# Ziwei Wang

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## Working Experience

**Robotics Institute, Carnegie Mellon University**
*Postdoc Fellow collaborated with Prof. Changliu Liu*                    2023.9-

**Computer Science and Artificial Intelligence Laboratory, MIT**
*Research assistant advised by Prof. Edward Adelson*                    2017.6-2017.9

## Education

**Department of Automation, Tsinghua University**                    Beijing, China
PhD in Control Science and Engineering                    2018.8-2023.7
Advisor: Prof. Jiwen Lu

**Department of Physics, Tsinghua University**                    Beijing, China
B.S. in Maths and Physics                    2014.8-2018.7

## Research Interests

Efficient Deep Learning, Embodied Visual Perception

## Publications

### Peer-Reviewed Journal Publications

[1] 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

[2] **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

[3] **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

[4] **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

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

[6] **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

[7] **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

[8] 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

[9] 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

[10] 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

[11] 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

[12] Quan Zheng, **Ziwei Wang**, Jie Zhou and Jiwen Lu
**Shap-CAM: Visual Explanations for Convolutional Neural Networks based on Shapley Value**
$17_{th}$ European Conference on Computer Vision (**ECCV**), 2022

[13] 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

[14] 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

[15] 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

[16] **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

[17] **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

[18] **Ziwei Wang**, Quan Zheng, Jiwen Lu and Jie Zhou
**Deep Hashing with Active Pairwise Supervision**
$16_{th}$ European Conference on Computer Vision (**ECCV**), 2020

[19] **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

[20] **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

[21] 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

[22] 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

**Department of Automation, Tsinghua University**
*Teaching assistant for Pattern Recognition and Machine Learning* *2022*

## Academic Services

### 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, 2023)