

# Tianwei Yin

+1 (512) 203 9275  
✉ [tianweiy@mit.edu](mailto:tianweiy@mit.edu)  
🌐 [tianweiy.github.io](https://tianweiy.github.io)  
Google Scholar / GitHub

## Summary

I am a final-year EECS Ph.D. student at MIT, graduating in Spring 2025. My research focuses on large-scale image and video generative models, with a strong focus on enhancing their efficiency and controllability. I am particularly passionate about fast generative models and their use in areas such as content creation, virtual reality, embodied intelligence, and other scenarios that require real-time and long-horizon generative modeling.

## Education

- 2022-2025 **Ph.D. Student in Electrical Engineering and Computer Science, MIT**
- Advisor: Frédo Durand and Bill Freeman
- 2018-2022 **B.S. in Computer Science and Math, UT Austin**
- *Dean's Honored Graduate*

## Research Experience

- 2023–now **Research Collaboration, Adobe**
- Manager: Eli Shechtman.
  - Lead research projects on accelerated image and video generation.
  - Research contributions have significantly influenced Adobe products, including Firefly Fast Mode, which achieves orders-of-magnitude reductions in latency and cost for features such as generative fill, text-to-image generation, video extension, video generation, and more.
- 2022–now **Research Assistant, MIT**
- Advisors: Frédo Durand and Bill Freeman.
  - Conduct research on visual generative models. Notable contributions include:
    1. The *Distribution Matching Distillation (DMD)* series [1, 2, 3, 4], which introduces a *distribution-level* objective to train fast few-step student generators for text-to-(image, video, 3D), achieving visual quality comparable to their slow 50-step teacher models.
    2. Customization of generative models, exemplified by *FastComposer* [5], one of the first tuning-free methods for customized diffusion-based image generation.
- 2019-2022 **Research Assistant, UT Austin**
- Advisor: Philipp Krähenbühl.
  - 2D and 3D object detection for autonomous driving. *CenterPoint* [7] is one of the most influential CVPR papers according to here. It has been widely adopted across a multitude of 3D detection systems in both academic research and industry applications, with over 1800 citations to date. Led and contributed to two other projects that advanced the state-of-the-art in multi-modal 3D detection [8] and 2D tracking [9].
- 2019-2022 **Research Intern, Caltech**
- Advisors: Katie Bouman and Yisong Yue.
  - Accelerated MRI.

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## Selected Works

- [1] Tianwei Yin\*, Qiang Zhang\*, Richard Zhang, William T. Freeman, Frédo Durand, Eli Shechtman, Xun Huang, **From Slow Bidirectional to Fast Autoregressive Video Diffusion Models** (\* equal contribution), Project, [A fast video generator capable of streaming inference on a single GPU at 9 FPS, while maintaining excellent visual quality](#)
- [2] Tianwei Yin, Michaël Gharbi, Taesung Park, Richard Zhang, Eli Shechtman, Frédo Durand, William T. Freeman, **Improved Distribution Matching Distillation for Fast Image Synthesis**, In NeurIPS 2024, Project, Code, [Selected for oral presentation at the conference. Selection rate: 0.4% \(72 papers selected out of 15671 submissions\)](#)
- [3] Tianwei Yin, Michaël Gharbi, Richard Zhang, Eli Shechtman, Frédo Durand, William T. Freeman, Taesung Park, **One-step Diffusion with Distribution Matching Distillation**, In CVPR 2024, Project
- [4] Hanzhe Hu, Tianwei Yin, Fujun Luan, Yiwei Hu, Hao Tan, Zexiang Xu, Sai Bi, Shubham Tulsiani\*, Kai Zhang\*, **Turbo3D: Ultra-fast Text-to-3D Generation** (\* equal advising), Project
- [5] Guangxuan Xiao\*, Tianwei Yin\*, William T. Freeman, Frédo Durand, Song Han, **Fast-Composer: Tuning-Free Multi-Subject Image Generation with Localized Attention** (\* equal contributions), IJCV, Code
- [6] Ayush Tewari\*, Tianwei Yin\*, George Cazenavette, Semon Rezchikov, Joshua B. Tenenbaum, Frédo Durand, William T. Freeman, Vincent Sitzmann, **Diffusion with Forward Models: Solving Stochastic Inverse Problems Without Direct Supervision** (\* equal contribution), In NeurIPS 2023 (Spotlight), Project, Code
- [7] Tianwei Yin, Xingyi Zhou, and Philipp Krähenbühl, **Center-based 3D Object Detection and Tracking**, In CVPR 2021, Project, Code [The top-10 cited papers among all CVPR-2021 papers, refer to here](#)
- [8] Tianwei Yin, Xingyi Zhou, and Philipp Krähenbühl, **Multimodal Virtual Point 3D Detection**, In NeurIPS 2021, Project, Code
- [9] Xingyi Zhou, Tianwei Yin, Vladlen Koltun, and Philipp Krähenbühl, **Global Tracking Transformer**, In CVPR 2022, Code

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## Honors & Awards

- May 2022 **UT Computer Science Dean's Honored Graduate (top 2 in the graduating class)**
- Dec 2021 **CRA Outstanding Undergraduate Researcher Award Runner-up**
- Jun 2021 **UT Computer Science 2021 Best Honors Thesis Award**
- May 2021 **Huckin-Liedtke-Lupton Endowed Presidential Scholarship**
- Dec 2020 **Winner, NeurIPS 2020 NuScenes 3D Detection Challenge**
- Jun 2020 **Caltech Summer Undergraduate Research Fellowship**

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## Services

**Conference Reviewer:** CVPR, ICCV, ECCV, ICLR, NeurIPS, ICML, SIGGRAPH  
**Journal Reviewer:** TPAMI, IJCV