a low-fps, high-compression VAE** for Cosmos video diffusion models
- **Spearheaded the open-source initiative** for the Cosmos video autoregressive model, including code release, documentation, and community engagement
- **Built evaluation and inference infrastructure** for Cosmos video models, including benchmarking and production-ready pipelines
- **Developed and deployed a background-replacement ControlNet**, enabling scalable synthetic data generation for downstream computer vision tasks
- **Led end-to-end data collection and post-training** for the Edify text-to-image model, ensuring high-quality data curation and model optimization

NVIDIA *08/2023 - 05/2024*
Research Intern, Mentors: Ting-Chun Wang, Xun Huang, Ming-Yu Liu Santa Clara, California

- Developed customization capabilities for the Edify image generation model, which was shipped as part of the Edify model family and deployed by enterprise clients for advertising applications (**demo**). The Edify customization generates extremely photorealistic images for human personalization tasks.

Snap Inc., Creative Vision Team *05/2023 - 08/2023*
Research Intern, Mentor: Jian Ren Los Angeles, California

- Research on multi-modal diffusion models for image generation

Microsoft Research, New England *05/2022 - 08/2022*
Research Intern, Mentors: David Alvarez-Melis, Nicolo Fusi Remote

- Developed an algorithm for generating synthetic datasets by interpolating among multiple labeled datasets, demonstrating strong performance in transfer learning tasks

PUBLICATIONS

20. **InfoTok: Adaptive Discrete Video Tokenizer via Information-Theoretic Compression**
    Haotian Ye, Qiyuan He, Jiaqi Han, Puheng Li, **Jiaojiao Fan**, Zekun Hao, Fitsum Reda, Yogesh Balaji, Huayu Chen, Sheng Liu, Angela Yao, James Zou, Stefano Ermon, Haoxiang Wang, Ming-Yu Liu.
    ICLR 2026.

19. **Cosmos 2.5: World Simulation with Video Foundation Models for Physical AI**
    NVIDIA
    arXiv 2025.

18. **Cosmos 1.0: Cosmos World Foundation Model Platform for Physical AI**
    NVIDIA
    arXiv 2025.

17. **Point-It-Out: Benchmarking Embodied Reasoning for Vision Language Models in Multi-Stage Visual Grounding**
Haotian Xue, Yunhao Ge, Yu Zeng, Zhaoshuo Li, Ming-Yu Liu, Yongxin Chen, **Jiaojiao Fan**.
arXiv 2025.

16. **Client-only Distributed Markov Chain Monte Carlo Sampling over a Network**
Bo Yuan, **Jiaojiao Fan**, Jiaming Liang, Yongxin Chen.
TMLR 2025.

15. **Proximal Sampler with Adaptive Step Size**
Bo Yuan, **Jiaojiao Fan**, Jiaming Liang, Yongxin Chen.
AISTATS 2025.

14. **Edify Image: High-Quality Image Generation with Pixel Space Laplacian Diffusion Models**
NVIDIA
arXiv 2024.

13. **One-step diffusion policy: Fast visuomotor policies via diffusion distillation**
Zhendong Wang, Zhaoshuo Li, Ajay Mandlekar, Zhenjia Xu, **Jiaojiao Fan**, Yashraj Narang, Linxi Fan, Yuke Zhu, Yogesh Balaji, Mingyuan Zhou, Ming-Yu Liu, Yu Zeng
ICML 2025.

12. **RefDrop: Controllable Consistency in Image or Video Generation via Reference Feature Guidance**
Jiaojiao Fan, Haotian Xue, Qinsheng Zhang, Yongxin Chen.
NeurIPS 2024.

11. **A parallel framework for graphical optimal transport**
Jiaojiao Fan*, Isabel Haasler*, Qinsheng Zhang, Johan Karlsson, Yongxin Chen
arXiv 2024.

10. **Neural Monge Map estimation and its applications**
Jiaojiao Fan*, Shu Liu*, Shaojun Ma, Yongxin Chen, Haomin Zhou.
TMLR 2023 (featured certificate).

9. **Improved dimension dependence of a proximal algorithm for sampling**
Jiaojiao Fan*, Bo Yuan*, Yongxin Chen.
COLT 2023.

8. **On a Class of Gibbs Sampling over Networks**
Bo Yuan, **Jiaojiao Fan**, Jiaming Liang, Andre Wibisono, Yongxin Chen.
COLT 2023.

7. **Nesterov smoothing for sampling without smoothness**
Jiaojiao Fan, Bo Yuan, Jiaming Liang, Yongxin Chen.
CDC 2023.

6. **Markov chain Monte Carlo for Gaussian: A linear control perspective**
Bo Yuan, **Jiaojiao Fan**, Yuqing Wang, Molei Tao, Yongxin Chen.
L-CSS 2023.

5. **Generating Synthetic Datasets by Interpolating along Generalized Geodesics**
Jiaojiao Fan, David Alvarez-Melis.
UAI 2023.

4. **Variational Wasserstein gradient flow**
Jiaojiao Fan, Qinsheng Zhang, Amirhossein Taghvaei, Yongxin Chen.
ICML 2022.

3. **On the complexity of the optimal transport problem with graph-structured cost**
Jiaojiao Fan*, Isabel Haasler*, Johan Karlsson, Yongxin Chen
AISTATS 2022.

2. **Scalable Computations of Wasserstein Barycenter via Input Convex Neural Networks**.
Jiaojiao Fan, Amirhossein Taghvaei, Yongxin Chen.
ICML 2021 (long talk).

1. **Watch for failing Objects: What Inappropriate Compliance Reveals about Shared Mental Models in Autonomous Cars**.
   Yosef Razin, Jack Gale, **Jiaojiao Fan**, Jaznae' Smith, Karen Feigh
   HFES 2021.

SKILLS

- Large-scale data processing using Ray across multiple clusters, with experience scaling to thousands of nodes
- Large-scale diffusion and VAE model training on SLURM clusters, with experience managing hundreds of nodes
- Comprehensive model evaluation using both human evaluation protocols and automated metrics

SELECTED AWARDS AND HONORS

- **CES Best AI Award and Best overall award for NVIDIA Cosmos model** *2025*
- **Herbert P. Haley Fellowship, $4000** *2023*
- **UAI scholarship, $325** *2023*
- **Neurips Top Reviewer** *2022*
- **IDEaS-TRIAD Research Scholarships, $8000** *2020*
- **SJTU Pacesetter Award** (one of students' highest honor in SJTU) *2018*
- **Tang Lixin Scholarship, $3000** (Top 0.5%) *2017, 2018*
- **China National Scholarship, $2300** (Top 2%, Twice) *2017, 2018*
- **Shanghai Outstanding Graduates** (Top 5%) *2019*

PEER REVIEW

- 2021 Neurips OTML workshop
- 2022 AISTATS, ICML, Neurips, SyntheticData4ML Workshop
- 2023 AISTATS, ICML, Neurips, IEEE L-CSS, Frontiers4lcd Workshop
- 2024 ICML, Neurips, Springer Machine Learning Journal
- 2025 ICML, Neurips