ZIYI WU

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EDUCATION

University of Toronto, Toronto, ON, Canada   Sept. 2021 – Present
Ph.D. in Computer Science
Advisor: Prof. Igor Gilitschenski

Tsinghua University, Beijing, P.R.China   Aug. 2017 – Jun. 2021
B.Eng. in Automation
Advisor: Prof. Jiwen Lu

PUBLICATIONS & MANUSCRIPTS

* indicates equal contribution/supervision

Journal Papers

1. **Learning Efficient Binarized Object Detectors with Information Compression**
   Ziwei Wang, Jiwen Lu, **Ziyi Wu**, Jie Zhou.
   T-PAMI, 2021.

Conference Papers

1. **Breaking Bad: A Dataset for Geometric Fracture and Reassembly**
   Silvia Sellán*, Yun-Chun Chen*, **Ziyi Wu***, Animesh Garg, Alec Jacobson.
   NeurIPS Datasets and Benchmarks Track, 2022.

2. **Instance Similarity Learning for Unsupervised Feature Representation**
   Ziwei Wang, Yunsong Wang, **Ziyi Wu**, Jiwen Lu, Jie Zhou.
   ICCV, 2021.

3. **BiDet: An Efficient Binarized Object Detector**
   Ziwei Wang, **Ziyi Wu**, Jiwen Lu, Jie Zhou.
   CVPR, 2020.

Workshop Papers & Preprints

1. **SlotFormer: Unsupervised Visual Dynamics Simulation with Object-Centric Models**
   Ziyi Wu, Nikita Dvornik, Klaus Greff, Thomas Kipf*, Animesh Garg*.
   Preprint. Under review.

2. **SlotFormer: Long-Term Dynamic Modeling in Object-Centric Models**
   Ziyi Wu, Nikita Dvornik, Klaus Greff, Jiaqi Xi, Thomas Kipf*, Animesh Garg*.
   UAI@CRL workshop, 2022.

3. **Dynamics-aware Adversarial Attack of 3D Sparse Convolution Network**
   An Tao, Yueqi Duan, He Wang, **Ziyi Wu**, Pengliang Ji, Haowen Sun, Jie Zhou, Jiwen Lu.
   Preprint. Under review.

4. **IF-Defense: 3D Adversarial Point Cloud Defense via Implicit Function based Restoration**
   Ziyi Wu*, Yueqi Duan*, He Wang, Qingnan Fan, Leonidas J. Guibas.
   arXiv, 2020.

5. **A Cascade Regression Model for Anatomical Landmark Detection**
Zimeng Tan, Yongjie Duan, **Ziyi Wu**, Jianjiang Feng, Jie Zhou.
MICCAI@STACOM Workshop, 2019.

6. **CFUN: Combining Faster R-CNN and U-net Network for Efficient Whole Heart Segmentation**
Zhanwei Xu, **Ziyi Wu**, Jianjiang Feng.
arXiv, 2018.

EXPERIENCE

Toronto Intelligent Systems Lab, University of Toronto   Sept. 2022 – Present
Graduate Research Assistant   Supervisor: Prof. Igor Gilitschenski
3D vision, robotics

Vector Institute   Sept. 2021 – Present
Student Researcher

People, AI and Robotics Group, University of Toronto   Sept. 2021 – Aug. 2022
Graduate Research Assistant   Supervisor: Prof. Animesh Garg & Prof. Andrea Tagliasacchi
3D vision, robotics

OpenMMLab, SenseTime Ltd.   Mar. 2021 – Aug. 2021
Research Intern   Manager: Dr. Kai Chen   Mentor: Wenwei Zhang
Develop open source codebase for 3D scene understanding (MMDetection3D)

Geometric Computation Group, Stanford University   Jun. 2020 – Dec. 2020
Research Intern   Supervisor: Prof. Leonidas J. Guibas
3D adversarial attack and defense in point cloud

Intelligent Vision Group, Tsinghua University   Apr. 2019 – May. 2020
Undergraduate Researcher Assistant   Supervisor: Prof. Jiwen Lu
Efficient design for 2D object detectors

INVITED TALK

Winner talk at ECCV 2022 MVCS Workshop CLEVRER Challenge   2022
SlotFormer: Unsupervised Visual Dynamics Simulation with Object-Centric Models

HONORS & AWARDS

- **1st place in CLEVRER track at MVCS Challenge (ECCV 2022 Workshop)**   2022
- Vector Institute Research Grant   2022
- Outstanding Graduates (Beijing, Tsinghua University & Dept. of Automation)   2021
- **SenseTime Undergraduate Scholarship for AI Research**   2020
- Xiaomi Scholarship, Tsinghua University   2020
- Fang Chongzhi Scholarship, Tsinghua University   2019
- **Chinese National Scholarship**   2018
- Spark Program Membership, Tsinghua University
- Innovation Award of Science and Technology, Tsinghua University   2018-2020
- Champion of the 20th Electronic Design Competition, Tsinghua University   2018

ACADEMIC SERVICES

Conference Reviewer/PC Member

- IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)   2022
- European Conference on Computer Vision (ECCV)   2022
- Conference on Neural Information Processing Systems (NeurIPS)   2022
- Association for the Advancement of Artificial Intelligence (AAAI)   2023
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)   2022
- IEEE International Conference on Robotics and Automation (ICRA)   2023

Journal Reviewer

- International Symposium of Robotic Research (ISRR)

Workshop Reviewer

- ICLR Workshop on the Elements of Reasoning: Objects, Structure and Causality   2022

Seminar Co-Organizer

- Toronto AI in Robotics (AIR) Seminar   2022-2023

MENTORING

Xudong Liu   Oct. 2022 – Present
MScAC student, University of Toronto
Project: Event-based vision

Wuyue Lu   Oct. 2022 – Present
B.S. student, University of Toronto
Project: Object-centric learning

Jingyu Hu   Oct. 2022 – Present
B.S. student, University of Toronto
Project: Object-centric learning

Xinyu Kang   May. 2022 – July. 2022
B.S. student, University of Toronto
Project: Fractured object reassembly

Jiaqi Xi   Sept. 2021 – May. 2022
B.S. student, Peking University
Project: Object-centric dynamics model