

# Tianfu Wang

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## RESEARCH INTEREST

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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

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<b>University of Maryland</b> Ph.D. student, Computer Science, GPA 4.0/4.0	<b>College Park, MD, USA</b> 08. 2024 –
<b>ETH Zurich</b> M.S. in Computer Science, with distinction, GPA 5.75/6.0	<b>Zurich, Switzerland</b> 09. 2021 – 07.2024
<b>Northwestern University</b> B.S. in Computer Science and Mathematics, Magna Cum Laude, GPA 3.94/4.0	<b>Evanston, IL, USA</b> 09. 2017 – 06. 2021

## EXPERIENCE

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<b>Intelligent Sensing Lab, University of Maryland, College Park</b> Research Assistant <ul style="list-style-type: none"><li>Computer Science Ph.D. Student supervised by Prof. Christopher Metzler</li><li>Developed novel diffusion-model-based image restoration approaches for flash photography reflection removal and underwater image restoration.</li></ul>	08. 2024 -
<b>Photogrammetry and Remote Sensing, ETH Zurich</b> Research Assistant <ul style="list-style-type: none"><li>Master's thesis supervised by Prof. Konrad Schindler</li><li>Developed fast and resolution-agnostic diffusion image generation methods, with applications in monocular depth estimation, 3D generation, and domain generalization.</li></ul>	07. 2023 – 07.2024
<b>Computer Vision Lab, ETH Zurich</b> Research Assistant <ul style="list-style-type: none"><li>Worked with Menelaos Kanakis and Anton Obukhov on neural radiance fields and diffusion models, supervised by Prof. Luc Van Gool</li></ul>	04. 2022 – 07.2023
<b>Computational Photography Lab, Northwestern University</b> Research Assistant <ul style="list-style-type: none"><li>Worked with Prof. Oliver Cossairt and Prof. Florian Willomitzer on structured light imaging and eye tracking with deflectometry.</li></ul>	01. 2020 – 09.2021

## SELECTED PUBLICATIONS

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\* 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  
Accepted to 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  
Preprint, under review, 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 Schiffrers, Florian Willomitzer, Oliver Cossairt  
Optica Computational Optical Sensing and Imaging, 2021

## TALKS

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### **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

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### **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

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**Programming:** Python, C++, PyTorch, PyTorch3D, Blender

**Language:** Mandarin(Native); English(Proficient)