ZIYI WU

Toronto, Ontario M5S 1A1 Canada
ziyiwu@cs.toronto.edu ◇ https://wuziyi616.github.io/

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. **SlotFormer: Unsupervised Visual Dynamics Simulation with Object-Centric Models**
Ziyi Wu, Nikita Dvornik, Klaus Greff, Thomas Kipf*, Animesh Garg*.
ICLR, 2023.

2. **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.

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

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

Workshop Papers & Preprints

1. **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.

2. **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.
arXiv, 2021.

3. **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.

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

5. **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 2018-20
- 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) 2022-23
- 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 (OSC) 2022

Seminar Co-Organizer

- Toronto AI in Robotics (AIR) Seminar 2022-23

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