Kexin Shi

(412) 339-7012 — kexins@andrew.cmu.edu — tenhearts.github.io

EDUCATION

Carnegie Mellon University — Pittsburgh, USA
Visiting Scholar at Robotics Institute, advised by Prof. Deepak Pathak — 2023.3 - Now

University of Zürich & ETH Zürich — 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 in Computer Science, advised by Dr. Lek Hsiang Hui — 2019.7 - 2019.8

University of Cambridge — Cambridge, UK
Visiting Student in Artificial Intelligence — 2019.1 - 2019.2

Shanghai Jiao Tong University — Shanghai, China
Summer Student in Computer Science — 2018.7 - 2018.8

PUBLICATIONS

* denotes equal contribution

Extreme Parkour with Legged Robots
Xuxin Cheng*, **Kexin Shi***, Ananye Agarwal, Deepak Pathak
arXiv 2023

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

- Proposed an end-to-end data-driven approach that can scale to the challenging task of precise and extreme parkour using onboard sensing, with deep reinforcement learning methods and sim-to-real technologies.

Advanced Interactive Technologies Lab (AIT), ETHz — Zürich, Switzerland
Research Assistant, advised by Prof. Otmar Hilliges — 2023.1 - 2023.6

- Improved the algorithm performance to reconstruct action-conditioned Human-Object Interactions (HOI) using commonsense knowledge priors on BEHAVE dataset.

Robotics and Perception Group (RPG), UZH & ETHz — Zürich, Switzerland
Graduate Student Researcher, advised by Prof. Davide Scaramuzza — 2021.9 - 2022.10

- 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).
- Adjusted point-voxel models to fit in 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.

Computer Vision and Geometry Group (CVG), ETHz — Zürich, Switzerland
Graduate Student Researcher, advised by Prof. Marc Pollefeys — 2022.2 - 2022.6

- Leveraged the advantages of both COLMAP and ORB-SLAM and built an offline python SLAM using monocular camera.
- Conducted 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

- Generated an accurate dataset containing RGB images, ground truth 6D pose of the based of ANYmal using Kalibr.
- Adopted EfficientPose model on the generated dataset to detect location and estimate 6D pose of ANYmal.

Institute of Robotics and Intelligent Manufacturing (IRIM), CUHKSZ — Shenzhen, China
Research Assistant, advised by Dr. Jiaming Zhang — 2019.10 - 2019.12

- Learned a gesture interaction algorithm with data extracted from Kinect sensor as a part implementation of a rehabilitation robot.
- This project was awarded as an excellent product in the 21st China Hi-Tech Fair 2019.

INVITED TALKS

- **Robotics and Embodied Artificial Intelligence Lab**, Stanford University, USA 2023.10
- **Robotics and Perception Group**, University of Zürich, Switzerland 2023.10

AWARDS

- 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, ANYmal, SuperMegaBot, Quadrotor.