

Aug 25, 2023

# Yi Wei

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## RESEARCH INTEREST

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**My research interests include computer vision, robotics and computer graphics.** In particular, I am interested in 3D scene understanding and 3D reconstruction. I love the research topic which has practical application, such as AR/VR and autonomous driving. I would like to leverage 3D vision techniques to benefit our lives.

## EDUCATION

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**Tsinghua University, Department of Automation** Sep 2019 – Present

*PhD student in Automation, supervised by Prof. Jiwen Lu*

**Tsinghua University, Department of Electronic Engineering** Aug 2015 – Jun 2019

*Bachelor student in Electronic Engineering, GPA: 3.66/4.0 (rank: 6/245, top 3%)*

**Beijing No.5 High School** Sep 2009 – Jul 2015

## EXPERIENCE

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**Gaussian Robotics** – Beijing, China

*Gaussian-Tsinghua joint laboratory*

- Engineer topic: Sensor calibration, drivable space detection, low-beam LiDAR-based 3D object detection.

**Apple** – Beijing, China

*[Research Intern] AI/ML Group*

- Research topic: 3D AIGC

**ByteDance** – Beijing, China

*SLAM & 3D Vision Group*

- Research topic: self-supervised depth estimation, plane-assisted multi-view stereo, multiple plane detection.
- Engineer topic: Shape AR, rectangle tracking.

**Xpeng Inc** – Beijing, China

*LiDAR Group*

- Engineer topic: LiDAR-based 3D object detection, LiDAR-based model quantization

**Microsoft Research Asia** - Beijing, China

*Intelligent Multimedia Group.*

- Research topic: multi-view hand pose estimation.

**Sensetime** – Beijing, China

*Group "Video Intelligence" (camera department).*

- Leveraged quantization and mimic to compress tiny model for object detection (ECCV 2018).
- Developed an framework iterated between quantization and channel pruning for model compression (already been applied to market products).

**DeePhi Tech (Xilinx)** – Beijing, China

- Major developer of a real-time detector using Squeezenet and R-FCN (already been applied to company demo).

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## PUBLICATIONS

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### First author top conference/journal:

1. **Yi Wei**, Shaohui Liu, Yongming Rao, Wang Zhao, Jiwen Lu, and Jie Zhou, "NerfingMVS: Guided Optimization of Neural Radiance Fields for Indoor Multi-view Stereo". ICCV 2021 (*Oral*).
2. **Yi Wei\***, Linqing Zhao\*, Wenzhao Zheng, Jiwen Lu, and Jie Zhou, "SurroundOcc: Multi-Camera 3D Occupancy Prediction for Autonomous Driving". ICCV 2023.
3. **Yi Wei\***, Linqing Zhao\*, Wenzhao Zheng, Yongming Rao, Guan Huang, Jiwen Lu, and Jie Zhou, "SurroundDepth: Entangling Surrounding Views for Self-Supervised Multi-Camera Depth Estimation". CoRL 2022.
4. **Yi Wei**, Zibu Wei, Yongming Rao, Jiabin Li, Jiwen Lu, and Jie Zhou, "LiDAR Distillation: Bridging the Beam-Induced Domain Gap for 3D Object Detection". ECCV 2022.
5. **Yi Wei\***, Ziyi Wang\*, Yongming Rao \*, Jiwen Lu and Jie Zhou, "PV-RAFT: Point-Voxel Correlation Fields for Scene Flow Estimation of Point Clouds". CVPR 2021.
6. **Yi Wei**, Shang Su, Jiwen Lu and Jie Zhou, "FGR: Frustum-Aware Geometric Reasoning for Weakly Supervised 3D Vehicle Detection". ICRA 2021.
7. **Yi Wei\***, Shaohui Liu\*, Wang Zhao\*, Jiwen Lu and Jie Zhou, "Conditional Single-view Shape Generation for Multi-view Stereo Reconstruction". CVPR 2019.
8. **Yi Wei**, Xinyu Pan , Hongwei Qin and Junjie Yan, "Quantization mimic: Towards very tiny cnn for object detection". ECCV 2018.
9. **Yi Wei**, Shaohui Liu, Jie Zhou, and Jiwen Lu. "Depth-Guided Optimization of Neural Radiance Fields for Indoor Multi-view Stereo". TPAMI 2023.
10. Ziyi Wang\*, **Yi Wei\***, Yongming Rao, Jiwen Lu and Jie Zhou. "3D Point-Voxel Correlation Fields for Scene Flow Estimation". Ziyi Wang\*, TPAMI 2023

### Others:

1. Xiaofeng Wang\*, Zheng Zhu\*, Wenbo Xu\*, Yunpeng Zhang, **Yi Wei**, Xu Chi, Yun Ye, Dalong Du, Jiwen Lu, Xingang Wang. "OpenOccupancy: A Large Scale Benchmark for Surrounding Semantic Occupancy Perception". ICCV 2023.
2. Zhenyu Wu, Ziwei Wang, Zibu Wei, **Yi Wei**, Haibin Yan, "Smart Explorer: Recognizing Objects in Dense Clutter via Interactive Exploration". IROS 2022.
3. Yongming Rao\*, Benlin Liu\*, **Yi Wei**, Jiwen Lu, Cho-Jui Hsieh, and Jie Zhou, "RandomRooms: Unsupervised Pre-training from Synthetic Shapes and Randomized Layouts for 3D Object Detection". ICCV 2021.
4. Wang Zhao\*, Shaohui Liu\*, **Yi Wei**, Hengkai Guo, and Yong-jin Liu, "A Confidence-based Iterative Solver of Depths and Surface Normals for Deep Multi-view Stereo". ICCV 2021.
5. **Yi Wei**, Guijin Wang , Cairong Zhang , Hengkai Guo , Xinghao Chen , Huazhong Yang, "Two-stream binocular network: Accurate near field finger detection based on binocular images". VCIP 2017 **Best Student Paper**.

## AWARDS

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- 2023 Apple AI/ML Scholarship – 22 people in the world
- 2021 National Scholarship, Tsinghua University
- 2019 Beijing Outstanding Graduate
- 2018 Caixiong Scholarship (Tsinghua Research Excellence Scholarship) – 10 people in Tsinghua University
- 2018 Baogang Outstanding Scholarship – 1 person in Tsinghua University
- 2017 Qualcomm Scholarship – 30 people in Tsinghua University
- 2017 Sensetime Undergraduate Scholarship – 30 people in China
- 2017 National Scholarship, Tsinghua University
- VCIP 2017 Best Student Paper Award

## TECHNICAL SKILLS

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**Programming:** C/C++, Python, MATLAB, SQL, Verilog, L<sup>A</sup>T<sub>E</sub>X, Linux/Unix

**Language:** Mandarin, English