

Kexin Shi

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EDUCATION

Carnegie Mellon University

Visiting Scholar at Robotics Institute, advised by Prof. Deepak Pathak

Pittsburgh, USA

2023.3 - Now

University of Zürich & ETH Zürich (Graduate summa cum laude)

Zürich, Switzerland

Master in Informatics & Special Master in Robotics, advised by Prof. Davide Scaramuzza

2020.9 - 2023.10

Xi'an Jiaotong University

Xi'an, China

Bachelor in Computer Science, advised by Dr. Liang He

2016.9 - 2020.6

National University of Singapore

Singapore

Summer Student at School of Computing, advised by Dr. Lek Hsiang Hui

2019.7 - 2019.8

Shanghai Jiao Tong University

Shanghai, China

Summer Student in Computer Science and Mathematics

2018.7 - 2018.8

PUBLICATIONS

* denotes equal contribution

Extreme Parkour with Legged Robots

Xuxin Cheng*, Kexin Shi*, Ananye Agarwal, Deepak Pathak

Conference on Robot Learning (CoRL) 2023, Generalist / Roboletics / Deployable Workshop (Oral)

International Conference on Robotics and Automation (ICRA) 2024

Learning Perception-Aware Agile Flight in Cluttered Environments

Yunlong Song*, Kexin Shi*, Robert Penicka, Davide Scaramuzza

International Conference on Robotics and Automation (ICRA) 2023

EXPERIENCES

Learning for Embodied Action and Perception (LEAP), CMU

Pittsburgh, USA

Visiting Scholar, advised by Prof. Deepak Pathak

2023.3 - Now

- **Research Topics:** Quadruped Locomotion, Reinforcement Learning for Control, Sim-to-Real
- Developed an end-to-end data-driven approach for legged robots that can scale to the challenging task of precise and extreme parkour skills using onboard sensing, with deep reinforcement learning methods and sim-to-real technologies.

Robotics and Perception Group (RPG), UZH & ETHz

Zürich, Switzerland

Graduate Student Researcher, advised by Prof. Davide Scaramuzza

2021.9 - 2022.10

- **Research Topics:** Vision Navigation, Reinforcement Learning, Imitation Learning, Sim-to-Real
- Leveraged deep reinforcement learning and learning-by-cheating framework to achieve perception-aware, minimum-time flight in cluttered environments for quadrotors, with real world validation via Hardware-in-the-loop (HITL).
- **Research Topics:** Computer Vision, Deep Learning, Event Camera
- Explored the ability of point-voxel features for event data, fused voxel features and point features effectively, improved performance in classification task on N-Caltech 101 dataset and optical flow regression task on DSEC dataset.

Advanced Interactive Technologies Lab (AIT), ETHz

Zürich, Switzerland

Research Assistant, advised by Prof. Otmar Hilliges

2023.1 - 2023.6

- **Research Topics:** 3D Vision, Deep Learning, Human-Object Interaction
- Improved the Phosa algorithm to reconstruct action-conditioned Human-Object Interactions (HOI) using common-sense knowledge priors on BEHAVE dataset.

Computer Vision and Geometry Group (CVG), ETHz

Zürich, Switzerland

Graduate Student Researcher, advised by Prof. Marc Pollefeys

2022.2 - 2022.6

- **Research Topics:** 3D Vision, SLAM, Structure from Motion
- Built an offline python SLAM using monocular camera by leveraging the advantages of both COLMAP and ORB-SLAM, with conducting benchmarking experiments on TUM-RGBD and KITTI datasets.

Robotic Systems Lab (RSL), ETHz

Zürich, Switzerland

Graduate Student Researcher, advised by Prof. Marco Hutter

2022.2 - 2022.6

- **Research Topics:** Computer Vision, Deep Learning, Localization
- Developed a powerful localization toolbox for ANYmal, including generating accurate dataset containing RGB images, ground truth 6D pose of ANYmal using Kalibr, adopting and analyzing multiple state-of-the-art localization algorithms on the generated dataset.

INVITED TALKS

- **Dynamic Robot Systems Group**, Oxford Robotics Institute, UK 2023.11
- **Biomimetic Robotics Lab**, Massachusetts Institute of Technology, USA 2023.11
- **Robotics and Embodied Artificial Intelligence Lab**, Stanford University, USA 2023.10
- **Robotics and Perception Group**, University of Zürich, Switzerland 2023.10

AWARDS

- The Excellent Product Award at national level in the **21st China Hi-Tech Fair**. 2019.11
- The first prize at university level in **The 18th “Ascendas Cup” Extracurricular Academic Science and Technology Competition**. 2019.3
- The first prize at national level in **The National Mathematical Contest in Modeling**. 2018.9
- University Academic Scholarships. 2017-2020

REVIEWER SERVICE

- International Conference on Robotics and Automation (ICRA) 2023, 2024
- International Conference on Intelligent Robotics and Systems (IROS) 2023
- Robotics and Automation Letters (RAL) 2023

SKILLS

- **Relevant Coursework:** Deep Learning, Reinforcement Learning, Computer Vision, 3D Vision, Planning and Decision Making, Optimal Control.
- **Programming:** C++, Python, Matlab, VHDL, Verilog.
- **Software:** Pytorch, Tensorflow, Flightmare, Agilicious, IssacGym, COLMAP, Unity, Blender, ROS, Git, L^AT_EX.
- **Robots:** Unitree A1/Go1/Go2, ANYmal, SuperMegaBot, Quadrotor.