

# Ziwei Wang

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## Working Experience

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### Computer Science and Artificial Intelligence Laboratory, MIT

Research assistant advised by Prof. Edward Adelson

2017.6-2017.9

## Education

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### 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

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Efficient Deep Learning, Robotic Vision

## Publications

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### Peer-Reviewed Journal Publications

- [1] **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
- [2] **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
- [3] Sichao Huang, **Ziwei Wang**, Jie Zhou and Jiwen Lu  
**Planning Irregular Object Packing via Hierarchical Reinforcement Learning**  
IEEE Robotics and Automation Letters (RAL), 2022
- [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), 2022
- [5] **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
- [6] **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
- [7] 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

- [8] 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, accepted

- [9] 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, accepted
- [10] Quan Zheng, **Ziwei Wang**, Jie Zhou and Jiwen Lu  
**Shap-CAM: Visual Explanations for Convolutional Neural Networks based on Shapley Value**  
17<sup>th</sup> European Conference on Computer Vision (ECCV), 2022
- [11] 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
- [12] 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
- [13] 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
- [14] **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
- [15] **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
- [16] **Ziwei Wang**, Quan Zheng, Jiwen Lu and Jie Zhou  
**Deep Hashing with Active Pairwise Supervision**  
16<sup>th</sup> European Conference on Computer Vision (ECCV), 2020
- [17] **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
- [18] **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
- [19] 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
- [20] 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

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

## Invited Talk

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

## Teaching Experience

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**Department of Automation, Tsinghua University**

*Teaching assistant for Pattern Recognition and Machine Learning*

2022

## Academic Services

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### Journal Reviewer

- 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)
- 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)
- International Conference on Machine Learning (ICML 2021, 2022, 2023)
- International Conference on Representation Learning (ICLR 2021, 2022, 2023)
- International Conference on Robotics and Automation (ICRA 2023)
- IEEE International Conference on Multimedia & Expo (ICME 2019, 2020, 2021, 2022)
- IEEE Winter Conference on Applications of Computer Vision (WACV 2020, 2021, 2022, 2023)