Qiao Gu

PH.D. STUDENT · UNIVERSITY OF TORONTO

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Education

University of Toronto   *Toronto ON, Canada*
PH.D. IN COMPUTER SCIENCE   *09/2021 - present*
- GPA: 4.0 / 4.0
- Advisor: Prof. Florian Shkurti
- Research Interest: 3D Computer Vision, Robot Learning, Foundation Model

Carnegie Mellon University   *Pittsburgh PA, U.S.A.*
M.S. IN ROBOTICS   *08/2019 - 08/2021*
- GPA: 4.24 / 4.33
- Advisor: Prof. David Held and Prof. Martial Hebert

Hong Kong University of Science and Technology   *Hong Kong S.A.R.*
B.ENG. IN COMPUTER SCIENCE AND ELECTRONIC ENGINEERING   *09/2015 - 06/2019*
- GPA: 4.15 / 4.30
- Advisors: Prof. Chi-Keung Tang and Prof. Yu-Wing Tai

Professional Experience

June 2025 – Dec 2025
Research Scientist Intern | Meta Reality Labs, REDMOND WA, U.S.A.
With Julian Straub
`Video Generation`

Aug 2023 – Feb 2024
Research Scientist Intern | Meta Reality Labs, REDMOND WA, U.S.A.
With Chris Sweeney and Zhaoyang Lv
`Open-world Segmentation` `3D Gaussian Splatting` `Egocentric Perception`

Dec 2018 – Jan 2019
Research and Development Intern | Tencent Youtu Lab, SHENZHEN GUANGDONG, China
With Yu-Wing Tai
`Computer Vision` `Face Alignment`

Publications

* Indicates equal contribution.

SAFE: Scalable Failure Estimation for Vision-Language-Action Models   NeurIPS 2025
Qiao Gu, Yuanliang Ju, Shengxiang Sun, Igor Gilitschenski, Haruki Nishimura, Masha Itkina, Florian Shkurti
Paper Website Code

SICNav-Diffusion: Safe and Interactive Crowd Navigation with Diffusion Trajectory Predictions   RA-L 2025
Sepehr Samavi, Anthony Lem, Fumiaki Sato, Sirui Chen, Qiao Gu, Keijiro Yano, Angela P Schoellig, Florian Shkurti
Paper

EgoLifter: Open-world 3D Segmentation for Egocentric Perception   ECCV 2024
Qiao Gu, Zhaoyang Lv, Duncan Frost, Simon Green, Julian Straub, Chris Sweeney
Paper Website Code

Safe Diffusion Model Predictive Control for Interactive Robotic Crowd Navigation   CoRL 2024 Workshop
Sepehr Samavi, Anthony Lem, Fumiaki Sato, Sirui Chen, Qiao Gu, Keijiro Yano, Angela P Schoellig, Florian Shkurti

Paper

Aria Everyday Activities Dataset   arXiv 2024
*Zhaoyang Lv, Nicholas Charron, Pierre Moulon, Alexander Gamino, Cheng Peng, Chris Sweeney, Edward Miller, Huixuan Tang, Jeff Meissner, Jing Dong, Kiran Somasundaram, Luis Pesqueira, Mark Schwesinger, Omkar Parkhi, **Qiao Gu**, Renzo De Nardi, Shangyi Cheng, Steve Saarinen, Vijay Baiyya, Yuyang Zou, Richard Newcombe, Jakob Julian Engel, Xiaqing Pan, Carl Ren*
Paper Website

ConceptGraphs: Open-vocabulary 3D Scenegraphs for Perception and Planning   ICRA 2024
Qiao Gu, Alihusein Kuwajerwala*, Sacha Morin*, Krishna Murthy Jatavallabhula*, Bipasha Sen, Aditya Agarwal, Corban Rivera, William Paul, Kirsty Ellis, Rama Chellappa, Chuang Gan, Celso Miguel de Melo, Joshua B. Tenenbaum, Antonio Torralba, Florian Shkurti, Liam Paull*
Paper Website Code

ConceptFusion: Open-set Multimodal 3D Mapping   RSS 2023
Krishna Murthy Jatavallabhula, Alihusein Kuwajerwala, **Qiao Gu***, Mohd Omama*, Tao Chen, Shuang Li, Ganesh Iyer, Soroush Saryazdi, Nikhil Keetha, Ayush Tewari, Joshua B. Tenenbaum, Celso Miguel de Melo, Madhava Krishna, Liam Paull, Florian Shkurti, Antonio Torralba*
Paper Website Code

Preserving Linear Separability in Continual Learning by Backward Feature Projection   CVPR 2023
***Qiao Gu**, Dongsub Shim, Florian Shkurti*
Paper Code

OSSID: Online Self-supervised Instance Detection by (and for) Pose Estimation   RA-L & ICRA 2022
***Qiao Gu**, Brian Okorn, David Held*
Paper Website Code

ZePHyR: Zero-shot Pose Hypothesis Rating   ICRA 2021
Brian Okorn, **Qiao Gu***, Martial Hebert, David Held*
Paper Website Code

Deep Video Matting via Spatio-Temporal Alignment and Aggregation   CVPR 2021
Yanan Sun, Guanzhi Wang, **Qiao Gu***, Chi-Keung Tang, Yu-Wing Tai*
Paper

iQUANT: Interactive Quantitative Investment Using Sparse Regression Factors   EuroVis 2021
*Xuanwu Yue, **Qiao Gu**, Deyun Wang, Huamin Qu, Yong Wang*
Paper

LADN: Local Adversarial Disentangling Network for Facial Makeup and De-Makeup   ICCV 2019
Qiao Gu, Guanzhi Wang*, Mang Tik Chiu, Yu-Wing Tai, Chi-Keung Tang*
Paper Website Code

Characterizing Fluid Response and Sepsis Progression in Emergency Department Patients EMBC 2019
***Qiao Gu**, Varesh Prasad, Thomas Heldt*
Paper

PreserVis, a Visual Analytic System for Traffic and Pollution Patterns   VAST 2017
***Qiao Gu**, Hang Yin, Lian Chen, Haotian Li, Chengzhong Liu, Xuanwu Yue, Huamin Qu*
Paper

Awards, Scholarships, & Grants

2025   **Mary H. Beatty Fellowship**   *CAD 10,000*

2025	**Finalist of Qualcomm Innovation Fellowship**	
2025	**Kwok Sau Po Scholarship**	*CAD 1,750*
2025	**The Fahiem Bacchus Memorial Graduate Student Scholarship**	*CAD 2,000*
2024	**NeurIPS 2024 Top Reviewer**	
2024	**Mary H. Beatty Fellowship**	*CAD 10,000*
2024	**Ray Reiter Graduate Award**	*CAD 1,000*
2023	**Acres Productive Technologies Inc./Joseph Yonan Memorial Fellowship**	*CAD 2,000*
2022	**Ontario Graduate Scholarships**	*CAD 15,000*
2019	**HKUST Academic Achievement Medal** (Top 1%)	
2017-2019	**HKSAR Government Scholarships**	*HKD 160,000*
2015-2019	**Dean's List**	
2018	**Mr. Armin and Mrs. Lillian Kitchell Undergraduate Research Award**	
2017	**High Fashion Charitable Foundation Exchange Scholarships**	*HKD 50,000*
2017	**HKSAR Government Scholarship Fund - Reaching Out Award**	*HKD 10,000*
2017	**HKSAR Government Scholarship Fund - Talent Development Scholarship**	*HKD 10,000*
2016	**Simatelex Charitable Foundation Scholarship**	*HKD 20,000*
2016	**University's Scholarship Scheme for Continuing Undergraduate Students**	*HKD 20,000*
2015	**University Admission Scholarship**	*HKD 40,000*

Invited Talks

03/2024. *ConceptGraphs: Open-Vocabulary 3D Scene Graphs for Perception and Planning*. Boston Dynamic AI institute

02/2024. *Open-World 3d Segmentation with Project Aria*. Meta Reality Labs

10/2023. *ConceptGraphs: Open-Vocabulary 3D Scene Graphs for Perception and Planning*. Meta Reality Labs

Teaching Experience

Fall 2022	**CSC384: Intro to Artificial Intelligence**	Teaching Assistant
Winter 2022	**CSC384: Intro to Artificial Intelligence**	Teaching Assistant
Fall 2021	**CSC110: Foundations of Computer Science I**	Teaching Assistant

Mentorship

2024-present	**James Ross**	Master student, University of Toronto
2024-present	**Yuanliang Ju**	PhD student, University of Toronto
2024-present	**Owen Sun**	Undergraduate student, University of Toronto
2022-2025	**Anthony Lem**	Master student, University of Toronto
2023-2024	**Sirui Chen**	Undergraduate student, University of Toronto
2023	**Edward Li**	Undergraduate student, University of Toronto
2023	**Spencer Li**	Undergraduate student, University of Toronto

Outreach & Professional Development

SERVICE AND OUTREACH

2024-2025	**UofT RI Reading Group**	Organizer
2022	**Toronto AI in Robotics Seminar**	Organizer

REVIEWER SERVICE

TRO, TPAMI, IJRR, TMLR, RA-L, NeurIPS, CVPR, ICLR, ICCV, ICRA, IROS, ECCV, ICML, WACV

PROFESSIONAL MEMBERSHIPS

Student member, IEEE