Kexin Shi

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EDUCATION

Carnegie Mellon University — Pittsburgh, USA
Visiting Scholar at Robotics Institute, advised by Prof. Deepak Pathak — 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

University of Cambridge — Cambridge, UK
Visiting Student in Artificial Intelligence at Lucy Cavendish College — 2019.1 - 2019.2

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)

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
- 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. Macro 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 price 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, LaTeX.
- **Robots:** Unitree A1/Go1, ANYmal, SuperMegaBot, Quadrotor.