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

EXPERIENCE

Google Research　　　　　　　　　　　　　　　　　　　　　　　Dec. 2023 – Present
Student Researcher　　　　　　　　　　　　　　　　　　　　Mentor: Dr. Thomas Kipf
Video diffusion model

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

* 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. **S²Edit: 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

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

HONORS & AWARDS

- **Outstanding reviewer at NeurIPS 2023**   2023
- University of Toronto Mississauga Travel Grant for NeurIPS 2023   2023
- **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)   2022-24
- 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

Robert Ren   Sept. 2023 – Present
Undergrad, University of Toronto
Project: Personalized visual generation with diffusion models

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
Next stop: Data Scientist, Royal Bank of Canada

Xudong Liu   Oct. 2022 – Nov. 2023
MScAC, University of Toronto
Project: Event-based vision
Next stop: Research Engineer, ByteDance Vancouver

Jingyu Hu   Oct. 2022 – May. 2023
Undergrad, University of Toronto
Project: Object-centric diffusion model

Wuyue Lu   Oct. 2022 – May. 2023
Undergrad, University of Toronto
Project: Object-centric diffusion model
Next stop: Master, Simon Fraser University

Jiaqi Xi   Sept. 2021 – May. 2022
Undergrad, Peking University
Project: Object-centric dynamics model
Next stop: Master, Columbia University