Zhanghao Sun

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EDUCATIONS

STANFORD UNIVERSITY

- PhD Candidate, Electrical Engineering (5th year) 09/2018-12/2023 (expected)
  Advisor: Prof. Olav Solgaard, Co-Advisor: Prof. Gordon Wetzstein

PEKING UNIVERSITY

B.S., Physics 09/2014-07/2018

SELECTED PUBLICATIONS

Z.Sun, Wei Ye, Jinhui Xiong, et al., "Consistent Direct Time-of-Flight Video Depth Super-Resolution", *arXiv*

Z.Sun, J.Wang, Y.Wu, S.Nayar, "*Seeing Far in the Dark with Patterned Flash*", *ECCV 2022*

Z.Sun, Y.Zhang, Y.Wu, D.Huo, Y.Qian, J.Wang, "*Structured Light with Redundancy Codes*", *arXiv*

Sunil Pai, **Z.Sun**, et al., "Experimentally realized in situ backpropagation for deep learning in nanophotonic neural networks", *arXiv*

Z.Sun, R.Quan, O.Solgaard, "*Resonant Scanning Design and Control for Fast Spatial Sampling*", *Scientific Reports*

Z.Sun, D.Lindell, O.Solgaard, G.Wetzstein, "*SPADnet: Deep RGB-SPAD Sensor Fusion Assisted by Monocular Depth Estimation*", *Optics Express*

For other publications, please refer to my personal webpage or google scholar profile

INDUSTRY EXPERIENCE

Meta Reality Labs

- Research Intern, On-Device Computer Vision Team 06/2022-09/2022
  - **Direct time-of-flight (dToF) processing algorithm**: Worked on a deep-learning based dToF video processing framework and related synthetic dataset generation with Unreal Engine.
- Student Researcher, On-Device Computer Vision Team 09/2022-12/2022

Snap Inc.

- Research Intern, Computational Imaging Team 06/2021-09/2021
  - **Low-light imaging**: Worked on a novel low-light imaging hardware prototype and deep learning-based reconstruction algorithm. Worked on image restoration for under display sensors.
  - **Structured light 3D imaging:** Worked on a novel structured light system and denoising algorithms

Adaps Photonics Inc.

- Algorithm Engineer Intern 07/2019-09/2019
  - **Imaging pipeline emulation & Processing algorithm design**: physics-based LiDAR sensor simulations

PhD RESEARCH EXPERIENCE

3D Reconstruction with Time-of-Flight and RGB Sensor Fusion

- Developed a Convolution Neural Network (CNN) model for time-of-flight and RGB image sensor fusion.
- Developed a video processing framework for low-resolution dToF sensor (collaborate with Meta Reality Labs).

Adaptive Sampling for 3D Reconstruction

- Proposed optimization-based design framework for adaptive sampling 3D reconstruction.
- Extended LiDAR based SLAM algorithm to adaptive scanning scenario.

Optical Neural Network and Applications in Imaging

- For the first time, realized neural network back-propagation in optical system.
- Developing hardware prototype for phase/3D/microscopic imaging with optical neural network.