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, lauguage grounding robotic manipulation.

Experience

- **Agile Robots SE [🌐]** *Dez 2018 - Present*
  Research Scientist, Software Engineer Munich, Germany
  - 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*
  Ph.D. Student (Remote) Munich, Germany
  - 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*
  Research Assistant Hannover, Germany
  - 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*
  PhD Candidate Hamburg, Germany
- **Leibniz Universität Hannover (LUH)** *M.Sc., Sep. 2017 - Mar. 2020*
  Master of Science Hannover, Germany
- **Harbin Institute of Technology** *Sep. 2012 - June. 2016*
  Bachelor of Science Harbin, China

Patents and Publications

C=Conference, J=Journal, P=Patent, S=In Submission, T=Thesis

[S.4] Mingheng Ni*, **Lei Zhang***, et al. (2024). **Don't Let Your Robot be Harmful: Responsible Robotic Manipulation**. Manuscript submitted for publication.

[S.3] Kaixin Bai, **Lei Zhang†**, et al. (2024). **StereoAnything: Advanced Zero-Shot Stereo Imaging for Multi-Finger Grasp Detection with Transparent Objects**. Manuscript submitted for publication.

[S.2] 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