# Tongzhou Wang

### Education

### **Massachusetts Institute of Technology**

Cambridge, MA

MACHINE LEARNING PHD CANDIDATE AT MIT CSAIL

Feb. 2019 - PRESENT

- Research Interests: Structures in machine learning and artificial agents: invariance, abstraction, distance, factorization, redundancy, etc.
  - Geometric structures of learned representations
  - Geometric structures for more efficient and general agents
  - Understanding training data via structured synthetic data
- · Advisors: Phillip Isola and Antonio Torralba.

### University of California, Berkeley

Berkeley, CA

**B.A. IN COMPUTER SCIENCE AND STATISTICS** 

Aug. 2013 - May 2017

• Research with Stuart Russell, Ren Ng, and Alexei Efros.

# Industrial Experience \_\_\_\_\_

### Facebook AI Research (FAIR)

Remote

RESEARCH INTERN

June 2021 - Dec. 2021

- Minimal representation for model-based reinforcement learning. Paper appeared in ICML 2022.
- Host: Yuandong Tian

### Facebook AI Research (FAIR)

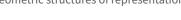
New York, NY

FULL-TIME FRAMEWORK ENGINEER ON THE PYTORCH TEAM

Aug. 2017 - Jan. 2019

- PyTorch core team when team size < 10.
- · Scientific computing & deep learning operators, autograd optimization, CPU & GPU optimization, data loading, Python binding, etc.

## **Publications**





### Optimal Goal-Reaching Reinforcement Learning via Quasimetric Learning (@ de)

TONGZHOU WANG, ANTONIO TORRALBA, PHILLIP ISOLA, AMY ZHANG

2023

- International Conference on Machine Learning 2023 [ICML 2023].
- ☑ Webpage arXiv

### Generalizing Dataset Distillation via Deep Generative Prior (

GEORGE CAZENAVETTE, TONGZHOU WANG, ANTONIO TORRALBA, ALEXEI A. EFROS, JUN-YAN ZHU

2023

2022

• IEEE/CVF Conference on Computer Vision and Pattern Recognition 2023 [CVPR 2023].

### Improved Representation of Asymmetrical Distances with Interval Quasimetric Embeddings (((a)))

TONGZHOU WANG, PHILLIP ISOLA

- Workshop on Symmetry and Geometry in Neural Representations at NeurIPS 2022 [NeurReps Workshop at NeurIPS 2022].
- · Proceedings of Machine Learning Research (PMLR), Volume on Symmetry and Geometry in Neural Representations
- $\square$  PyTorch Package for Quasimetric Learning Webpage OpenReview arXiv

### Procedural Image Programs for Representation Learning ()

Manel Baradad, Richard Chen, Jonas Wulff, <u>Tongzhou Wang</u>, Rogerio Feris, Antonio Torralba, Phillip Isola

2022

- Conference on Neural Information Processing Systems 2022 [NeurIPS 2022].
- 🖸 Code & Datasets Webpage OpenReview arXiv

#### Denoised MDPs: Learning World Models Better Than the World Itself (

TONGZHOU WANG, SIMON S. DU, ANTONIO TORRALBA, PHILLIP ISOLA, AMY ZHANG, YUANDONG TIAN

2022

- International Conference on Machine Learning 2022 [ICML 2022].
- 🖸 Code Webpage arXiv

### On the Learning and Learnability of Quasimetrics (()

TONGZHOU WANG, PHILLIP ISOLA

2022

- International Conference on Learning Representations 2022 [ICLR 2022].
- 🖸 Code Webpage OpenReview arXiv

| Dataset Distillation by Matching Training Trajectories (  )   | 2022 |
|---|------|
| George Cazenavette, <u>Tongzhou Wang</u> , Antonio Torralba, Alexei A. Efros, Jun-Yan Zhu   | 2022 |
| • IEEE/CVF Conference on Computer Vision and Pattern Recognition 2022 [CVPR 2022].  |      |
| • 🗗 Code Webpage arXiv  |      |
| Totems: Physical Objects for Verifying Visual Integrity   | 2027 |
| Jingwei Ma, Lucy Chai, Minyoung Huh, <u>Tongzhou Wang</u> , Ser-Nam Lim, Phillip Isola, Antonio Torralba                                | 2022 |
| • European Conference on Computer Vision 2022 [ECCV 2022].  |      |
| • 🖸 Code Webpage arXiv  |      |
| Learning to See by Looking at Noise (=)   | 202  |
| MANEL BARADAD, JONAS WULFF, TONGZHOU WANG, PHILLIP ISOLA, ANTONIO TORRALBA  |      |
| Advances in Neural Information Processing Systems 2021 [NeurIPS 2021].  |      |
| • C Code & Datasets Webpage arXiv   |      |
| Understanding Contractive Depresentation Learning through Alignment and Uniformity on the Hymerchere (A)                                | 2020 |
| Understanding Contrastive Representation Learning through Alignment and Uniformity on the Hypersphere ( )  Tongzhou Wang, Phillip Isola | 2020 |
| International Conference on Machine Learning 2020 [ICML 2020].  |      |
| • C7 Code Webpage arXiv   |      |
|   |      |
| Rewriting a Deep Generative Model ( )   | 2020 |
| David Bau, Steven Liu, <u>Tongzhou Wang</u> , Jun-Yan Zhu, Antonio Torralba   |      |
| European Conference on Computer Vision 2020 [ECCV 2020].  |      |
| • 🗗 Code Webpage arXiv  |      |
| Diverse Image Generation via Self-Conditioned GANs (◎)  | 2020 |
| Steven Liu, <u>Tongzhou Wang</u> , David Bau, Jun-Yan Zhu, Antonio Torralba   |      |
| Conference on Computer Vision and Pattern Recognition 2020 [CVPR 2020].   |      |
| • C Code Webpage arXiv  |      |
| Dataset Distillation (=)  | 2018 |
| Tongzhou Wang, Jun-Yan Zhu, Antonio Torralba, Alexei A. Efros   |      |
| • C Code Webpage arXiv  |      |
| Meta-Learning MCMC Proposals  | 2017 |
| Tongzhou Wang, Yi Wu, David A. Moore, Stuart Russell  | 2011 |
| Advances in Neural Information Processing Systems 2018 [NeurIPS 2018].  |      |
| Oral presentation at ICML 2017 AutoML workshop.   |      |
| • © arXiv   |      |
|   |      |
| Learning to Synthesize a 4D RGBD Light Field from a Single Image  | 2017 |
| PRATUL SRINIVASAN, TONGZHOU WANG, ASHWIN SREELAL, RAVI RAMAMOORTHI, REN NG  |      |
| • International Conference on Computer Vision 2017 [ICCV 2017].  • C <sup>2</sup> Code arXiv  |      |
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| Academic Services   |      |

**Reviewer** ICML 2020 (Top Reviewer), NeurIPS 2020, ICML 2021, CVPR 2021, NeurIPS 2021, ICLR 2022, ICML 2022, NeurIPS 2022, ICML 2023, NeurIPS 2023, TMLR.

**Workshop Organizer** Goal-Conditioned Reinforcement Learning (GCRL) Workshop at NeurIPS 2023.