

# ZENGYI QIN

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## RESEARCH INTEREST

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Robotics and Computer Vision; Medical Devices; Machine Learning; Signal Processing

## EDUCATION

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**Massachusetts Institute of Technology**

*M.S. in Aeronautics and Astronautics*

Sep. 2020 - May 2022

Advisor: Prof. [Chuchu Fan](#)

**Tsinghua University**

*B.E. in Electronic Engineering (with honor)*

Aug. 2016 - June 2020

Advisor: Prof. [Jiansheng Chen](#)

**Stanford University**

*Visiting Scholar in Computer Science*

July 2019 - Sep. 2019

Advisor: Prof. [Fei-Fei Li](#) and Prof. [Silvio Savarese](#)

## HONORS AND AWARDS

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- MathWorks Fellowship (2021)
- Fellowship of Stanford Undergraduate Visiting and Research (UGVR) Program (2019)
- Scholarship of Technological Innovation at Tsinghua University (2019 - 2020)
- Scholarship of Comprehensive Excellence at Tsinghua University (2019)
- The Highest Award of Challenge Cup Technological Innovation Competition at Tsinghua University (2019)
- The Highest Award of Beijing Challenge Cup Technological Innovation Competition (2019)
- The First Prize of Microsoft Imagine Cup Global Student Technological Competition, China Finals (2018)

## PUBLICATIONS

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- 12. [TPAMI 21] Zengyi Qin, Jinglu Wang, Yan Lu. “MonoGRNet: A General Framework for Monocular 3D Object Detection.” *The IEEE Transactions on Pattern Analysis and Machine Intelligence*, 2021. [\[PDF\]](#)
- 11. [TAC 21] Chuchu Fan, [Zengyi Qin](#), Umang Mathur, Qiang Ning, Sayan Mitra, Mahesh Viswanathan. “Controller Synthesis for Linear System with Reach-avoid Specifications.” *The IEEE Transactions on Automatic Control*, 2021. [\[PDF\]](#)
- 10. [ICML 21] Zengyi Qin, Yuxiao Chen, Chuchu Fan. “Density Constrained Reinforcement Learning.” *The International Conference on Machine Learning*, 2021. [\[PDF\]](#)
- 9. [ICLR 21] [Zengyi Qin](#), Kaiqing Zhang, Yuxiao Chen, Jingkai Chen, Chuchu Fan. “Learning Safe Multi-Agent Control with Decentralized Neural Barrier Certificates.” *The International Conference on Learning Representations*, 2021. [\[PDF\]](#) [\[Website\]](#) [\[Code\]](#)
- 8. [IROS 21] Yue Meng, Zengyi Qin, Chuchu Fan. “Reactive and Safe Road User Simulations using Neural Barrier Certificates.” *The International Conference on Intelligent Robots and Systems*, 2021.
- 7. [CoRL 21] Charles Dawson, [Zengyi Qin](#), Sicun Gao, Chuchu Fan. “Safe Nonlinear Control Using Robust Neural Lyapunov-Barrier Functions.” *The Conference on Robot Learning*, 2021. [\[PDF\]](#)

6. [SR 21] Zengyi Qin, Jiansheng Chen, Zhenyu Jiang, Xumin Yu, Chunhua Hu, Yu Ma, Suhua Miao, Rong-song Zhou. "Learning Fine-Grained Estimation of Physiological States from Coarse-Grained Labels by Distribution Restoration." *Scientific Reports*, 2021. [PDF]
5. [ACM MM 20] Zengyi Qin, Jinglu Wang, Yan Lu. "Weakly Supervised 3D Object Detection from Point Clouds." *ACM Multimedia*, 2020. [PDF] [Code]
4. [ICRA 20] Zengyi Qin, Kuan Fang, Yuke Zhu, Li Fei-Fei, Silvio Savarese. "KETO: Learning Keypoint Representations for Tool Manipulation." *The International Conference on Robotics and Automation*, 2020. [PDF] [Website] [Video]
3. [AAAI 19] Zengyi Qin, Jinglu Wang, Yan Lu. "MonoGRNet: A Geometric Reasoning Network for Monocular 3D Object Localization." *The Thirty-Third AAAI Conference on Artificial Intelligence*, 2019. **Oral Presentation** (< 8%) [PDF] [Website] [Code]
2. [CVPR 19] Zengyi Qin, Jinglu Wang, Yan Lu. "Triangulation Learning Network: from Monocular to Stereo 3D Object Detection." *The International Conference on Computer Vision and Pattern Recognition*, 2019. [PDF] [Website] [Code]
1. [SPL 19] Zengyi Qin\*, Zhenyu Jiang\*, Jiansheng Chen, Chunhua Hu, Yu Ma. "sEMG based Tremor Severity Evaluation for Parkinson's Disease using a Light-weight CNN." *IEEE Signal Processing Letters*, 2019. [PDF] [Website]

## RESEARCH EXPERIENCES

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### Reliable Autonomous Systems Lab at MIT

Graduate Student Researcher

Sep. 2020 - present

Advisor: Prof. [Chuchu Fan](#)

- Project: Advancing the safety of autonomous systems via certifiable algorithms

### Stanford Vision and Learning Lab

Visiting Scholar

July 2019 - Sep. 2019

Advisor: Prof. [Fei-Fei Li](#) and Prof. [Silvio Savarese](#)

- Project: Robotic dexterous manipulation via self-supervised keypoint representations

### Microsoft Research Asia, Media Computing Group

Research Intern

June 2018 - July 2019

Advisor: Dr. [Jinglu Wang](#)

- Project: 3D scene understanding for autonomous driving

### Tsinghua University, High-speed Image Processing Lab

Undergraduate Student Researcher

Sep. 2017 - June 2018

Advisor: Prof. [Jiansheng Chen](#)

- Project: Early diagnosis of Parkinson's Disease via surface electromyography

## PATENTS

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1. "Surface Electromyography-based Parkinson's Disease Diagnosis", CN210697629U, granted July 2020.

## INVITED TALKS

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2. "Learning Keypoint Representations for Tool Manipulation", *Stanford University*, Stanford, CA, 2019.
1. "A Geometric Reasoning Network for Monocular 3D Object Localization", *The AAAI Conference on Artificial Intelligence*, Honolulu, Hawaii, 2019.

## LEADERSHIP AND ACTIVITIES

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- Member of the execution team of MIT Chinese Entrepreneurs Organization
- Co-founder and Chief of Student Association of Data Science and Machine Learning at Tsinghua University