Aug 25, 2023

Yi Wei

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RESEARCH INTEREST

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

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

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

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, Jiaxin 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. **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

· 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

Programming: C/C++, Python, MATLAB, SQL, Verilog, LaTeX, Linux/Unix
Language: Mandarin, English