

Ziwei Wang

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Working Experience

Robotics Institute, Carnegie Mellon University

Postdoc Fellow collaborated with Prof. Changliu Liu

2023.10-

Computer Science and Artificial Intelligence Laboratory, MIT

Research assistant advised by Prof. Edward Adelson

2017.6-2017.9

Education

Department of Automation, Tsinghua University

PhD in Control Science and Engineering

Advisor: Prof. Jiwen Lu

Beijing, China

2018.8-2023.7

Department of Physics, Tsinghua University

B.S. in Maths and Physics

Beijing, China

2014.8-2018.7

Research Interests

Efficient Deep Learning, Embodied Visual Perception

Publications

Peer-Reviewed Journal Publications

- [1] Jingyi Zhang, **Ziwei Wang**, Haoyu Wang, Jie Zhou and Jiwen Lu
Anycost Network Quantization for Image Super-Resolution
IEEE Transactions on Image Processing (T-IP), 2024
- [2] Xiuwei Xu, **Ziwei Wang**, Jie Zhou and Jiwen Lu
Back to Reality: Learning Data-Efficient 3D Object Detector with Shape Guidance
IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI), 2023
- [3] **Ziwei Wang**, Jiwen Lu, Han Xiao, Shengyu Liu and Jie Zhou
Learning Accurate Performance Predictors for Ultrafast Automated Model Compression
International Journal of Computer Vision (IJCV), 2023
- [4] **Ziwei Wang**, Han Xiao, Yueqi Duan, Jie Zhou and Jiwen Lu
Learning Deep Binary Descriptors via Bitwise Interaction Mining
IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI), 2023
- [5] **Ziwei Wang**, Changyuan Wang, Xiuwei Xu, Jie Zhou and Jiwen Lu
Quantformer: Learning Extremely Low-precision Vision Transformers
IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI), 2022
- [6] Sichao Huang, **Ziwei Wang**, Jie Zhou and Jiwen Lu
Planning Irregular Object Packing via Hierarchical Reinforcement Learning
IEEE Robotics and Automation Letters (RAL), 2022
- [7] **Ziwei Wang**, Jiwen Lu, Ziyi Wu and Jie Zhou
Learning Efficient Binarized Object Detectors with Information Compression
IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI), 2022
- [8] **Ziwei Wang**, Jiwen Lu, and Jie Zhou
Learning Channel-wise Interactions for Binary Convolutional Neural Networks
IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI), 2021

- [9] Yueqi Duan, Jiwen Lu, **Ziwei Wang**, Jianjiang Feng and Jie Zhou
Learning Deep Binary Descriptor with Multi-Quantization
IEEE Transactions on Pattern Analysis and Machine Intelligence (**T-PAMI**), 2019

Peer-Reviewed Conference Publications

- [10] Changyuan Wang, **Ziwei Wang**, Xiuwei Xu, Yansong Tang, Jie Zhou and Jiwen Lu
Towards Accurate Post-training Quantization for Diffusion Models
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2024
- [11] Xiuwei Xu, Chong Xia, **Ziwei Wang**, Linqing Zhao, Yueqi Duan, Jie Zhou and Jiwen Lu
Memory-based Adapters for Online 3D Scene Perception
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2024
- [12] Linqing Zhao, Xiuwei Xu, **Ziwei Wang**, Yunpeng Zhang, Borui Zhang, Wenzhao Zheng, Dalong Du, Jie Zhou and Jiwen Lu
LowRankOcc: Tensor Decomposition and Low-Rank Recovery for Vision-based 3D Semantic Occupancy Prediction
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2024
- [13] Yinan Liang, **Ziwei Wang**, Xiuwei Xu, Yansong Tang, Jie Zhou and Jiwen Lu
MCUFormer: Deploying Vision Transformers on Microcontrollers with Limited Memory
Thirty-seventh Conference on Neural Information Processing Systems (**NeurIPS**), 2023
- [14] Xiuwei Xu, **Ziwei Wang**, Jie Zhou and Jiwen Lu
Binarizing Sparse Convolutional Networks for Efficient Point Cloud Analysis
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2023
- [15] Zhenyu Wu, **Ziwei Wang**, Jiwen Lu and Haibin Yan
Category-level Shape Estimation for Densely Cluttered Objects
IEEE International Conference on Robotics and Automation (**ICRA**), 2023
- [16] Quan Zheng, **Ziwei Wang**, Jie Zhou and Jiwen Lu
Shap-CAM: Visual Explanations for Convolutional Neural Networks based on Shapley Value
17th European Conference on Computer Vision (**ECCV**), 2022
- [17] Zhenyu Wu*, **Ziwei Wang***, Zibu Wei, Yi Wei and Haibin Yan
Smart Explorer: Recognizing Objects in Dense Clutter via Interactive Exploration
IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), 2022
- [18] Zhan Liu, **Ziwei Wang**, Sichao Huang, Jie Zhou and Jiwen Lu
GE-Grasp: Efficient Target-Oriented Grasping in Dense Clutters
IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), 2022
- [19] Han Xiao, **Ziwei Wang**, Zheng Zhu, Jie Zhou, and Jiwen Lu
Shapley-NAS: Discovering Operation Contribution for Neural Architecture Search
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2022
- [20] **Ziwei Wang**, Han Xiao, Jiwen Lu and Jie Zhou
Generalizable Mixed-Precision Quantization via Attribution Rank Preservation
IEEE International Conference on Computer Vision (**ICCV**), 2021
- [21] **Ziwei Wang**, Yunsong Wang, Ziyi Wu, Jiwen Lu and Jie Zhou
Instance Similarity Learning for Unsupervised Feature Representation
IEEE International Conference on Computer Vision (**ICCV**), 2021
- [22] **Ziwei Wang**, Quan Zheng, Jiwen Lu and Jie Zhou
Deep Hashing with Active Pairwise Supervision
16th European Conference on Computer Vision (**ECCV**), 2020
- [23] **Ziwei Wang**, Ziyi Wu, Jiwen Lu and Jie Zhou
BiDet: An Efficient Binarized Object Detector
IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2020

- [24] **Ziwei Wang**, Jiwen Lu, Chenxin Tao and Jie Zhou
Learning Channel-wise Interactions for Binary Convolutional Neural Networks
 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2019
- [25] Yueqi Duan, **Ziwei Wang**, Jiwen Lu, Xudong Lin and Jie Zhou
GraphBit: Bitwise Interaction Mining via Deep Reinforcement Learning
 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2018
- [26] Yueqi Duan, Jiwen Lu, **Ziwei Wang**, Jianjiang Feng and Jie Zhou
Learning Deep Binary Descriptor with Multi-Quantization
 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2017

Honors and Awards

- Outstanding Doctoral Dissertation of Tsinghua University 2023
- National Scholarship 2022
- National Scholarship 2020
- Chi-Sun Yeh Scholarship 2018
- Qualcomm Scholarship 2016

Invited Talk

- **Compact Visual Representation Learning**
 Young Annual Conference of Chinese Association of Automation, 2021

Teaching Experience

- Robotics Institute, Carnegie Mellon University**
Guest speaker for Safety in Provable Control 2024
- Department of Automation, Tsinghua University**
Teaching assistant for Pattern Recognition and Machine Learning 2022

Academic Services

Journal Reviewer

- IEEE Transactions on Pattern Analysis and Machine Intelligence
- IEEE Transactions on Image Processing
- IEEE Transactions on Circuits and Systems for Video Technology
- IEEE Robotics and Automation Letters
- IEEE Transactions on Biometrics, Behavior, and Identity Science
- ACM Transactions on Graphics
- Pattern Recognition Letters
- Journal of Visual Communication and Image Representation

Conference Reviewer

- IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2020, 2021, 2022, 2023, 2024)
- Neural Information Processing Systems (NeurIPS 2020, 2021, 2022, 2023)

- IEEE International Conference on Computer Vision (ICCV 2021, 2023)
- European Conference on Computer Vision (ECCV 2022, 2024)
- International Conference on Machine Learning (ICML 2021, 2022, 2023, 2024)
- International Conference on Representation Learning (ICLR 2021, 2022, 2023, 2024)
- International Conference on Robotics and Automation (ICRA 2023)