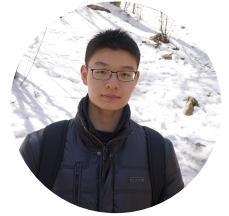# SHENGJIE LIN

Ph.D. Student in Robotics, Computer Vision and Machine Learning

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PROJECTS

Baxter Pose Following
Empower the Baxter robot to follow a human's pose.

📅 2022/02—2023/06

The project was showcased at the Museum of Science and Industry in Chicago for the 2022 and 2023 National Robotics Week, and had the honor to stay in the Museum for regular exhibition since summer 2023.
- Use RTMPose-m for SOTA real-time pose detection.
- Robustly track and focus on a highlighted pose over time.
- Solve Baxter's joint configuration for pose following.
- Parallel threaded execution for responsive performance.

Code as Policies on UR5e
Implementation of Code as Policies on the UR5e robot.

📅 2023/02—2023/04

The project was presented during the 2023 National Robotics Week at the Museum of Science and Industry in Chicago.
- Robust speech-to-text as input aided by wake-up-word mechanism and dynamic ambient sound adaptation.
- Flexible robot action as output via GPT code generation.
- Open-vocabulary visual pick & place enabled by MDETR.
- Pertinent object grasping based on point-cloud analysis.

Infant
Artistic reaction of a digital infant to external stimuli.

📅 2020/03—2020/11

The project was featured in the 2020 SAIC Shows.
- Interact with the audience via multi-modal perception, including vision, audio, touch and pulse sensing.
- Reflection of external stimuli on the infant is designed with philosophical and realistic considerations.
- Powered by neural style transfer, the infant's state is visualized via the gradation of art style in its skin texture.

Baxter Rubik's Cube
Solving a Rubik's Cube with the Baxter robot.

📅 2019/02—2019/04

The project was presented during the 2019 National Robotics Week at the Museum of Science and Industry in Chicago.
- Follow programmed routine to pick up and scan the cube.
- Determine the color grids with a clustering-based method.
- Execute Kociemba's cube solution via visual servoing.
- Visualize the cube state and solution step in 3D graphics.

PUBLICATIONS

* denotes equal contribution in no particular order.
- J. Fang*, **S. Lin***, I. Vasiljevic, *et al.*, "Nerf registration, blending and fusion," in *ICLR Workshop on Neural Fields across Fields*, Kigali, Rwanda, May 2023.
- J. Fang*, **S. Lin***, I. Vasiljevic, *et al.*, *Nerfuser: Large-scale scene representation by nerf fusion*, 2023. arXiv: 2305.13307 [cs.CV].
- T. Yoneda*, J. Fang*, P. Li*, *et al.*, *Statler: State-maintaining language models for embodied reasoning*, 2023. arXiv: 2306.17840 [cs.RO].

EDUCATION

Ph.D. Candidate in Computer Science
Toyota Technological Institute at Chicago

📅 2017/10—Present

M.Sc. in Computer Science
Toyota Technological Institute at Chicago

📅 2017/10—2019/09

B.Sc. in Electronic Engineering
Tsinghua University

📅 2013/08—2017/07

Awards
- Outstanding Graduate at EE Dept., Tsinghua Univ.
- Outstanding Thesis at EE Dept., Tsinghua Univ.

TEACHING

Teaching Assistant
- TTIC 31170: Planning, Learning and Estimation for Robotics and Artificial Intelligence

SKILLS

Robotics Computer Vision Machine Learning
Software Development Python Programming