

# 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](#)

## EXPERIENCE

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**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

Mentor: Dr. [Kai Chen](#), Dr. [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

## SELECTED PUBLICATIONS & MANUSCRIPTS

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\* indicates equal contribution/supervision

### Preprints

#### 1. SPAD: Spatially Aware Multiview Diffusers

[Yash Kant](#), [Ziyi Wu](#), [Michael Vasilkovsky](#), [Guocheng Qian](#), [Jian Ren](#), [Riza Alp Guler](#), [Bernard Ghanem](#), [Sergey Tulyakov](#), [Igor Gilitschenski](#), [Aliaksandr Siarohin](#).

*Under Review.*

#### 2. S<sup>2</sup>Edit: Text-Guided Image Editing with Precise Semantic and Spatial Control

[Xudong Liu](#), [Zikun Chen](#), [Ruowei Jiang](#), [Ziyi Wu](#), [Kejia Yin](#), [Han Zhao](#), [Parham Aarabi](#), [Igor Gilitschenski](#).

*Under Review.*

3. **LEOD: Label-Efficient Object Detection for Event Cameras**  
Ziyi Wu, Mathias Gehrig, Qing Lyu, Xudong Liu, Igor Gilitschenski.  
*Under Review.*
4. **EventCLIP: Adapting CLIP for Event-based Object Recognition**  
Ziyi Wu, Xudong Liu, Igor Gilitschenski.  
*Under Review.*

## 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.

## INVITED TALK

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Invited talk in Prof. <b>Kun Zhang's</b> 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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• University of Toronto Mississauga Travel Grant for NeurIPS 2023.	2023
• 1st place in <b>CLEVRER</b> track at <b>MVCS Challenge</b> (ECCV 2022 Workshop)	2022
• <b>Vector Institute</b> Research Grant	2022
• Outstanding Graduates (Beijing, Tsinghua University & Dept. of Automation)	2021
• <b>SenseTime</b> 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

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### Conference Reviewer/PC Member

- IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2022-24
- 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) 2023-24

### Journal Reviewer

- IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI)
- 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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### [Anastasiia Pedan](#)

May. 2023 – Present

UofT CS Summer Program for Ukraine Students  
Project: Object-centric reinforcement learning

### [Jasper Gerigk](#)

May. 2023 – Present

Undergrad, University of Toronto  
Project: Object-centric reinforcement learning

### [Qing Lyu](#)

May. 2023 – Nov. 2023

Undergrad, University of Toronto  
Project: Event-based vision

### [Xudong Liu](#)

Oct. 2022 – Nov. 2023

MScAC, University of Toronto  
Project: Event-based vision  
*Next stop:* ByteDance Vancouver, BC, Canada

### [Jingyu Hu](#)

Oct. 2022 – May. 2023

Undergrad, University of Toronto  
Project: Object-centric diffusion model

**Wuyue Lu**

Undergrad, University of Toronto

Project: Object-centric diffusion model

*Next stop*: Master, Simon Fraser University

Oct. 2022 – May. 2023

**Jiaqi Xi**

Undergrad, Peking University

Project: Object-centric dynamics model

*Next stop*: Master, Columbia University

Sept. 2021 – May. 2022