Yiming Xie

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Education

Zhejiang University, Hangzhou, China *Sep. 2015 - June. 2019*

- *Bachelor of Opto-Electronics Information Science and Engineering*
- **Related Courseworks:** Advanced Data Structures & Algorithm Analysis, Object-Oriented Programming, Linux Application, Computer Networks

Research Interests

- 3D computer vision and machine learning with a focus on 3D understanding and reconstruction.

Publications

- **Yiming Xie***, Jiaming Sun*, Siyu Zhang, and Xiaowei Zhou. You don't only look once: Constructing visuospatial working memory for integrated 3d object detection and tracking. In submission
- **Yiming Xie***, Jiaming Sun*, Linghao Chen, and Xiaowei Zhou. Neuralrecon: Real-time coherent 3d reconstruction from monocular video. In *CVPR*, 2021 **(Oral)**
- Jiaming Sun*, Linghao Chen*, **Yiming Xie**, Siyu Zhang, Qinhong Jiang, Xiaowei Zhou, and Hujun Bao. Disp r-cnn: Stereo 3d object detection via shape prior guided instance disparity estimation. In *CVPR*, 2020

Note: * above denotes equal contribution

Research Experience

ZJU-SenseTime Joint Lab of 3D Vision Zhejiang University, Hangzhou

Supervisor: *Prof. Xiaowei Zhou, Jiaming Sun*

Real-Time 3D Scene Reconstruction from Monocular Images *Feb. 2020 - Present*

- Designed a accurate, coherent and real-time method for RGB scene reconstruction.
- Proposed to directly reconstruct local surfaces represented as sparse TSDF volumes for each video fragment sequentially by a neural network.
- A learning-based TSDF fusion module was used to guide the network to fuse features from previous fragments.

3D Object Detection and Tracking via Constructing Visuospatial Working Memory *Feb. 2019 - Nov. 2019*

- Designed a novel framework for integrated 3D detection and tracking.
- Proposed an early integration scheme based on a new representation to speed up object detection.
- Proposed a novel way to fuse predictions from previous frames with estimations at the current frame.
- Achieved better detection performance and truncation or occlusion handling.

Shape Prior Guided Instance Disparity Estimation for Stereo 3D Object Detection *June. 2019 - Nov. 2019*

- Proposed a novel framework to estimate object instance disparity in 3D object detection with stereo images.
- Proposed a pseudo-ground-truth generation process to supervise the instance disparity estimation network.
- Guided the disparity estimation to learn object shape prior that is suitable for object detection.
- Outperformed state-of-the-art baselines on both accuracy and runtime speed.

State Key Laboratory of CAD&CG, ZJU-HAMAMATSU Joint Photonics lab Zhejiang University, Hangzhou

Supervisor: *Prof. Xiaowei Zhou, Prof. Huafeng Liu* *Excellent Senior Honor Thesis Award (top 5%)*

Deep Scene Flow Estimation with Iterative Soft-argmin and Edge-aware Regression *July. 2018 - Jan. 2019*

- Explored methods of improving the performance of scene flow estimation based on PWCNet.
- Proposed an iterative soft argmin to cope with the multi-modal distributions of cost volume.
- Proposed an edge-aware policy to improve the over-smoothing problem and utilized contrastive loss to learn a more discriminative descriptor.
- Conducted experiments to show that our proposed method leads to improvement in terms of both optical flow and disparity estimation.

National Engineering Research Center of Optical Instrumentation Zhejiang University, Hangzhou

Supervisor: *Prof. Bin Lin* *Final report ranked among the top 5%*

Robust Stereo Face Recognition Using Convolutional Neural Networks *Nov. 2017 - May. 2018*

- Proposed a simple CNN-based face recognition approach that incorporates disparity information.
- Proposed to utilize RGB-D fusion at different levels and Adaboost to combine RGB-D information.
- Conducted experiments to show that our model improves the robustness and the performance compared to RGB input.

Professional Experience

Research Intern | SenseTime, Hangzhou, China *Nov. 2018 - Feb. 2021*

Supervisor: *Jiaming Sun*

- scene reconstruction, 3D detection and tracking

Skills

Programming Languages: C, C++, Python, LaTex

Technical: Pytorch, Git, Linux, Blender, Final cut pro