
VRFromX: from Scanned Reality to Interactive Virtual Experience with Human-in-the-Loop

Apr 2020 to Nov 2020

Purdue University, IN

AD: **Karthik Ramani**

- Developed an end-to-end system framework to make the content creation process easy and generic in Virtual Reality (VR), which supports the authoring of interactive VR scenes from real-world scans.
- Designed and implemented an interaction method with point cloud using AI assistance and an interactive behavioral modeling sub-system with an affordance recommender for VR users in Unity engine.
- Conducted the integration of the back-end deep neural network with the front-end Unity software.
- Implemented the user interface design for the entire system to achieve intuitive user experience.
- Implemented three different use cases including welding training, remote 3D printing and Robot-IoT task planning using the complete system.
- Designed the process of a user study with one of the three use cases—welding training.

PUBLICATION & PRESENTATION

1. Gao, R*, Dou, Y.*, **Li, H.***, Agarwal, T., Bohg, J., Li, Y., Fei-Fei, L., Wu, J. The OBJECTFOLDER BENCHMARK: Multisensory Object-Centric Learning with Neural and Real Objects. In *IEEE/CVF Conference on Computer Vision and Pattern Recognition 2023*. (Under review)
2. Gao, R*, **Li, H.***, Dharan, G., Wang Z., Li, C., Xia, F., Savarese, S., Fei-Fei, L., Wu, J. SONICVERSE: A Multisensory Simulation Platform for Embodied Household Agents that See and Hear. In *2023 IEEE International Conference on Robotics and Automation*. (Accepted)
3. **Li, H.***, Zhang, Y.*, Zhu, J., Wang, S., Lee, M. A., Xu, H., ... & Wu, J. See, Hear, and Feel: Smart Sensory Fusion for Robotic Manipulation. In *6th Annual Conference on Robot Learning*.
4. Ipsita, A., **Li, H.**, Duan, R., Cao, Y., Chidambaram, S., Liu, M., & Ramani, K. (2021, May). VRFromX: from scanned reality to interactive virtual experience with human-in-the-loop. In *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems* (pp. 1-7).

LEADERSHIP AND RESPONSIBILITIES

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| Couse Assistant in AA274A Fall 2022, Stanford, CA | Sept 2022 to Dec 2022 |
| <ul style="list-style-type: none">▫ Led two sessions every week to teach students how to use ROS▫ Designed and implemented the final project codebase | |
| Volunteer Teacher of School of Xingnan, Shanghai, China | Sept 2018 to Dec 2018 |
| <ul style="list-style-type: none">▫ Tutored children in poverty or from families with disabilities in rural area in academics. | |
| Volunteer of China Coordinates City Orienteering Challenge, Shanghai, China | May 2018 |
| <ul style="list-style-type: none">▫ Encouraged citizens to be involved in city exploration and exercise▫ Organized and helped the participants to finish simple and joyful exercising tasks | |

HONORS AND AWARDS

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| Academic Advancing Scholarship, SJTU | Oct 2020 |
| Howard L. Timms Scholarship, Purdue University | Jun 2020 |
| Dean's List & Semester Honours, Purdue University | Jun 2020, Jan 2020, May 2020 |
| School of Mechanical Engineering Scholarship, SJTU | Oct 2019, Oct 2018 |
| Enrolled in Tsien Hsue-Shen Honor Program, SJTU | Apr 2018 |

SKILLS AND TECHNICAL STRENGTHS

- **Real Robot experience:** Franka Emika Panda Robot Arm, Turtlebot
- **Design and Prototyping:** SOLIDWORKS, Unity, ANSYS, Pybullet, ROS
- **Programming:** Python, C#, C++, Arduino, LaTeX