XIAOMING ZHAO

Contact Information

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Research Interests

Developing methodologies capable of effectively harnessing diverse data sources with applications in **2D/3D/4D computer vision**, **generative models**, and **neural rendering**.

For example, my recent works aim for scalable 3D representation learning and 3D/4D view synthesis without requiring large-scale real-world multi-view datasets via utilizing

- Generic data priors;
- Generative Adversarial Networks (GANs);
- (2D) Diffusion models pretrained with large-scale data.

Education

University of Illinois Urbana-Champaign, Urbana, IL, USA
Doctor of Philosophy in Computer Science — 08/2019 - Present
Advisor: Prof. Alexander Schwing

Master of Science in Computer Science — 08/2017 - 05/2019
Advisor: Prof. Jian Peng

University of Science and Technology of China, Hefei, Anhui, China
Bachelor of Science in Statistics — 09/2012 - 07/2016

Publications

[11] IllumiNeRF: 3D Relighting without Inverse Rendering.
Xiaoming Zhao, Pratul P. Srinivasan, Dor Verbin, Keunhong Park, Ricardo Martin Brualla, Philipp Henzler.
Under review, 2024.

[10] GoMAvatar: Efficient Animatable Human Modeling from Monocular Video Using Gaussians-on-Mesh.
Jing Wen, **Xiaoming Zhao**, Zhongzheng Ren, Alexander G. Schwing, Shenlong Wang.
In *IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**)*, 2024.

[9] NeRFDeformer: NeRF Transformation from a Single View via 3D Scene Flows.
Zhenggang Tang, Zhongzheng Ren, **Xiaoming Zhao**, Bowen Wen, Jonathan Tremblay, Stan Birchfield, Alexander G. Schwing.
In *IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**)*, 2024.

[8] Pseudo-Generalized Dynamic View Synthesis from a Video.
Xiaoming Zhao, Alex Colburn, Fangchang Ma, Miguel Ángel Bautista, Joshua M. Susskind, Alexander G. Schwing.
In *International Conference on Learning Representations (**ICLR**)*, 2024.

[7] Occupancy Planes for Single-view RGB-D Human Reconstruction.
Xiaoming Zhao, Yuan-Ting Hu, Zhongzheng Ren, Alexander G. Schwing.
In *AAAI Conference on Artificial Intelligence (**AAAI**)*, 2023.

[6] Generative Multiplane Images: Making a 2D GAN 3D-Aware.
Xiaoming Zhao, Fangchang Ma, David Güera, Zhile Ren, Alexander G. Schwing, Alex Colburn.
In *European Conference on Computer Vision (**ECCV**)*, 2022. **(Oral)**.

[5] Initialization and Alignment for Adversarial Texture Optimization.
Xiaoming Zhao, Zhizhen Zhao, Alexander G. Schwing.
In *European Conference on Computer Vision (**ECCV**)*, 2022.

[4] Class-agnostic Reconstruction of Dynamic Objects from Videos.
Zhongzheng Ren*, **Xiaoming Zhao***, Alexander G. Schwing.
(* indicates equal contribution)
In *Neural Information Processing Systems (**NeurIPS**)*, 2021.

[3] The Surprising Effectiveness of Visual Odometry Techniques for Embodied PointGoal Navigation.
Xiaoming Zhao, Harsh Agrawal, Dhruv Batra, Alexander G. Schwing.
In *International Conference on Computer Vision (**ICCV**)*, 2021.

[2] Mitigating Data Scarcity in Protein Binding Prediction Using Meta-Learning.
Yunan Luo*, Jianzhu Ma*, **Xiaoming Zhao**, Yufeng Su, Yang Liu, Trey Ideker, Jian Peng.
(* indicates equal contribution)
In *Research in Computational Molecular Biology (**RECOMB**)*, 2019.

[1] Integrating Thermodynamic and Sequence Contexts Improves Protein-RNA Binding Prediction.
Yufeng Su, Yunan Luo, **Xiaoming Zhao**, Yang Liu, Jian Peng.
PLOS Computational Biology, 2019.

Workshops

[2] Learning from Synthesized Demonstrations.
Xiaoming Zhao, Yang Liu, Jian Peng.
In *ICML Workshop on Learning in Artificial Open Worlds (**ICML-W**)*, 2020.

[1] Approximation Gradient Error Variance Reduced Optimization.
Wei-Ye Zhao, Yang Liu, **Xiaoming Zhao**, Jie-Lin Qiu, Jian Peng.
In *AAAI Workshop on Reinforcement Learning in Games (**AAAI-W**)*, 2019.

Research Experiences

Google, San Francisco, CA, USA 09/2023 - 08/2024
Research Intern. *With Keunhong Park, Philipp Henzler, Pratul Srinivasan, Dor Verbin, and Ricardo Martin-Brualla*
- Conducted research on diffusion models (using JAX for multi-host training).

Apple, Seattle, WA, USA 02/2023 - 09/2023
Research Intern. *With Alexander Schwing and Alex Colburn*
- Conducted research on dynamic novel view synthesis (using PyTorch).

Reality Labs, Meta, Seattle, WA, USA 05/2022 - 12/2022
Research Scientist Intern. *With Shunsuke Saito, Minh P. Vo, and Jia-Bin Huang*
- Conducted research on avatar reconstruction (using PyTorch).

Apple, Seattle, WA, USA 05/2021 - 05/2022
Machine Learning Research Intern. *With Alex Colburn and Fangchang Ma*
- Conducted research on generative 3D models (using PyTorch).

Kwai Inc. Y-tech AI Lab, Bellevue, WA, USA 05/2019 - 08/2019
Research Intern. *With Ji Liu*
- Developed AI agent for multi-player poker game via counterfactual regret minimization.

Tencent AI Lab, Bellevue, WA, USA 05/2018 - 08/2018
Machine Learning Researcher Intern. *With Boqing Gong*
- Developed Markov decision process algorithm in multi-agent cost-aware environments.

Invited Talks

Towards Automatic 3D-Consistent Content Generation

Adobe Research 03/2024

Pseudo-Generalized Dynamic View Synthesis from a Video

Apple 06/2024
Google 01/2024

Generative Multiplane Images

Meta 08/2022

Teaching

University of Illinois Urbana-Champaign

CS588: Autonomous Vehicle System Engineering	Fall 2021
CS446/ECE449: Machine Learning	Spring 2021
CS440/ECE448: Artificial Intelligence	Fall 2020
CS498AML: Applied Machine Learning	Spring 2019
CS598BL: Special Topics on Adversarial Machine Learning	Fall 2018

Selected Awards and Honors

University of Illinois Urbana-Champaign

University nomination (one of three) for 2023 Apple Scholars in AI/ML	2022
Graduate Student SSBG Fellowship	2020

University of Science and Technology of China

Outstanding Graduates	2016
Outstanding Undergraduate Scholarship	2013, 2015
Seagate Scholarship	2014
Outstanding Freshman Scholarship	2012

Ministry of Education, China

Honorably received waiver for the National College Entrance Exam 2012

Chinese Chemical Society

Silver Medalist nation-wide, the 25^{th} Chinese Chemistry Olympiad 2011

Services

Reviewing for Journals

International Journal of Computer Vision (IJCV)	2023 - present
Transactions on Pattern Analysis and Machine Intelligence (TPAMI)	2023 - present

Reviewing for International Conferences

IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)	2022 - present
International Conference on Computer Vision (ICCV)	2023 - present
European Conference on Computer Vision (ECCV)	2024 - present
Neural Information Processing Systems (NeurIPS)	2022 - present
International Conference on Machine Learning (ICML)	2022 - present
International Conference on Learning Representations (ICLR)	2023 - present
AAAI Conference on Artificial Intelligence (AAAI)	2023
IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)	2024