Lin Cong

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Education

RA | ***Human Motion and Graphics*** — Feb. 2022 – present
Universität Hamburg (UHH) — Hamburg, Germany

Ph.D. Candidate | ***Deep Reinforcement Learning*** — Oct. 2017 – Jan. 2022
Universität Hamburg (UHH) — Hamburg, Germany

M.S. | ***Robotics*** — Sep. 2015 – Jun. 2017
Harbin Institute of Technology (HIT) — Harbin, China

B.S. | ***Robotics*** — Sep. 2010 – Jun. 2014
Harbin Institute of Technology (HIT) — Harbin, China

Skills

Speciality: Deep Learning, Computer Vision, Physics Engine, Optimization
Programming: C++, Python, C#
Software: Tensorflow, Pytorch, Blender, Unity, Unreal, Mujoco

Projects

Ultracept Secondment — Dec. 2022 – Mar. 2023
Tsinghua University — Beijing, China

- System integration and obstacle avoidance algorithm design
- Human motion detection algorithm design for autonomous system

Crossmodal Transfer of Dexterous Manipulation Skills — Oct. 2017 – present
Universität Hamburg — Hamburg, Germany

- Perform research and experiments on robot learning for TRR169 Crossmodal Learning
- Build simulation environment with Mujoco for robot learning
- Reinforcement learning algorithm design with Pytorch and Tensorflow for robot manipulation tasks
- Model deployment on real robot platforms using ROS
- Four publications with first or corresponding authorship (one pre-print paper included)

Exo-Skeleton Robot Control System and Algorithm Design — Jul. 2015 – Jul. 2017
Harbin Institute of Technology — Harbin, China

- 3D modeling for the Exo-Skeleton robot mechanical structure
- Control board, sensors and actuator integration
- Design the control system and algorithm for the Exo-Skeleton robot
- One first authorship publication on the robot follow-up control algorithm
- One co-author publication for the contribution of robot hardware design

Academic Training and Activities

Symposium on Crossmodal Learning in Humans and Robots — Nov. 2019
Universität Hamburg — Hamburg, Germany

CML Summer School 2019 — Sep. 2019
Universität Hamburg — Hamburg, Germany

CML Summer School 2018 — Sep. 2018
Tsinghua University — Beijing, China

Honors and Awards

Universität Hamburg — Nov. 2017
Full Scholarship from China Scholarship Council (CSC) — Hamburg, Germany

Harbin Institute of Technology — Jun. 2016
National Scholarship — Harbin, China

Harbin Institute of Technology — Oct. 2015
National Scholarship — Harbin, China

Harbin Institute of Technology — June. 2013
Second Prize for Bionic Robot Design Competition in HIT — Harbin, China

Harbin Institute of Technology — June. 2012
Second Prize for Mechanical Innovative Design Competition in HIT — Harbin, China

Demonstration Presentations

Efficient Human Motion Reconstruction
https://hitlyn.github.io/EHMR/

Visual Pushing with Reinforcement Learning
https://www.youtube.com/watch?v=ffXmOHrG5HY

Multimodal Grasping with Reinforcement Learning
https://www.youtube.com/watch?v=PuYvUxyDnPY

Model Prediction and Robot Control for Object Planar Pushing
https://www.youtube.com/watch?v=z-gTJMs9tFg

Self-supervised Attention Mechanism
https://hitlyn.github.io/blog/2020/08/14/Attention-for-Reinforcement-Learning

Selected Publications

Lin Cong*, Philipp Ruppe*, Xiang Pan, Yizhou Wang, Norman Hendrich and Jianwei Zhang.
Efficient Human Motion Reconstruction from Monocular Videos with Physical Consistency Loss. *Siggraph Asia* , 2023

Hao Zhang, Hongzhuo Liang, **Lin Cong**, Jianzhi Lyu, Long Zeng, Pingfa Feng, and Jianwei Zhang.
Reinforcement Learning Based Pushing and Grasping Objects from Ungraspable Poses. *International Conference on Robotics and Automation (ICRA)*, 2023

Lin Cong, Hongzhuo Liang, Philipp Ruppel, Yunlei Shi, Michael Görner, Norman Hendrich and Jianwei Zhang.
Reinforcement Learning with Vision-Proprioception Model for Robot Planar Pushing. *Frontiers in Neurorobotics*, 2022

Hongzhuo Liang*, **Lin Cong*** , Norman Hendrich, Shuang Li, Fuchun Sun, Jianwei Zhang.
Multifingered Grasping Based on Multimodal Reinforcement Learning. *IEEE Robotics and Automation Letters (RA-L)*, 2021

Lin Cong, Yunlei Shi, Jianwei Zhang.
Self-supervised Attention Learning for Robot Control. *IEEE International Conference on Robotics and Biomimetics (ROBIO)*, 2021

Lin Cong, Michael Görner, Philipp Ruppel, Hongzhuo Liang, Norman Hendrich, Jianwei Zhang.
Self-Adapting Recurrent Models for Object Pushing from Learning in Simulation. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2020