

# YIMING XIE

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## EDUCATION

**Zhejiang University**, Hangzhou, China

*Sep. 2015 - June. 2019*

• *Bachelor of Opto-Electronics Information Science and Engineering*

*Jr./Sr. GPA: 3.57/4.0*

• **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\*, Linghao Chen, and Xiaowei Zhou. Neuralfusion: Real-time coherent 3d reconstruction from monocular video. In submission

• **Yiming Xie\***, Jiaming Sun\*, Siyu Zhang, Hujun Bao, and Xiaowei Zhou. You don't only look once: Constructing visuospatial working memory for integrated 3d object detection and tracking. In submission

• Jiaming Sun\*, Linghao Chen\*, **Yiming Xie**, Siyu Zhang, Qinghong Jiang, Xiaowei Zhou, and Hujun Bao. Disp r-cnn: Stereo 3d object detection via shape prior guided instance disparity estimation. In *CVPR*, June 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 is 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**

Zhejiang University, Hangzhou

Supervisor: *Prof. Xiaowei Zhou*

*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 methods 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*

*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 - Present*

Supervisor: *Jiaming Sun*

- scene reconstruction, 3D detection and tracking

## SKILLS

**Programming Languages:** C, C++, Python, LaTeX

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