ZEHAO YU

Computer Vision, Machine Learning, Deep Learning

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EDUCATION

University of Tübingen   **Tübingen Germany**
Ph.D in Computer Science   *Sep. 2021 - Present*
Advisor: Prof. Andreas Geiger and Dr. Torsten Sattler, Major in Computer Vision

ShanghaiTech University   **Shanghai China**
School of Information Science and Technology, M.S. in Computer Science   *Sep. 2018 - July. 2021*
Advisor: Prof. Shenghua Gao, Major in Computer Vision

Xiamen University   **Xiamen China**
Software School, B.S. in Software Engineering   *Sep. 2014 - Jun. 2018*
Advisor: Prof. Zhihong Zhang, Major in Computer Vision

PUBLICATIONS

Mip-Splatting: Alias-free 3D Gaussian Splatting   *Nov. 2023*
Zehao Yu, *Anpei Chen, Binbin Huang, Torsten Sattler, Andreas Geiger*

- arXiv, under review

SDFStudio: A Unified Framework for Surface Reconstruction   *Dec. 2022*
Zehao Yu, *Anpei Chen, Bozidar Antic, Songyou Peng, Michael Niemeyer, Siyu Tang, Torsten Sattler, Andreas Geiger*

- Open Source Project **1.7K Stars**

MonoSDF: Exploring Monocular Geometric Cues for Neural Implicit Surface Reconstruction   *Dec. 2022*
Zehao Yu, *Songyou Peng, Michael Niemeyer, Torsten Sattler, Andreas Geiger*

- Accepted by **NeurIPS 2022**

TransFuser: Imitation with Transformer-Based Sensor Fusion for Autonomous Driving   *Jun. 2022*
Kashyap Chitta, Aditya Prakash, Bernhard Jaeger, **Zehao Yu**, *Katrin Renz, Andreas Geiger*

- Accepted by **T-PAMI 2022**

AS-MLP: An Axial Shifted MLP Architecture for Vision   *Jul. 2021*
Dongze Lian*, **Zehao Yu***, *Xing Sun, Shenghua Gao*   *(* means equal contribution)*

- Accepted by **ICLR 2022**

P^{2}Net: Patch-match and Plane-regularization for Unsupervised Indoor Depth Estimation   *Feb. 2020*
Zehao Yu*, *Lei Jin*, Shenghua Gao*   *(* means equal contribution)*

- Accepted by **ECCV 2020**

Fast-MVSNet: Sparse-to-dense Multi-View Stereo With Learned Propagation and Gauss-Newton Refinement   *Nov. 2019*
Zehao Yu, *Shenghua Gao*

- Accepted by **CVPR 2020**

Single-Image Piece-wise Planar Reconstruction via Associative Embedding   *Feb. 2019*
Zehao Yu*, *Jia Zheng*, Dongze Lian, Zihan Zhou, Shenghua Gao*   *(* means equal contribution)*

- Accepted by **CVPR 2019**
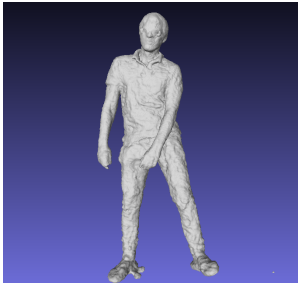
Believe It or Not, We Know What You Are Looking at!   *Sep. 2018*
Dongze Lian*, **Zehao Yu***, *Shenghua Gao*   *(* means equal contribution)*

- Accepted by **ACCV 2018** (**Oral Presentation**)

RESEARCH EXPERIENCES

3D Human Modeling   **Shenzhen China**
Research project, Tencent AI Lab   *May. 2020*

- Estimate SMPL parameters from multi-view images
- Reconstruct surface geometry
- Use nueral renderer for novel view synthesis

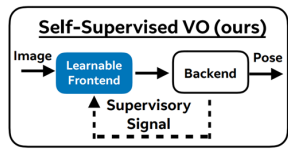**Multi-view Stereo**   **Shanghai China**
Research project, ShanghaiTech University   *Jun. 2019*

- Implement state-of-the-art algorithm
- Reduce GPU memory consumption
- Speed up training and inference
- State-of-the-art performance

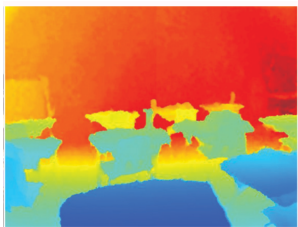**Self-improving Visual Odometry**   **Shanghai China**
Course Project, ShanghaiTech University   *May. 2019*

- Implement state-of-the-art algorithm
- Learnable frontend (keypoints detection and description)
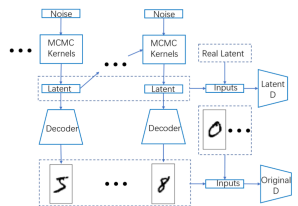- Use backend optimization to filter out bad keypoints then retrain frontend

Unsupervised Depth Estimation   **Shanghai China**
Research project, ShanghaiTech University   *Des. 2018*

- Implement state-of-the-art algorithm
- Transfter to indoor scenario

Nueral Markov Chain Monte Carlo   **Shanghai China**
Course Project, ShanghaiTech University   *Des. 2018*

- Use auto encoder to learn latent representation of high-dimensional data
- Use deep neural network to parameter MCMC kernel
- Train the MCMC kernel to directly sample latent representation via adversarial training

Single-Image Planar Reconstruction   **Shanghai China**
Research Project, ShanghaiTech University(Accepted by CVPR2019)   *Jul. 2018*

- Cast planar reconstruction problem as a instance segmentation problem
- Propose fast variant mean shift algorithm to group plane instance
- State-of-the-art performance and real-time performance

Human Pose Estimation   **Xiamen China**
Bachelor Thsis   *May. 2018*

- Propose stack feature pyramid network for human pose estimation
- Achieve comparable results with state-of-the-art performance

Gaze Following   **Shanghai China**
Research Project, ShanghaiTech University(Accepted by ACCV2018)   *Mar. 2018*

- Propose plausible two stage solution for gaze following, we first estimate gaze direction, then use gaze direction field to estimate gaze point
- Collect a video based gaze following dataset
- State-of-the-art performance

WORK EXPERIENCE

Tencent AI Lab   **Shenzhen China**
· Computer Vision Research internship   *May. 2020 - Present*

SiPhoton (Xiamen)   **Xiamen China**
· Image Processing Engineer internship   *Jul. 2016 - May. 2017*

AWARDS AND HONORS

National Scholarship for Master Students 2020   Oct. 2020
2020 Tencent Rhino-Bird Elite Training Program   Apr. 2020
The **2nd Prize(Honorable Mention)** in Mathematical Contest in Modeling (**MCM**), America   Feb. 2017
The **3rd Prize** in Collegiate Programming Contest, Fujian Province   Des. 2015

SKILL

Research Insterent: Implicit Representation, 3D Reconstruction, Novel View Synthesis, SLAM
Programming: Python(Pytorch), C++, CUDA
Knowledge: Git

PROFESSIONAL SERVICES

Journal Reviewer: **TPAMI**, **TIP**, **TCSVT**
Conference Reviewer: **CVPR**, **ICCV**, **ECCV**, **NeurIPS**, **ICLR**, **AAAI**