

Yanran Lin

u1529122@utah.edu | 📞 +1 (385) 371-5994
350 S 600 E, Salt Lake City, UT 84102

Interests

Augmented Reality, Neuroscience, Human-Computer Interaction, Context Awareness.

Education

University of Utah

Ph.D. in Computer Science

Advised by Professor Luis Garcia.

Aug. 2024 - May. 2029 (expected)

University of Michigan

B.S.E. in Computer Science and Engineering

Sep. 2022 - May. 2024

Shanghai Jiao Tong University

B.S.E. in Electrical and Computer Engineering

Sep. 2020 - Aug. 2024

Publication

Yanran Lin, Wonse Jo, Arsha Ali, Lionel P. Robert Jr., and Dawn M. Tilbury. 2024. Toward Personalized Tour-Guide Robot: Adaptive Content Planner based on Visitor's Engagement. In Companion of the 2024 ACM/IEEE International Conference on Human-Robot Interaction (HRI '24).

Research Experience

Michigan Autonomous Vehicle Research Intergroup Collaboration (MAVRIC) Lab

May. 2023 - May. 2024

Advisor: Prof. Dawn Tilbury

University of Michigan

VR Development for Social-awareness Navigation

- Developed city environment in Unity covered various areas including urban, and residential, to simulate complex public spaces.
- Utilized social force model to simulate virtual pedestrians in Unity. Equipped each agent with scripts to control movements avoiding others based on social distances and navigate to target positions.
- Tested the immersion of the virtual environment using HTC Vive and omni-directional treadmill, analyzed the limitation and proposed solutions.
- Imported various robot and autonomous driving vehicle models into the environment and controlled through ROS, which allowed us to test different navigation algorithms and evaluate their motions and interactions in complex public scenes.

Personalized Tour Guide Robot: Enhancing Visitor Engagement

- Identified limitations of current tour guide robots including reliance on pre-recorded content, insufficient engagement assessment, and lack of content adaptability through literature review.
- Developed basic capabilities of a tour guide robot including autonomous navigation and speech narration on Toyota HSR robot platform.
- Designed engagement metrics utilizing head camera to capture visitor information and implementing facial expression recognition for engagement measurement.
- Pre-designed multiple narration content and route options, and realized adaptive content adjustment system by selecting suitable scripts and paths based on real-time engagement data.
- Moving forward, will implement human-robot verbal interaction and engagement level measure utilizing facial expression recognition.

Distributed Aerospace Systems and Control (DASC) Lab

Nov. 2022 - May. 2024

Advisor: Prof. Dimitra Panagou

University of Michigan

Supervision of Multi-robot Systems Through Immersive Interface

- Identified limitations of current user interfaces for supervision of multi-robot systems through literature review.
- Developed prototypes of 2D and 3D human-robot interaction interfaces in Unity.
- Implemented video streaming from drones to HoloLens, with processing to show real-time positions and trajectories of ground robots.
- Displayed the processed real-time video on the HoloLens interface to enable human-robot interaction.

SJTU 35th PRP (Participation in Research Program)

Jul. 2021 - Feb. 2022

Advisor: Yufeng Kou

Shanghai Jiao Tong University

Application of Indoor High-Precision Positioning Technology

- Analyzed the application feasibility in accurate layout of anchor chain pipe rack system in marine platforms.
- Determined ROS-based LIDAR positioning technology to best meet the requirements.
- Configured ROS environment on Scorpio robot, and implemented two functions of SLAM mapping and robot navigation.
- Confirmed preliminary realization of positioning and navigation and proposed plans for improvement.

Honors and Awards

Dean's List, University of Michigan

Apr. 2023

Outstanding Member of Student Union, UM-SJTU Joint Institute of Shanghai Jiao Tong University

May. 2021

Skills

Programming Languages:

Python, C, C++, HTML, JavaScript, CSS, Matlab

Technologies & Tools:

PyTorch, TensorFlow, Git, Linux, ROS, Unity, Originlab, Solidworks, Mathematica