

# Tongzhou Wang

✉ tongzhou.wang.1994@gmail.com | 🏠 tongzhouwang.info | 📄 Google Scholar | 📄 SsnL

## Education

### Massachusetts Institute of Technology

MACHINE LEARNING PHD CANDIDATE AT MIT CSAIL

Cambridge, MA

Feb. 2019 - PRESENT

- Interests:
  - Geometric structures of learned representations (🧠), and enabling efficient, adaptive and general agents via such representations (🤖).
  - Understanding leaning via learning from synthetic data (🌱).
- Advisors: Phillip Isola and Antonio Torralba.

### University of California, Berkeley

B.A. IN COMPUTER SCIENCE AND STATISTICS

Berkeley, CA

Aug. 2013 - May 2017

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

## Industrial Experience

### Facebook AI Research (FAIR)

RESEARCH INTERN

Remote

June 2021 - Dec. 2021

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

### Facebook AI Research (FAIR)

FULL-TIME FRAMEWORK ENGINEER ON THE PYTORCH TEAM

New York, NY

Aug. 2017 - Jan. 2019

- PyTorch core team when team size < 10.
- Linear algebra and spectral operators, deep learning layers, autograd optimization, CPU & GPU optimization, data loading, Python binding, etc.

## Publications

🧠: Geometric structures of representations   🤖: Efficient and general agents   🌱: Synethtic data

### Optimal Goal-Reaching Reinforcement Learning via Quasimetric Learning (🧠🤖)

TONGZHOU WANG, ANTONIO TORRALBA, PHILLIP ISOLA, AMY ZHANG

2023

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

TONGZHOU WANG, PHILLIP ISOLA

2022

- Workshop on Symmetry and Geometry in Neural Representations at Conference on Neural Information Processing Systems 2022 [NeurReps Workshop at NeurIPS 2022].
- Proceedings of Machine Learning Research (PMLR), Volume on Symmetry and Geometry in Neural Representations
- 🔗 PyTorch Package for Quasimetric Learning Webpage OpenReview arXiv

### Procedural Image Programs for Representation Learning (🌱)

MANEL BARADAD, RICHARD CHEN, JONAS WULFF, TONGZHOU WANG, 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 (🌱)

GEORGE CAZENAVETTE, TONGZHOU WANG, 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

JINGWEI MA, LUCY CHAI, MINYOUNG HUH, [TONGZHOU WANG](#), 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 (📺)

2021

MANEL BARADAD, JONAS WULFF, [TONGZHOU WANG](#), PHILLIP ISOLA, ANTONIO TORRALBA

- Advances in Neural Information Processing Systems 2021 [[NeurIPS 2021](#)].
- [Code & Datasets](#) [Webpage](#) [arXiv](#)

## Understanding Contrastive Representation Learning through Alignment and Uniformity on the Hypersphere (🔗)

2020

[TONGZHOU WANG](#), PHILLIP ISOLA

- International Conference on Machine Learning 2020 [[ICML 2020](#)].
- [Code](#) [Webpage](#) [arXiv](#)

## Rewriting a Deep Generative Model (📺)

2020

DAVID BAU, STEVEN LIU, [TONGZHOU WANG](#), 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, [TONGZHOU WANG](#), DAVID BAU, JUN-YAN ZHU, ANTONIO TORRALBA

- Conference on Computer Vision and Pattern Recognition 2020 [[CVPR 2020](#)].
- [Code](#) [Webpage](#) [arXiv](#)

## Dataset Distillation (📺)

2018

[TONGZHOU WANG](#), JUN-YAN ZHU, ANTONIO TORRALBA, ALEXEI A. EFROS

- [Code](#) [Webpage](#) [arXiv](#)

## Meta-Learning MCMC Proposals

2017

[TONGZHOU WANG](#), YI WU, DAVID A. MOORE, STUART RUSSELL

- 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 RAMAMOORTHY, REN NG

- International Conference on Computer Vision 2017 [[ICCV 2017](#)].
- [Code](#) [arXiv](#)

## Academic Services

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