

Lei Zhang

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Munich, Bayern - 81379, Germany

OBJECTIVE

Highly motivated researcher and DL/RL engineer with extensive experience in developing advanced software and algorithms for dexterous manipulation using multi-fingered robotic hands in complex environments, deep learning model-free grasping, 3D visual robotic grasping, language grounding robotic manipulation.

EXPERIENCE

- **Agile Robots SE**  Dez 2018 - Present
Munich, Germany
Research Scientist, Software Engineer
 - Developed deep learning/ reinforcement learning-based algorithm for five-finger hand manipulation.
 - Developed teleoperation system for five finger hand manipulation.
 - LLM-based robotic manipulation, five-finger hand grasping pose generation.
 - Developed smart pick-and-place system for industrial bin-picking tasks, 3C assembly tasks, and etc.
 - Enhanced vision-based bin picking through Sim2Real Transfer.
- **University of Hamburg**  Dez 2018 - Present
Munich, Germany
Ph.D. Student (Remote)
 - Multi-Fingered Robotic Hand Grasping through Contact Information using Generation Model.
 - Tool-Use using Multi-Fingered Robotic Hand.
 - Tool Frame 6D Pose Estimation using Diffusion Policy.
 - Sim2Real Transfer for Deep Learning-Based Cable Grasping in Cluttered Scenes.
- **IPH - Institut für Integrierte Produktion Hannover gGmbH**  Jun 2018 - Nov 2018
Hannover, Germany
Research Assistant
 - Real-Time Pose Detection in Forging Processes via Sensor Fusion: A Comparative Study of Monochrome and Thermal Camera Systems

EDUCATION

- **University of Hamburg (UHH)** Present
Hamburg, Germany
PhD Candidate
- **Leibniz Universität Hannover (LUH)** M.Sc., Sep. 2017 - Mar. 2020
Hannover, Germany
Master of Science
- **Harbin Institute of Technology** Sep. 2012 - June. 2016
Harbin, China
Bachelor of Science

PATENTS AND PUBLICATIONS

C=CONFERENCE, J=JOURNAL, P=PATENT, S=IN SUBMISSION, T=THESIS

- [S.1] Kaixin Bai, **Lei Zhang**[†], et al. (2024). **ClearDepth: Enhanced Stereo Perception of Transparent Objects for Robotic Manipulation**. Manuscript submitted for publication.
- [S.1] **Lei Zhang**, et al. (2024). **FFHClutteredGrasping: Multi-fingered Robotic Hand Grasping in Cluttered Environments through Hand-object Contact Semantic Mapping**. Manuscript submitted.
- [C.7] Yunlong Wang, **Lei Zhang**^{*}, et al. (2024). **ToolEENet: Tool Affordance 6D Pose Estimation**. In *IEEE International Conference on Intelligent Robots and Systems (IROS) 2024*.
- [C.6] **Lei Zhang**, et al. (2024). **A Collision-Aware Cable Grasping Method in Cluttered Environment**. In *IEEE International Conference on Robotics and Automation (ICRA) 2024*.
- [C.5] Kaixin Bai, **Lei Zhang**, et al. (2024). **Close the Sim2real Gap via Physically-based Structured Light Synthetic Data Simulation**. In *IEEE International Conference on Robotics and Automation (ICRA) 2024*.
- [P.2] **Lei Zhang**, Kaixin Bai, Zhaopeng Chen. (2023). **Method, Device, and Electronic Equipment for Cable Grasping from Cluttered Environments**. CN202211210759.3[2024-10-10].
- [P.1] Kaixin Bai, **Lei Zhang**, Zhaopeng Chen. (2023). **Method, Device, and System for Cable Bin Picking**. CN202211208038.9[2024-10-10].
- [C.4] **Lei Zhang**, et al. (2023). **A Closed-Loop Multi-perspective Visual Servoing Approach with Reinforcement Learning**. In *IEEE International Conference on Robotics and Biomimetics (ROBIO) 2023*.

- [C.3] **Lei Zhang**, et al. (2022). **Towards Precise Model-free Robotic Grasping with Sim-to-Real Transfer Learning**. In *IEEE International Conference on Robotics and Biomimetics (ROBIO) 2022*.
- [C.2] Kaixin Bai, **Lei Zhang**, et al. (2022). **Learning of 6D Object Poses with Multi-task Point-wise Regression Deep Networks**. In *IEEE International Conference on Robotics and Biomimetics (ROBIO) 2022*.
- [C.1] Yunlei Shi,..., **Lei Zhang**, et al. (2021). **Maximizing the Use of Environmental Constraints: A Pushing-Based Hybrid Position/Force Assembly Skill for Contact-Rich Tasks**. In *IEEE International Conference on Robotics and Biomimetics (ROBIO) 2021*.

SKILLS

- **Programming Languages:** Python, C++
- **Data Science & Machine Learning:** Isaac GYM, PyBullet, Mujoco, PyTorch, Blender
- **Research Skills:** Dexterous Manipulation, Grasping from Cluttered, Imitation Learning, Reinforcement Learning, Sim2Real Transfer.

ADDITIONAL INFORMATION

Languages: Chinese, English, German