Xingjian Bai

Email: xbai@mit.edu Phone: +1 6177846837 Homepage: xingjianbai.com
70 Pacific Street, Cambridge, MA 02139, USA

Education

Ph.D. in EECS, Massachusetts Institute of Technology Sep 2024 – Present

- Supervised by Professor Phillip Isola and Professor Vincent Sitzmann.
- Supported by the Robert M. (1941) and Jacqueline M. Fano Fellowship and MongoDB Fellowship.
- Expected graduation: Fall 2028.

Master of Mathematics and Computer Science, University of Oxford Oct 2023 – Jul 2024

- Received the **Departmental Prize for the Best Computer Science Project**.

B.A. in Mathematics and Computer Science, University of Oxford Oct 2020 – Jul 2023

- Graduated with distinction and the **Gibbs Prize** for the best performance in computer science exams.

Research Experience

Adobe Research Jun 2025 – Aug 2026
Research Scientist Intern *Supervisors: Xun Huang, Zongze Wu, Richard Zhang*
Analyzed the causal structure of video diffusion models, decoupling temporal reasoning from iterative denoising to make autoregressive video generation substantially more efficient. Researched hierarchical memory for long-horizon video generation.

Visual Geometry Group (VGG), Oxford Oct 2023 – Apr 2024
Student Researcher *Supervisors: Christian Rupprecht, Luke Melas-Kyriazi*
Developed fixed-point diffusion models that flexibly allocate and reuse computation across sampling steps.

Stanford Vision & Learning Lab (SVL) Jul 2023 – Sep 2023
Visiting Research Intern *Supervisor: Jiajun Wu*
Studied neurosymbolic controllers for diffusion models to improve compositional generation.

Algorithms and Complexity Theory Group, Oxford Mar 2023 – Aug 2023
Undergraduate Student Researcher *Supervisor: Christian Coester*
Designed sorting algorithms that can use both exact comparisons and imperfect predictions from black-box deep learning models. Proved error-adaptive guarantee on the number of exact comparisons from $O(n \log n)$ toward $O(n)$ as prediction quality improves.

Mathematics Institute, Oxford Jul 2022 – Apr 2023
Summer Research Intern *Supervisor: Jan Obłój*
Studied adversarial robustness of neural networks via Wasserstein distributionally robust optimization.

AI Safety Research Lab, Oxford Nov 2022 – Mar 2023
Student Researcher *Mentor: Joar Skalse*
Studied Goodhart's law in RL and proposed early stopping algorithms to mitigate reward hacking behaviors.

Selected Publications

[*] Equal contribution.

Xingjian Bai, Jia-Hao Liang, Jayden Teoh, Vincent Sitzmann.
"Reactive Optimizers."
arXiv preprint, 2026. [arXiv] [Blog] [Twitter]

Sizhe Lester Li[*], Evan Kim[*], **Xingjian Bai**[*], Tong Zhao, Tao Pang, Max Simchowitz, Vincent Sitzmann.
"Turning Video Models into Generalist Robot Policies."
arXiv preprint, 2026. [arXiv]

Shivam Duggal[*], **Xingjian Bai**[*], Zongze Wu, Richard Zhang, Eli Shechtman, Antonio Torralba, Phillip Isola, William T. Freeman.
"End-to-End Training for Unified Tokenization and Latent Denoising."
Advances in Neural Information Processing Systems (**NeurIPS 2026**). [arXiv]

Selected Publications (continued)

Xingjian Bai, Guande He, Zhengqi Li, Eli Shechtman, Xun Huang, Zongze Wu.
"Causality in Video Diffusers is Separable from Denoising."
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR 2026**). [arXiv]

Zhengyang Geng, Mingyang Deng, **Xingjian Bai**, J. Zico Kolter, Kaiming He.
"Mean Flows for One-step Generative Modeling."
Advances in Neural Information Processing Systems (**NeurIPS 2025**). **Oral presentation.** [arXiv]

Xingjian Bai, Christian Coester, Romain Cosson.
"Unweighted Layered Graph Traversal: Passing a Crown via Entropy Maximization."
ACM-SIAM Symposium on Discrete Algorithms (**SODA 2025**). [arXiv]

Xingjian Bai*, Luke Melas-Kyriazi*.
"Fixed Point Diffusion Models."
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR 2024**). [arXiv]

Xingjian Bai, Christian Coester.
"Sorting with Predictions."
Advances in Neural Information Processing Systems (**NeurIPS 2023**). [arXiv]

Xingjian Bai, Guangyi He, Yifan Jiang, Jan Obłój.
"Wasserstein Distributional Robustness of Neural Networks."
Advances in Neural Information Processing Systems (**NeurIPS 2023**). [arXiv]

Awards & Honors

World finalist and regional gold medalist 2023
International Collegiate Programming Contest

Outstanding Winner and American Mathematical Society Best Paper Award 2021
37th Mathematical Contest in Modeling

"*Hack the Hackers' Hack*" Award, best of 66 teams 2020
Oxford Hackathon

Gold medalist, first place 2018
Canadian Computing Olympiad, national team selection camp

Silver medalist 2018
Chinese National Olympiad in Informatics

Other Experience

Conference Reviewer Present
NeurIPS, ICLR, ICML, CVPR, AISTATS

Class Demonstrator, Computer Vision 2024
Department of Computer Science, University of Oxford

Student Ambassador 2023
Mathematics Institute, University of Oxford
Supported outreach events and taught algorithms to students from under-resourced regions.

Skills & Hobbies

Programming: Proficient in C++ and Python; experience with Julia, Java, Scala, and Haskell.
Tools: PyTorch, JAX/Flax, Linux, Git, basic CUDA.
Hobbies: Marathon running, tennis, table tennis, and Go.