Wufei Ma

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https://wufeim.github.io
Towson, MD

EDUCATION

Johns Hopkins University Baltimore, MD
Ph.D. in Computer Science advised by Prof. Alan Yuille, GPA: 4.0/4.0 *Sep 2022 - Present*

Purdue University West Lafayette, IN
Graduate study in Computer Science, GPA: 4.0/4.0 *Sep 2021 - May 2022*

Rensselaer Polytechnic Institute Troy, NY
B.S. in Computer Science & B.S. in Mathematics *Jan 2017 - May 2020*
- Summa Cum Laude, GPA: 3.96/4.0, Dean's Honor List in every semester
- Outstanding performance award recognized by: Prof. Lirong Xia, Prof. David Goldschmidt

Columbia University New York, NY
Undergraduate study in computer science, GPA: 4.0/4.0 *May - Aug 2017*

Wuhan University Wuhan, Hubei, China
B.S. in Mathematics (transferred to RPI), GPA: 3.4/4.0 *Sep 2015 - Nov 2016*

Internship Experience

Meta Reality Labs Burlingame, CA
Research Scientist Intern *May 2023 - Present*
- Supervisor: Kai Li, Huiyu Wang
- Research focus: text-video pre-training; video diffusion models

Amazon AWS AI Santa Clara, CA
Applied Scientist Intern *May - Aug 2022*
- Supervisor: Srikar Appalaraju, R Manmatha
- Research focus: visual pre-training for scene-text VQA

Microsoft Research Asia (MSRA) Beijing, China
Research Intern *Jan - Aug 2021*
- Supervisor: Dr. Bin Li, Dr. Jiahao Li
- Research focus: deep learning-based video compression; ensemble learning
- "Stars of Tomorrow" Award of Excellence

Megvii (Face++) Research Beijing, China
Research Intern *Aug - Dec 2020*
- Supervisor: Dr. Zhikang Liu
- Research focus: monocular 3D object detection with occlusion-reasoning
- Award of Excellence

Publications

Compositional Video-Text Reasoning from Augmented Texts
- Under review

Adding 3D Geometry Control to Diffusion Models
Wufei Ma*, Qihao Liu*, Jiahao Wang*, Angtian Wang, Yaoyao Liu, Adam Kortylewski, Alan Yuille*
• ICLR, 2024 (Spotlight)

3D-Aware Visual Question Answering about Parts, Poses, and Occlusions
*Xingrui Wang, **Wufei Ma**, Zhuowan Li, Adam Kortylewski, Alan Yuille*
• NeurIPS, 2023

Animal3D: A Comprehensive Dataset of 3D Animal Pose and Shape
*Jiacong Xu, Yi Zhang, Jiawei Peng, **Wufei Ma**, …, Alan Yuille, Adam Kortylewski*
• ICCV, 2023

Neural Textured Deformable Meshes for Robust Analysis-by-Synthesis
Angtian Wang, **Wufei Ma***, Alan Yuille, Adam Kortylewski*
• WACV, 2024

Robust Category-Level 3D Pose Estimation from Synthetic Data
*Jiahao Yang, **Wufei Ma**, Angtian Wang, Xiaoding Yuan, Adam Kortylewski, Alan Yuille*
• WACV, 2024

OOD-CV-v2: An Extended Benchmark for Robustness to Out-of-Distribution Shifts of Individual Nuisances in Natural Images
*Bingchen Zhao, Jiahao Wang, **Wufei Ma**, Artur Jesslen, Siwei Yang, Shaozuo Yu, Oliver Zendel, Christian Theobalt, Alan Yuille, Adam Kortylewski*
• In submission; available on arXiv

SuperCLEVR: A Virtual Benchmark to Diagnose Robustness in Visual Reasoning
*Zhuowan Li, Xingrui Wang, Elias Stengel-Eskin, Adam Kortylewski, **Wufei Ma**, Benjamin Van Durme, Alan Yuille*
• CVPR, 2023 (Highlight, 10%)

Robust 6DoF Object Detection using Neural Mesh Models with multi-object reasoning
***Wufei Ma**, Angtian Wang, Adam Kortylewski, Alan Yuille*
• ECCV, 2022

ROBIN: A Benchmark for Robustness to Individual Nuisances in Real-World Out-of-Distribution Shifts
*Bingchen Zhao, Shaozuo Yu, **Wufei Ma**, Mingxin Yu, Shenxiao Mei, Angtian Wang, Ju He, Alan Yuille, Adam Kortylewski*
• ECCV, 2022 (Oral)

Uncertainty-aware deep video compression with ensembles
***Wufei Ma**, Jiahao Li, Bin Li, Yan Lu*
• To be appeared in *IEEE Transactions on Multimedia*

Making group decisions from natural language-based preferences
*Farhad Moshin, Lei Luo, **Wufei Ma**, Inwon Kang, Zhibing Zhao, Ao Liu, Rohit Vaish, Lirong Xia*
• Published on *the 8th International Workshop on Computational Social Choice (COMSOC 2021)*

Image-driven discriminative and generative machine learning algorithms for establishing microstructure-processing relationships
Wufei Ma, *Elizabeth Kautz, Arun Baskaran, Aritra Chowdhury, Vineet Joshi, Bülent Yener, Daniel Lewis*
• Published on *Journal of Applied Physics*

An image-driven machine learning approach to kinetic modeling of a discontinuous precipitation reaction
Elizabeth Kautz,* ***Wufei Ma*****, Saumyadeep Jana, Arun Devaraj, Vineet Joshi, Bülent Yener, Daniel Lewis (* for equal contribution)*
• Published on *Materials Characterization*

Image-driven discriminative and generative methods for establishing microstructure-processing relationships relevant to nuclear fuel processing pipelines
Elizabeth Kautz, ***Wufei Ma****, Arun Baskaran, Aritra Chowdhury, Bülent Yener, Daniel Lewis*
• Published on *Microscopy and Microanalysis*

The adoption of image-driven machine learning for microstructure characterization and materials design: a perspective
Arun Baskaran, Elizabeth Kautz, Aritra Chowdhury, ***Wufei Ma****, Bülent Yener, Daniel Lewis*
• Published on *Journal of the Minerals, Metals, and Materials Society*

Professional Service

Reviewer
ICLR, NeurIPS, ICML, CVPR, ICCV, WACV, etc.

Teaching

CS661 - Computer Vision *Fall 2023, Spring 2024*
Graduate Course Assistant, Johns Hopkins University

CS671 - NLP: Self-Supervised Models *Spring 2023*
Graduate Teaching Assistant, Johns Hopkins University

CS182 - Foundations of Computer Science *Fall 2021*
Graduate Teaching Assistant, Purdue University

Leadership

Soccer Team, College of Mathematics *Sep 2015 - Nov 2016*
Captain
• Enter semi-final and quarter-final of WHU Soccer Champion Cup in 2015 and 2016, out of 32.
• Host weekly training and organize friendly matches every month.

Shanghai High School Rubik's Cube Club *Jan 2014 - Jan 2015*
President
• Organize tutorials, workshops, and competitions for various Rubik's Cubes.