

# Matthew Wallingford

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🏠 <https://mattwallingford.github.io/>  
🎓 Google Scholar

## EDUCATION

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### University of Washington, Seattle

2019 - present

*PhD student in Computer Science and Engineering advised by Prof. Ali Farhadi*

### Cornell University

2013 - 2019

*Master of Science in Computer Science, advised by Prof. Bharath Hariharan*

*Bachelor of Arts in Mathematics, minor in Computer Science and Physics*

## PUBLICATIONS

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### Preprints

\* - equal contribution

### Conference Publications

12. **From an Image to a Scene: Learning to Imagine the World from a Million 360° Videos.**  
Matthew Wallingford, Anand Bhattad, Aditya Kusupati, Vivek Ramanujan, Matt Deitke, Sham Kakade, Aniruddha Kembhavi, Roozbeh Mottaghi, Wei-Chiu Ma, Ali Farhadi.  
*Neural Information Processing Systems, **NeurIPS** 2024.*
11. **Multilingual Diversity Improves Vision-Language Representations**  
Thao Nguyen, Matthew Wallingford, Sebastin Santy, Wei-Chiu Ma, Sewoong Oh, Ludwig Schmidt, Pang Wei Koh, Ranjay Krishna.  
*Neural Information Processing Systems, **NeurIPS** 2024.*
10. **The Unmet Promise of Synthetic Training Images: Using Retrieved Real Images Performs Better**  
Scott Geng, Cheng-Yu Hsieh, Vivek Ramanujan, Matthew Wallingford, Chun-Liang Li, Pang Wei Koh, Ranjay Krishna.  
*Neural Information Processing Systems, **NeurIPS** 2024.*
9. **Superposed Decoding: Multiple Generations from a Single Autoregressive Inference Pass**  
Ethan Shen, Alan Fan, Sarah M. Pratt, Jae Sung Park, Matthew Wallingford, Sham M. Kakade, Ari Holtzman, Ranjay Krishna, Ali Farhadi, Aditya Kusupati.  
*Neural Information Processing Systems **NeurIPS** 2024.*
8. **Neural Priming for Sample-Efficient Adaptation.**  
Matthew Wallingford\*, Vivek Ramanujan\*, Alex Fang, Aditya Kusupati, Roozbeh Mottaghi, Aniruddha Kembhavi, Ludwig Schmidt, Ali Farhadi.  
*Neural Information Processing Systems (**NeurIPS**), 2023.*
7. **Objaverse-XL: A Universe of 10M+ 3D Objects.**  
Matt Deitke, Ruoshi Liu, Matthew Wallingford, Huong Ngo, Oscar Michel, Aditya Kusupati, Alan Fan, Christian Laforte, Vikram Voleti, Samir Yitzhak Gadre, Eli VanderBilt, Aniruddha Kembhavi, Carl Vondrick, Georgia Gkioxari, Kiana Ehsani, Ludwig Schmidt, Ali Farhadi.  
*Neural Information Processing Systems (**NeurIPS**), Datasets and Benchmarks, 2023.*
6. **Neural Radiance Field Codebooks.**  
Matthew Wallingford, Aditya Kusupati, Alex Fang, Vivek Ramanujan, Aniruddha Kembhavi, Roozbeh Mottaghi, Ali Farhadi.  
*International Conference on Learning Representations (**ICLR**), 2023*
5. **FLUID: A Unified Evaluation Framework for Flexible Sequential Data.**  
Matthew Wallingford, Aditya Kusupati, Keivan Alizadeh-Vahid, Aaron Walsman, Aniruddha Kembhavi, Ali Farhadi.  
*Transactions on Machine Learning Research (**TMLR**), 2023.*
4. **Matryoshka Representation Learning.**  
Aditya Kusupati, Gantavya Bhatt, Aniket Rege, Matthew Wallingford, Aditya Sinha, Vivek Ramanujan, William Howard-Snyder, Kaifeng Chen, Sham Kakade, Prateek Jain, Ali Farhadi.  
*Neural Information Processing Systems (**NeurIPS**), 2022.*

3. **Task Adaptive Parameter Sharing for Multi-Task Learning.**  
**Matthew Wallingford**, Hao Li, Alessandro Achille,  
 Avinash Ravichandran, Charless Fowlkes, Rahul Bhotika, Stefano Soatto.  
*Conference on Computer Vision and Pattern (CVPR), 2022.*
2. **LLC: Accurate, Multi-purpose Learnt Low-dimensional Binary Codes.**  
 Aditya Kusupati, **Matthew Wallingford**, Vivek Ramanujan, Raghav Somani,  
 Jae Sung Park, Krishna Pillutla, Prateek Jain, Sham Kakade, Ali Farhadi.  
*Neural Information Processing Systems (NeurIPS), 2021.*
1. **RoboTHOR: An Open Simulation-to-Real Embodied AI Platform.**  
 Matt Deitke, Winson Han, Alvaro Herrasti, Aniruddha Kembhavi, Eric Kolve, Roozbeh Mottaghi, Jordi Salvador,  
 Dustin Schwenk, Eli VanderBilt, **Matthew Wallingford**, Luca Weihs, Mark Yatskar, Ali Farhadi.  
*Conference on Computer Vision and Pattern(CVPR), 2020.*

## WORK EXPERIENCE

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**Allen Institute for Artificial Intelligence - AI2** *2021-Present*  
*Student Collaborator*

Advisors: [Aniruddha Kembhavi](#), [Roozbeh Mottaghi](#) & [Ali Farhadi](#)

Long-term collaboration with Allen Institute working on challenges associated with computer vision, representation learning, and embodied agents.

**AWS AI Lab** *June - August, 2021*  
*Research Intern*

Advisors: [Avinash Ravichandran](#) & [Charless Fowlkes](#)

Developed method (Task Adaptive Parameter Sharing - CVPR '22) for efficiently fine-tuning and deploying models.

**Microsoft** *May - August, 2018*  
*Data Science Intern*

Developed and deployed an anomaly detection system for user login data to detect system failures and security breaches on Azure Identity.

## TALKS

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- **Learning World Models from 360° Video**  
 – *Invited Talk* - Wild-3D Workshop (ECCV 2024) *September 2024*
- **Towards 3D Foundation Models**  
 – UIUC Computer Vision Seminar *May 2023*  
 – UW Graphics Seminar *July 2023*  
 – Workshop on Neural Fields (ICLR 2023) *June 2023*
- **Towards Real World Machine Learning**  
 – Google Brain - Meta Learning Group *March 2020*  
 – University of Washington CSE Colloquium *March 2020*

## SERVICE

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- **Reviewer** - NeurIPS (2022 - Present, Top reviewer '23), ICLR (2022 - Present), CVPR (2020 - Present)
- **Mentorship**  
 – [Ethan Shen](#) *2024-Present*  
 BS Student, UW CSE  
 – [Andre Ye](#) *2024-Present*  
 BS Student, UW CSE  
 – [Peter Sushko](#) *2024-Present*  
 MS Student, UW Statistics
- **Reader:**  
 – *PhD Admissions* - Paul G. Allen School of CSE, University of Washington *2020-Present*  
 – *Allen School PhD Pre-Application Mentorship Service (PAMS)* *2020-2022*