ZIYI WU

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EDUCATION

University of Toronto, Toronto, ON, Canada — Sept. 2021 – Jun. 2026 (expected)
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 DeepMind, Toronto — June. 2025 – Present
Student Researcher — Mentor: Saurabh Saxena, Marcus Brubaker
Visual generation

Snap Research, Remote — Feb. 2025 – May. 2025
Research Intern — Mentor: Aliaksandr Siarohin, Sergey Tulyakov
Post-training video diffusion models

Snap Research, LA — Jun. 2024 – Dec. 2024
Research Intern — Mentor: Aliaksandr Siarohin, Sergey Tulyakov
Controllable video generation

Google DeepMind, Remote — Dec. 2023 – Jun. 2024
Student Researcher — Mentor: Thomas Kipf
3D-aware controllable image generation

Vector Institute, Toronto — Sept. 2021 – Present
Student Researcher

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

RESEARCH

* indicates equal contribution/supervision

Preprints

1. **DenseDPO: Fine-Grained Temporal Preference Optimization for Video Diffusion Models**
Ziyi Wu, Anil Kag, Ivan Skorokhodov, Willi Menapace, Ashkan Mirzaei, Igor Gilitschenski*, Sergey Tulyakov*, Aliaksandr Siarohin*.
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. **TESPEC: Temporally-Enhanced Self-Supervised Pretraining for Event Cameras**
   Mohammad Mohammadi, **Ziyi Wu**, Igor Gilitschenski.
   ICCV, 2025.

2. **Mind the Time: Temporally-Controlled Multi-Event Video Generation**
   Ziyi Wu, Aliaksandr Siarohin, Willi Menapace, Ivan Skorokhodov, Yuwei Fang, Varnith Chordia, Igor Gilitschenski*, Sergey Tulyakov*.
   CVPR, 2025.

3. **SG-I2V: Self-Guided Trajectory Control in Image-to-Video Generation**
   Koichi Namekata, Sherwin Bahmani, **Ziyi Wu**, Yash Kant, Igor Gilitschenski, David B. Lindell.
   ICLR, 2025.

4. **Neural Assets: 3D-Aware Multi-Object Scene Synthesis with Image Diffusion Models**
   Ziyi Wu, Yulia Rubanova, Rishabh Kabra, Drew A. Hudson, Igor Gilitschenski, Yusuf Aytar, Sjoerd van Steenkiste, Kelsey Allen, Thomas Kipf.
   NeurIPS, 2024 (Spotlight).

5. **LEOD: Label-Efficient Object Detection for Event Cameras**
   Ziyi Wu, Mathias Gehrig, Qing Lyu, Xudong Liu, Igor Gilitschenski.
   CVPR, 2024.

6. **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*.
   CVPR, 2024.

7. **SlotDiffusion: Object-Centric Generative Modeling with Diffusion Models**
   Ziyi Wu, Jingyu Hu*, Wuyue Lu*, Igor Gilitschenski, Animesh Garg.
   NeurIPS, 2023 (Spotlight) | *NeSy-GeMs@ICLR Workshop*, 2023.

8. **SlotFormer: Unsupervised Visual Dynamics Simulation with Object-Centric Models**
   Ziyi Wu, Nikita Dvornik, Klaus Greff, Thomas Kipf*, Animesh Garg*.
   ICLR, 2023 | *CRL@UAI Workshop*, 2022 | *MVCS@ECCV Challenge*, 2022.

9. **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.

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

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

INVITED TALK

Talk at Toronto Robotics Conference Jul. 2025
Neural Assets: 3D-Aware Multi-Object Scene Synthesis with Image Diffusion Models

Talk at Google DeepMind Toronto Apr. 2025
Controllable Generation with Diffusion Models (SPAD, Neural Assets, SG-I2V, MinT)

Invited talk at Vector Institute Jan. 2025
Neural Assets: 3D-Aware Multi-Object Scene Synthesis with Image Diffusion Models

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

HONORS & AWARDS

- Outstanding reviewer at CVPR 2025 and CVEU@CVPR Workshop 2025
- Outstanding reviewer at NeurIPS 2024 2024
- Outstanding reviewer at NeurIPS 2023 2023
- **1st place in CLEVRER track at MVCS Challenge (ECCV 2022 Workshop)** 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

ACADEMIC SERVICES

Conference Reviewer/PC Member

- IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2022-25
- International Conference on Computer Vision (ICCV) 2023-25
- European Conference on Computer Vision (ECCV) 2022-24
- Conference on Neural Information Processing Systems (NeurIPS) 2022-25
- International Conference on Machine Learning (ICML) 2023-25
- International Conference on Learning Representations (ICLR) 2024-25
- Association for the Advancement of Artificial Intelligence (AAAI) 2023-24
- International Joint Conference on Artificial Intelligence (IJCAI) 2024
- 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)
- Transactions on Machine Learning Research (TMLR)
- International Symposium of Robotic Research (ISRR)
- IEEE Robotics and Automation Letters (RA-L)

Workshop Reviewer

- OSC@ICLR Workshop 2022
- CVEU@CVPR Workshop 2025

Seminar Co-Organizer

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

MENTORING

Mohammad Mohammadi Sept. 2023 – Jul. 2025
PhD, University of Toronto
Project: Event-based vision
Next stop: PhD, University of Toronto

Koichi Namekata May. 2024 – Jan. 2025
Undergrad, University of Toronto
Project: Controllable video generation
Next stop: PhD, University of Oxford

Robert Ren Sept. 2023 – Jul. 2024
Undergrad, University of Toronto
Project: Personalized visual generation with diffusion models

Anastasiia Pedan May. 2023 – May. 2024
UofT CS Summer Program for Ukraine Students
Project: Object-centric reinforcement learning
Next stop: PhD, University of Toronto

Jasper Gerigk May. 2023 – May. 2024
Undergrad, University of Toronto
Project: Object-centric reinforcement learning
Next stop: PhD, University of Toronto

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