Ze Yang – Curriculum Vitæ

Contact Information	Department of Computer Science University of Toronto Toronto, ON, Canada	 └ +1 (647) 786-0934 ☑ zeyang@cs.toronto.edu ☆ https://www.cs.toronto.e 	du/~zeyang/
Research Interests	My research interests focus on the intering. In particular, I am dedicated to data, with the purpose of creating <i>im</i> and evaluation of robotic systems, su <i>cost-effective</i> manner. Towards this go such as <i>3D reconstruction</i> spanning from passing both rigid and dynamic contract data. Crucially, I investigate these tass lenging <i>in-the-wild</i> settings where the of my research, I'm interested in learn	ersection of 3D computer vision, robotion build <i>controllable</i> and <i>realistic</i> digital <i>mersive</i> virtual environments that facil uch as self-driving vehicles, in a <i>safe</i> , or oal, I have delved into various areas ow mindividual objects to large-scale scene ents, and <i>closed-loop sensor simulation</i> for this not only in <i>controlled</i> environments resulting models will be deployed. Du- ing <i>flexible</i> and <i>structural</i> representation	cs, and machine learn- twins using <i>real-world</i> itate the development <i>controlled, reactive,</i> and ver the past few years, <i>ae, 3D modeling</i> encom- or camera and LiDAR but also in more chal- uring the earlier stages a for visual perception.
Education	University of Toronto Department of Computer Science Ph.D., Supervisor: Raquel Urtasun		2020/09 – Present
	Peking University School of Electronics Engineering and M.Sc., Supervisor: Liwei Wang Thesis: "Learning Representative F	<i>Computer Science (EECS)</i> oints for Visual Perception"	2017/09 - 2020/06
	Xi'an Jiaotong University Special Class for the Gifted Young B.Eng., Electrical Engineering and At	utomation	2013/09 – 2017/06
Professional Experience	Waabi Innovation, Toronto, ON, Can Senior Researcher Researcher II Researcher Working on next-generation sensor Uber ATG, Toronto, ON, Canada	ada simulation for self-driving	2023/09 – Present 2022/06 – 2023/09 2021/03 – 2022/06
	Research Scientist Research Internship Working on 3D reconstruction, mod	leling and simulation for self-driving	2020/06 - 2021/02 2019/10 - 2020/06
	Research Internship Working with Dr. Han Hu, Jifeng E	ina Dai, and Steve Lin on visual perception	2018/12 - 2019/09
	Sinovation ventures, Beijing, China Research Internship Working on unmanned convenience	store project	2017/06 - 2017/08
	Research Internship Working with Prof. Jiashi Feng on g	ngapore enerative model	2016/09 - 2016/12

PEER-REVIEWED CONFERENCE PUBLICATIONS

(*=equal contribution, †=interns)

2024

- C1 GenAssets: Generating in-the-wild 3D Assets in Latent Space Ze Yang, Jingkang Wang, Haowei Zhang, Siva Manivasagam, Yun Chen, Raquel Urtasun In *Conference on Computer Vision and Pattern Recognition* (*CVPR*), 2025
- C2 UniCal: Unified Neural Sensor Calibration Ze Yang*, George Chen*+, Haowei Zhang, Kevin Ta, Ioan Andrei Bârsan, Daniel Murphy, Siva Manivasagam, Raquel Urtasun In European Conference on Computer Vision (ECCV), 2024
- C3 G3R: Gradient Guided Generalizable Reconstruction Yun Chen*, Jingkang Wang*, **Ze Yang**, Siva Manivasagam, Raquel Urtasun In *European Conference on Computer Vision (ECCV)*, 2024
- C4 Copilot4D: Learning Unsupervised World Models for Autonomous Driving via Discrete Diffusion

Lunjun Zhang, Yuwen Xiong, **Ze Yang**, Sergio Casas, Rui Hu, Raquel Urtasun In *International Conference on Learning Representations (ICLR)*, 2024

2023

C5 LightSim: Neural Lighting Simulation for Urban Scenes Ava Pun*t, Gary Sun*t, Jingkang Wang*, Yun Chen, **Ze Yang**, Siva Manivasagam, Wei-Chiu Ma, Raquel Urtasun

In Neural Information Processing Systems (NeurIPS), 2023

- C6 Real-Time Neural Rasterization for Large Scenes Jeffrey Yunfan Liu⁺, Yun Chen^{*}, **Ze Yang**^{*}, Jingkang Wang, Sivabalan Manivasagam, Raquel Urtasun In *International Conference on Computer Vision (ICCV)*, 2023
- C7 Towards Zero Domain Gap: A Comprehensive Study of Realistic LiDAR Simulation for Autonomy Testing
 Sivabalan Manivasagam*, Ioan Andrei Bârsan*, Jingkang Wang, Ze Yang, Raquel Urtasun
 In International Conference on Computer Vision (ICCV), 2023
- C8 UniSim: A Neural Closed-Loop Sensor Simulator Ze Yang*, Yun Chen*, Jingkang Wang*, Siva Manivasagam*, Wei-Chiu Ma, Anqi Joyce Yang, Raquel Urtasun In Conference on Computer Vision and Pattern Recognition (CVPR), 2023 (Highlight)
- C9 Reconstructing Objects in-the-wild for Realistic Sensor Simulation Ze Yang, Siva Manivasagam, Yun Chen, Jingkang Wang, Rui Hu, Raquel Urtasun In *International Conference on Robotics and Automation (ICRA)*, 2023

2022

- C10 CADSim: Robust and Scalable in-the-wild 3D Reconstruction for Controllable Simulation Jingkang Wang, Siva Manivasagam, Yun Chen, **Ze Yang**, Ioan Andrei Bârsan, Anqi Joyce Yang, Wei-Chiu Ma, Raquel Urtasun In *Conference on Robot Learning (CoRL)*, 2022
- C11 RBGNet: Ray-based Grouping for 3D Object Detection Haiyang Wang, Shaoshuai Shi, **Ze Yang**, Rongyao Fang, Qi Qian, Hongsheng Li, Bernt Schiele, Liwei Wang In *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022

2021

C12 S3: Neural Shape, Skeleton, and Skinning Fields for 3D Human Modeling

Ze Yang, Shenlong Wang, Siva Manivasagam, Zeng Huang, Wei-Chiu Ma, Xinchen Yan, Ersin Yumer,

Raquel Urtasun			
In Conference on Computer Vis	ion and Pattern	Recognition (CVPR), 2021

2020

	 Recovering and Simulating Pedestrians in the Wild Ze Yang, Siva Manivasagam, Ming Liang, Bin Yang, Wei-Chiu Ma, Raquel Urtasun In Conference on Robotic Learning (CoRL), 2020 (Spotlight) 	
	14 Dense RepPoints: Representing Visual Objects with Dense Point Sets Ze Yang*, Yinghao Xu*, Han Xue*, Zheng Zhang, Raquel Urtasun, Liwei Wang, Steve Lin, Han Hu In European Conference on Computer Vision (ECCV), 2020	
	 19 15 RepPoints: Point Set Representation for Object Detection Ze Yang*, Shaohui Liu*, Han Hu, Liwei Wang, Steve Lin In International Conference on Computer Vision (ICCV), 2019 	
	 16 Learning Relationships for Multi-view 3D Object Recognition Ze Yang, Liwei Wang In International Conference on Computer Vision (ICCV), 2019 	
	 18 and before 17 Learning to Navigate for Fine-grained Classification Ze Yang, Tiange Luo, Dong Wang, Zhiqiang Hu, Jun Gao, Liwei Wang In European Conference on Computer Vision (ECCV), 2018 	
	 18 Single Image Super-Resolution with a Parameter Economic Residual-Like Convolutional Neural Network Ze Yang, Kai Zhang, Yudong Liang, Jinjun Wang In International Conference on Multimedia Modeling, 2017 (Oral) 	
Preprints & Tech Reports	R1 On the Anomalous Generalization of GANs Jinchen Xuan, Yunchang Yang, Ze Yang , Di He, Liwei Wang <i>arXiv preprint arXiv:1909.12638</i> , 2019	
	R2 Single Image Super-resolution via a Lightweight Residual Convolutional Neural Network Yudong Liang, Ze Yang , Kai Zhang, Yihui He, Jinjun Wang, Nanning Zheng <i>arXiv preprint arXiv:1703.08173</i> , 2017	
Patents	P1 Learning Unsupervised World Models for Autonomous Driving via Discrete Diffusion Lunjun Zhang, Yuwen Xiong, Ze Yang, Sergio Casas Romero, Raquel Urtasun US Patent App. 18/900,601, 2025	
	P2 Deferred Neural Lighting in Augmented Image Generation Ava Pun, Gary Sun, Jingkang Wang, Yun Chen, Ze Yang, Sivabalan Manivasagam, Raquel Urtasun US Patent App. 18/666,728, 2024	
	P3 Three Dimensional Object Reconstruction for Sensor Simulation Ioan Andrei Bârsan, Yun Chen, Wei-Chiu Ma, Sivabalan Manivasagam, Raquel Urtasun, Jingkang Wang, Ze Yang US Patent App. 18/209,609, 2023	
	P4 Real World Object Reconstruction and Representation Ze Yang, Sivabalan Manivasagam, Yun Chen, Jingkang Wang, Raquel Urtasun US Patent App. 18/182,491, 2023	

	P5 Systems and Methods for Simulating Dynamic Objects Based on Real World I Ming Liang, Wei-Chiu Ma, Sivabalan Manivasagam, Raquel Urtasun, Bin Yang, Ze Yan US Patent App. 17/388,372, 2022	Data ng
TEACHING	University of Toronto	
Assistant	• CSC 490: Making Your Self-driving Car Perceive the World	2021 Winter
	Peking UniversityEECS 04831210: Information Theory	2018 Spring
Selected Awards	 Ontario Graduate Scholarship, University of Toronto Vector Institute Research Grant, University of Toronto May 4th Scholarship, Peking University Merit Student, Peking University 1st Place in Alibaba TianChi AI Competition for Healthcare (lung nodule detection) 	2024 2020 - 2024 2019 2019 2019 2017
Professional Service	 Journal Reviewer: IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI) IEEE Transactions on Circuits and Systems for Video Technology (TCSVT) IEEE Transactions on Multimedia (TMM) 	
	 Conference Reviewer: Conference on Computer Vision and Pattern Recognition (CVPR) International Conference on Computer Vision (ICCV) European Conference on Computer Vision (ECCV) Asian Conference on Computer Vision (ACCV) Winter Conference on Applications of Computer Vision (WACV) Conference on Neural Information Processing Systems (NeurIPS) International Conference on Learning Representations (ICLR) International Conference on Machine Learning (ICML) AAAI Conference on Artificial Intelligence (AAAI) International Conference on Robotics and Systems (IROS) International Conference on Robotics and Automation (ICRA) 	$\begin{array}{c} 2020-2024\\ 2021-2023\\ 2022-2024\\ 2020, 2024\\ 2021-2024\\ 2023-2024\\ 2025\\ 2025\\ 2025\\ 2025\\ 2025\\ 2023\\ 2024 \end{array}$
Open Source Softwares	 Learning to Navigate for Fine-grained Classification. GitHub: https://github.com/yangze0930/NTS-Net RepPoints: Point Set Representation for Object Detection. GitHub: https://github.com/microsoft/RepPoints Dense RepPoints: Representing Visual Objects with Dense Point Sets. GitHub: https://github.com/justimyhxu/Dense-RepPoints MMDetection. GitHub: https://github.com/open-mmlab/mmdetection/pull/1256 	
INVITED TALKS	T1 Learning in-the-wild Sensor Simulation for Autonomous Driving Mila Robot Learning Seminar, Online	2023/12
	T2 Learning in-the-wild Sensor Simulation for Autonomous Driving OpenDriveLab @ Shanghai AI Lab, Online	2023/07
	T3 Learning in-the-wild Sensor Simulation for Autonomous Driving Toronto Computational Imaging Group @ UofT, Toronto, ON, Canada	2023/07
	T4 Learning 3D Reconstruction in the Wild for Realistic Sensor Simulation ByteDance Research, Online	2022/10

	T5 Deformable Asset Reconstruction and Animation for Sensor Simulation CVPR21 Tutorial: All about Self-Driving, Online	2021/06
	T6 Learning Fine-grained Regions for Long-tail Visual Perception Microsoft Research Asia, Beijing, China	2019/09
	T7 Representing Objects as Point Sets for Visual Perception Noah's Ark Lab, Shenzhen, China	2019/07
	T8 Learning Representative Regions for Fine-grained Classification Noah's Ark Lab, Shenzhen, China	2018/11
Mentorship and Support	George Chen (University of Waterloo Undergrad & Waabi Internship)Working on Neural Sensor Calibration project	
	Jeffrey Liu (University of Waterloo Undergrad & Waabi Internship) • Working on Neural Scene Rasterization project	
	Ava Pun (University of Waterloo Undergrad & Waabi Internship) Gary Sun (University of Waterloo Undergrad & Waabi Internship) • Working on Neural Light Simulation project	
	Haiyang Wang (Peking University Ph.D.)Working on Ray-based Grouping for 3D Object Detection project	
	Shengcao Cao (Peking University Undergrad)Working on Video Object Detection project	
	<i>Jinchen Xuan (Peking University Undergrad)</i>Working on <i>Anomalous Behaviour of GANs</i> project	
PRESS COVERAGE	 Simulator Realism: The New Safety Standard for the AV Industry. Waabi Blog [link] Introducing Copilot4D: A Foundation Model for Self-Driving. Waabi Blog [link] Accelerating AVs through the next generation of Generative AI. Waabi Blog [link] Introducing UniSim, one of the core groundbreaking technologies powering Waabi Blog [link]. 2023/06. 	nk]. 2025/03.]. 2024/03. k]. 2023/09. World. Waabi

Getting a better visual: RepPoints detect objects with greater accuracy through flexible and adaptive object modeling. Microsoft Research Blog [link]. 2019/10.