

Songwei Ge

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Research Interest

Image, Video, and 3D Synthesis

Education

Department of Computer Science, University of Maryland

College Park, MD, USA

PH.D. IN COMPUTER SCIENCE

Sep. 2020 - Present

- Advisors: David Jacobs and Jia-Bin Huang.
- GPA: 4.00/4.00
- Selected courses: Advanced Numerical Optimization, Fundamental Concepts of Differential Geometry, Foundation of Deep Learning.

School of Computer Science, Carnegie Mellon University

Pittsburgh, PA, USA

M.S. IN COMPUTATIONAL BIOLOGY

Aug. 2018 - May. 2020

- Thesis Advisors: Barnabás Póczos, Eunsu Kang and Ziv Bar-Joseph.
- GPA: 4.00/4.00
- Selected courses: Machine Learning for Ph.D., Convex Optimization, Probabilistic Graphical Models.

School of Information, Renmin University of China

Beijing, China

B.S. IN COMPUTER SCIENCE AND TECHNOLOGY

Sep. 2014 - Jul. 2018

- Thesis Advisors: Zhicheng Dou. (**Best thesis award** in Computer Science.)

HillHouse Academy, Renmin University of China

Beijing, China

B.S. IN FINANCE

Sep. 2014 - Jul. 2018

- Thesis Advisor: Wei Xu.

Employment

BAIR, University of California, Berkeley.

Berkeley, CA, USA

MENTOR: [ANGJOO KANAZAWA](#)

Aug. 2023 - Mar. 2024

Visiting Researcher

The Robotics Institute, Carnegie Mellon University.

Pittsburgh, PA, USA

MENTOR: [JUN-YAN ZHU](#)

Jan. 2023 - Aug. 2023

Visiting PhD

NVIDIA Research

Santa Clara, CA, USA

MENTORS: [YOGESH BALAJI](#), [MING-YU LIU](#)

May. 2022 - May. 2023

Research Intern

Facebook AI Research

Menlo Park, CA, USA

MENTOR: [DEVI PARIKH](#)

June. 2021 - Dec. 2021

Research Intern, Student Researcher

Facebook AI Research

Menlo Park, CA, USA

MENTORS: [LARRY ZITNICK](#), [DEVI PARIKH](#)

June. 2020 - Aug. 2020

Research Intern

Microsoft Research

Beijing, China

ADVISOR: [RUIHUA SONG](#)

Apr. 2018 - Jul. 2018

Software Engineer Intern

Selected Publications

IN PREPARATION

- **Grounded Text-to-Image Synthesis with Attention Refocusing.**
Quynh Phung, [Songwei Ge](#), Jia-Bin Huang.

PEER REVIEWED PUBLICATIONS

- **Preserve Your Own Correlation: A Noise Prior for Video Diffusion Models.**
Songwei Ge, Guilin Liu, Seungjun Nah, Tyler Poon, Andrew Tao, Bryan Catanzaro, David Jacobs, Jia-Bin Huang, Ming-Yu Liu, Yogesh Balaji.
In International Conference on Computer Vision (ICCV), 2023
- **Expressive Text-to-Image Generation with Rich Text.**
Songwei Ge, Taesung Park, Jun-Yan Zhu, Jia-Bin Huang.
In International Conference on Computer Vision (ICCV), 2023
- **Hyperbolic Contrastive Learning for Visual Representations beyond Objects.**
Songwei Ge*, Shlok Mishra*, Simon Kornblith, Chun-Liang Li, David Jacobs.
In Computer Vision and Pattern Recognition (CVPR), 2023
- **Long Video Generation with Time-Agnostic VQGAN and Time-Sensitive Transformer.**
Songwei Ge, Thomas Hayes, Harry Yang, Xi Yin, Guan Pang, David Jacobs, Jia-Bin Huang, Devi Parikh.
In European Conference on Computer Vision (ECCV), 2022.
- **MUGEN: A Playground for Video-Audio-Text Multimodal Understanding and GENERation.**
Thomas Hayes, Songyang Zhang, Xi Yin, Guan Pang, Sasha Sheng, Harry Yang, Songwei Ge, Isabelle Hu, Devi Parikh
In European Conference on Computer Vision (ECCV), 2022.
- **Robust Contrastive Learning Using Negative Samples with Diminished Semantics.**
Songwei Ge, Shlok Mishra, Haohan Wang, Chun-Liang Li, David Jacobs.
In Neural Information Processing Systems (NeurIPS), 2021.
- **Shift Invariance Can Reduce Adversarial Robustness.**
Songwei Ge*, Vasu Singla*, Ronen Basri, David Jacobs.
In Neural Information Processing Systems (NeurIPS), 2021.
- **Conceptual Blending with Large-scale Language and Vision Models.**
Songwei Ge, Devi Parikh.
In International Conference on Computational Creativity (ICCC Oral), 2021.
- **Creative Sketch Generation.**
Songwei Ge, Vedanuj Goswami, Larry Zitnick, Devi Parikh.
In Workshop on Machine Learning for Creativity and Design at NeurIPS (Oral), 2020
In International Conference on Learning Representations (ICLR) 2021.
- **Supervised Adversarial Alignment of Single-Cell RNA-seq Data.**
Songwei Ge, Haohan Wang, Amir Alavi, Eric P. Xing, Ziv Bar-Joseph.
In the 24th International Conference on Research in Computational Molecular Biology (RECOMB), 2020
- **Learning Robust Global Representations by Penalizing Local Predictive Power.**
Haohan Wang, Songwei Ge, Eric P. Xing, Zachary C. Lipton.
In Neural Information Processing Systems (NeurIPS), 2019.
- **From Text to Sound: a Preliminary Study on Retrieving Sound Effects to Radio Stories.**
Songwei Ge, Curtis Xuan, Ruihua Song, Chao Zou, Wei Liu and Jin Zhou.
In ACM International Conference on Research and Development in Information Retrieval (SIGIR), 2019.
- **Hallucinating Point Cloud into 3D Sculptural Object.**
Songwei Ge*, Chun-Liang Li*, Eunsu Kang*, Lingyao Zhang, Austin Dill, Manzil Zaheer, Barnabás Póczos.
In Workshop on Machine Learning for Creativity and Design at NeurIPS, 2018, and Inter-Society for the Electronic Arts (ISEA), 2019
- **A Computational Strategy for Finding Novel Targets and Therapeutic Compounds for Opioid Dependence.**
Xiaojun Wu, Siwei Xie, Lirong Wang, Peihao Fan, Songwei Ge, Xiang-Qun Xie, Wei Wu.
In PLoS One, 2018
- **Personalizing Search Results Using Hierarchical RNN with Query-aware Attention.**

Songwei Ge, Zhicheng Dou, Zhengbao Jiang, Jian-Yun Nie, Ji-Rong Wen.
In *ACM International Conference on Information and Knowledge Management (CIKM)*, 2018

Selected Honors & Awards

Jan 2023	Meta Graduate Fellowship Finalist	Menlo Park, CA
Dec 2022	NVIDIA Graduate Fellowship Finalist	Santa Clara, CA
Dec 2022	NeurIPS Outstanding Reviewer	New Orleans, LA
2019-2020	CMU MSCB Academic Scholarship	Pittsburgh, PA
Jun 2018	Outstanding Undergraduate Thesis Award (Top 1% in RUC & Top 1 in the Computer Science)	Beijing, China
Jan 2017	Meritorious Winners , American Mathematical Contest in Mathematical Modeling	Beijing, China

Professional Service

2021-2023	Conference Reviewer Annual Conference on Neural Information Processing Systems	NeurIPS
2023	Conference Reviewer ACM SIGGRAPH Conference and Exhibition on Computer Graphics in Asia	SIGGRAPH Asia
2022-2024	Conference Reviewer International Conference on Learning Representations	ICLR
2023	Conference Reviewer ACM SIGGRAPH Conference and Exhibition on Computer Graphics	SIGGRAPH
2023	Conference Reviewer International Conference on Computer Vision	ICCV
2023	Jounal Reviewer Transactions on Pattern Analysis and Machine Intelligence	PAMI
2023	Conference Reviewer Conference on Computer Vision and Pattern Recognition	CVPR
2022	External Reviewer The ACM Symposium on User Interface Software and Technology	UIST
2022	Conference Reviewer European Conference on Computer Vision	ECCV
2022	Emergency Reviewer Conference on Computer Vision and Pattern Recognition	CVPR
2022	Conference Reviewer International Conference on Machine Learning	ICML

Teaching

2023	Guest Lecturer Art and Machine Learning	Pittsburgh, PA
2021	Teaching Assistant Algorithm	College Park, MD
2020	Teaching Assistant Introduction to Machine Learning	College Park, MD
2019	Guest Lecturer Art and Machine Learning	Pittsburgh, PA
2017	Teaching Assistant Advanced Algorithm Design	Beijing China