

# ZIYI WU

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## EDUCATION

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**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

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\* 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. **SlotDiffusion: Object-Centric Generative Modeling with Diffusion Models**

**Ziyi Wu**, Jingyu Hu\*, Wuyue Lu\*, Igor Gilitschenski, Animesh Garg.

*NeurIPS*, 2023 (Spotlight) | *ICLR@NeSy-GeMs Workshop*, 2023.

2. **SlotFormer: Unsupervised Visual Dynamics Simulation with Object-Centric Models**

**Ziyi Wu**, Nikita Dvornik, Klaus Greff, Thomas Kipf\*, Animesh Garg\*.

*ICLR*, 2023 | *UAI@CRL Workshop*, 2022 | *ECCV@MVCS Challenge*, 2022.

3. **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* (Featured Paper Presentation), 2022.

4. **Instance Similarity Learning for Unsupervised Feature Representation**

Ziwei Wang, Yunsong Wang, **Ziyi Wu**, Jiwen Lu, Jie Zhou.

*ICCV*, 2021.

5. **BiDet: An Efficient Binarized Object Detector**

Ziwei Wang, **Ziyi Wu**, Jiwen Lu, Jie Zhou.

*CVPR*, 2020.

### Workshop Papers & Preprints

1. **EventCLIP: Adapting CLIP for Event-based Object Recognition**

**Ziyi Wu**, Xudong Liu, Igor Gilitschenski.

*arXiv*, 2023.

2. **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.

3. **A Cascade Regression Model for Anatomical Landmark Detection**  
Zimeng Tan, Yongjie Duan, **Ziyi Wu**, Jianjiang Feng, Jie Zhou.  
*MICCAI@STACOM Workshop*, 2019.
4. **CFUN: Combining Faster R-CNN and U-net Network for Efficient Whole Heart Segmentation**  
Zhanwei Xu, **Ziyi Wu**, Jianjiang Feng.  
*arXiv*, 2018.

## EXPERIENCE

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<b>Toronto Intelligent Systems Lab, University of Toronto</b>	Sept. 2022 – Present
Graduate Research Assistant	Supervisor: Prof. Igor Gilitschenski
3D vision, robotics	
<b>Vector Institute</b>	Sept. 2021 – Present
Student Researcher	
<b>People, AI and Robotics Group, University of Toronto</b>	Sept. 2021 – Aug. 2022
Graduate Research Assistant	Supervisor: Prof. Animesh Garg & Prof. Andrea Tagliasacchi
3D vision, robotics	
<b>OpenMMLab, SenseTime Ltd.</b>	Mar. 2021 – Aug. 2021
Research Intern	Manager: Dr. Kai Chen
Develop open source codebase for 3D scene understanding ( <i>MMDetection3D</i> )	Mentor: Wenwei Zhang
<b>Geometric Computation Group, Stanford University</b>	Jun. 2020 – Dec. 2020
Research Intern	Supervisor: Prof. Leonidas J. Guibas
3D adversarial attack and defense in point cloud	
<b>Intelligent Vision Group, Tsinghua University</b>	Apr. 2019 – May. 2020
Undergraduate Researcher Assistant	Supervisor: Prof. Jiwen Lu
Efficient design for 2D object detectors	

## INVITED TALK

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Invited talk in Prof. <b>Kun Zhang</b> 's group	Feb. 2023
Invited talk in <b>Neuroinformatics Group</b>	Nov. 2022
Winner talk at <b>ECCV@MVCS Workshop CLEVRER Track</b>	Oct. 2022
SlotFormer: Unsupervised Visual Dynamics Simulation with Object-Centric Models	

## HONORS & AWARDS

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• 1st place in CLEVRER track at <b>MVCS Challenge (ECCV 2022 Workshop)</b>	2022
• Vector Institute Research Grant	2022
• Outstanding Graduates (Beijing, Tsinghua University & Dept. of Automation)	2021
• <b>SenseTime Undergraduate Scholarship for AI Research</b>	2020
• Xiaomi Scholarship, Tsinghua University	2020
• Fang Chongzhi Scholarship, Tsinghua University	2019
• <b>Chinese National Scholarship</b>	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

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### Conference Reviewer/PC Member

- IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2022-23
- International Conference on Computer Vision (ICCV) 2023
- European Conference on Computer Vision (ECCV) 2022
- Conference on Neural Information Processing Systems (NeurIPS) 2022-23
- International Conference on Machine Learning (ICML) 2023
- International Conference on Learning Representations (ICLR) 2024
- Association for the Advancement of Artificial Intelligence (AAAI) 2023-24
- 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@OSC Workshop](#) 2022

### Seminar Co-Organizer

- [Toronto AI in Robotics \(AIR\) Seminar](#) 2022-23

## MENTORING

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**Qing Lyu** June. 2023 – Present

B.S. student, University of Toronto

Project: Event-based vision

**Xudong Liu** Oct. 2022 – Present

MScAC student, University of Toronto

Project: Event-based vision

**Jingyu Hu** Oct. 2022 – May. 2023

B.S. student, University of Toronto

Project: Object-centric diffusion model

**Wuyue Lu** Oct. 2022 – May. 2023

B.S. student, University of Toronto

Project: Object-centric diffusion model

*Next stop:* Master at Simon Fraser University

**Jiaqi Xi** Sept. 2021 – May. 2022

B.S. student, Peking University

Project: Object-centric dynamics model

*Next stop:* Master at Columbia University