Shengjie Zhu
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About me

My Ph.D. focuses on monocular/multi-view depth estimation. This is a comprehensive task, encompassing topics including NeRF, structure-from-motion, correspondence estimation, camera pose estimation, camera calibration, self-supervision, etc.

Research Highlights

- **Revisit Self-Supervision as Local Structure-from-Motion.**
  - Robust pose estimation outperforms COLMAP, preparing pose for NeRF rendering on short videos.
  - First work demonstrates self-supervision enhances supervised depth with RGB inputs.
  - First work demonstrates self-supervision enhances supervised correspondence with RGB-D inputs.
- **The Overlooked Relationships between Monocular 3D Sensing and Intrinsic.**
  - Monocular camera calibration over in-the-wild images.
  - Intrinsic scales up multi-datasets monocular depth and monocular 3D object detector learning.

Education

2017 – 2024: **PhD, Computer Science & Engineering**, *Michigan State University*, East Lansing, U.S.
Dissertation: Structure-from-Motion with Monocular Depth and Dense Correspondence Estimation
Advisor: Prof. Xiaoming Liu
GPA: 3.70/4.0

2013 – 2017: **Bachelor of Engineering, Electrical and Electronics**, *Southeast University*, Nanjing, China.
GPA: 3.54/4.0

Publications

ECCV'24 **Revisit Self-Supervision with Local Structure-from-Motion** [PDF].
[Under Review] Shengjie Zhu, Xiaoming Liu

ECCV'24 **Produce Accurate LiDAR Depthmap via Determining Stereo Occlusion** [PDF].
[Under Review] Shengjie Zhu, Girish Chandar Ganesan, Xiaoming Liu

NeurIPS'23 **Tame a Wild Camera: In-the-Wild Monocular Camera Calibration** [PDF, Code].
Shengjie Zhu, Abhinav Kurmur, Masa Hu, Xiaoming Liu

CVPR'23 **LightedDepth: Video Depth Estimation in light of Limited Inference View Angles** [PDF, Code].
Shengjie Zhu, Xiaoming Liu

CVPR'23 **PMatch: Paired Masked Image Modeling for Dense Geometric Matching** [PDF, Code].
Shengjie Zhu, Xiaoming Liu

CVPR'20 **The Edge of Depth: Explicit Constraints between Segmentation and Depth** [PDF, Code].
Shengjie Zhu, Garrick Brazil, Xiaoming Liu

Work Experience

June – Sep, 2022 **Applied Scientist Intern, Amazon Device AI**.
Develop SoTA Few-Shot Object Detection System.

June – Sep, 2021 **Applied Scientist Intern, Amazon Device AI**.
Develop Non-Learning Algorithm for Improved Depthmap Groundtruth from LiDAR, applicable to KITTI, Nuscenes, DDAD, Waymo, and Other Driving Datasets.

Computer Skills

Language **CUDA, Matlab, C++, Python, Pytorch, Tensorflow, CuPy, Numba**

Talk

Aug. 08, 2023 **3D Perception from Two Views**, Google Pixel Biometrics Seminar.
Feb. 05, 2024 **Structure-from-Motion Meets Self-supervised Learning**, CMU VACS Seminar. [Link]