Tianfu Wang

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Research Interest

I am interested in developing intelligent systems for computer vision and computational imaging. More specifically, I work on 3D imaging of specular objects, and diffusion models for 3D generation and image processing tasks such as reflection removal, underwater image restoration, and depth estimation. I am looking for summer 2026 research internship positions.

Education

University of Maryland — **College Park, MD, USA**
Ph.D. student, Computer Science, GPA 4.0/4.0 — 08. 2024 –

ETH Zurich — **Zurich, Switzerland**
M.S. in Computer Science, with distinction, GPA 5.75/6.0 — 09. 2021 – 07.2024

Northwestern University — **Evanston, IL, USA**
B.S. in Computer Science and Mathematics, Magna Cum Laude, GPA 3.94/4.0 — 09. 2017 – 06. 2021

Experience

Intelligent Sensing Lab, University of Maryland, College Park — 08. 2024 -
Research Assistant

- Computer Science Ph.D. Student supervised by Prof. Christopher Metzler
- Developed novel diffusion-model-based image restoration approaches for flash photography reflection removal and underwater image restoration.

Photogrammetry and Remote Sensing, ETH Zurich — 07. 2023 – 07.2024
Research Assistant

- Master's thesis supervised by Prof. Konrad Schindler
- Developed fast and resolution-agnostic diffusion image generation methods, with applications in monocular depth estimation, 3D generation, and domain generalization.

Computer Vision Lab, ETH Zurich — 04. 2022 – 07.2023
Research Assistant

- Worked with Menelaos Kanakis and Anton Obukhov on neural radiance fields and diffusion models, supervised by Prof. Luc Van Gool

Computational Photography Lab, Northwestern University — 01. 2020 – 09.2021
Research Assistant

- Worked with Prof. Oliver Cossairt and Prof. Florian Willomitzer on structured light imaging and eye tracking with deflectometry.

Selected Publications

* Denotes equal contribution

Single-Step Latent Diffusion for Underwater Image Restoration
Jiayi Wu*, **Tianfu Wang***, Md Abu Bakr Siddique, Md Jahidul Islam, Cornelia Fermuller, Yiannis Aloimonos, Christopher A. Metzler
IEEE TPAMI & ICCP, 2025

Marigold: Affordable Adaptation of Diffusion-Based Image Generators for Image Analysis
Bingxin Ke*, Kevin Qu*, **Tianfu Wang***, Nando Metzger, Shengyu Huang, Bo Li, Anton Obukhov*, Konrad Schindler
IEEE TPAMI, 2025

Flash-Split: 2D Reflection Removal with Flash Cues and Latent Diffusion Separation
Tianfu Wang*, Mingyang Xie*, Haoming Cai, Sachin Shah, Christopher A. Metzler
CVPR, 2025

Repurposing Pre-trained Video Diffusion Models for Event-based Video Interpolation
Jingxi Chen, Brandon Y Feng, Haoming Cai, **Tianfu Wang**, Levi Burner, Dehao Yuan,
Cornelia Fermuller, Christopher A. Metzler, Yiannis Aloimonos
CVPR, 2025

Accurate Eye Tracking from Dense 3D Surface Reconstructions using Single-Shot Deflectometry
Jiazhang Wang, **Tianfu Wang**, Bingjie Xu, Oliver Cossairt, Florian Willomitzer
Nature Communications, 2025

Optimization-Based Eye Tracking using Deflectometric Information
Tianfu Wang, Jiazhang Wang, Oliver Cossairt, Florian Willomitzer
IEEE Transactions on Computational Imaging (TCI), 2024

DGInStyle: Domain Generalizable Semantic Segmentation
with Image Diffusion Models and Stylized Semantic Control
Yuru Jia, Lukas Hoyer, Shengyu Huang, **Tianfu Wang**, Luc Van Gool, Konrad Schindler, Anton Obukhov
ECCV, 2024

Breathing New Life into 3D Assets with Generative Repainting
Tianfu Wang, Menelaos Kanakis, Konrad Schindler, Luc Van Gool, Anton Obukhov
British Machine Vision Conference (BMVC), 2023 (**Oral**)

A Mitsuba-based Study on Trade-offs Between
Projection and Reflection Based Systems in Structured-Light 3D Imaging
Tianfu Wang, Florian Schiffers, Florian Willomitzer, Oliver Cossairt
Optica Computational Optical Sensing and Imaging, 2021

Talks

Breathing New Life into 3D Assets with Generative Repainting
British Machine Vision Conference (BMVC)
Aberdeen, United Kingdom, Nov. 2023

Optimization-Based Eye Tracking using Deflectometric Information
124th Annual Meeting of the German Branch of the European Optics Society (DGaO)
Berlin, Germany, May. 2023

A Mitsuba-based Study on Trade-offs Between
Projection and Reflection Based Systems in Structured-Light 3D Imaging
Optica Imaging and Applied Optics Congress
Washington, DC, United States, July. 2021

Scholarships

University of Maryland Graduate School Dean's Fellowship
$2500/yr fellowship for 2 years supporting graduate studies.
2024

Northwestern University Summer Undergraduate Research Grant Advanced (SURG Advanced)
$3500 research grant for Modeling and Analysis of Real Time 3D SPH Fluid Simulation on WebGL
Supervised by Prof. Jack Tumblin, 2020

Technical Skills

Programming: Python, C++, PyTorch, PyTorch3D, Blender
Language: Mandarin(Native); English(Proficient)