

Towards Social-Acceptability of Mobile Robots through Motion Communication Cues

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INTRODUCTION

We are designing and evaluating visual cues for mobile robots to communicate their motion to pedestrians on the sidewalk, with the goal of increasing human comfort and acceptance. We are comparing a flashing lights cue to a path projection cue in order to determine which is a more effective and comfortable communication cue for pedestrians.

CUES and EXPERIMENT APPARATUS

- Two motion communication cues:
 1. Flashing lights.
 2. Path projection.
- HoloLens used for prototyping and experimentation.
- Cues prototyped in Unity and overlaid as holograms on robot.



Figure 1: User observes lights (orange) and path (green) motion communication cues through HoloLens.

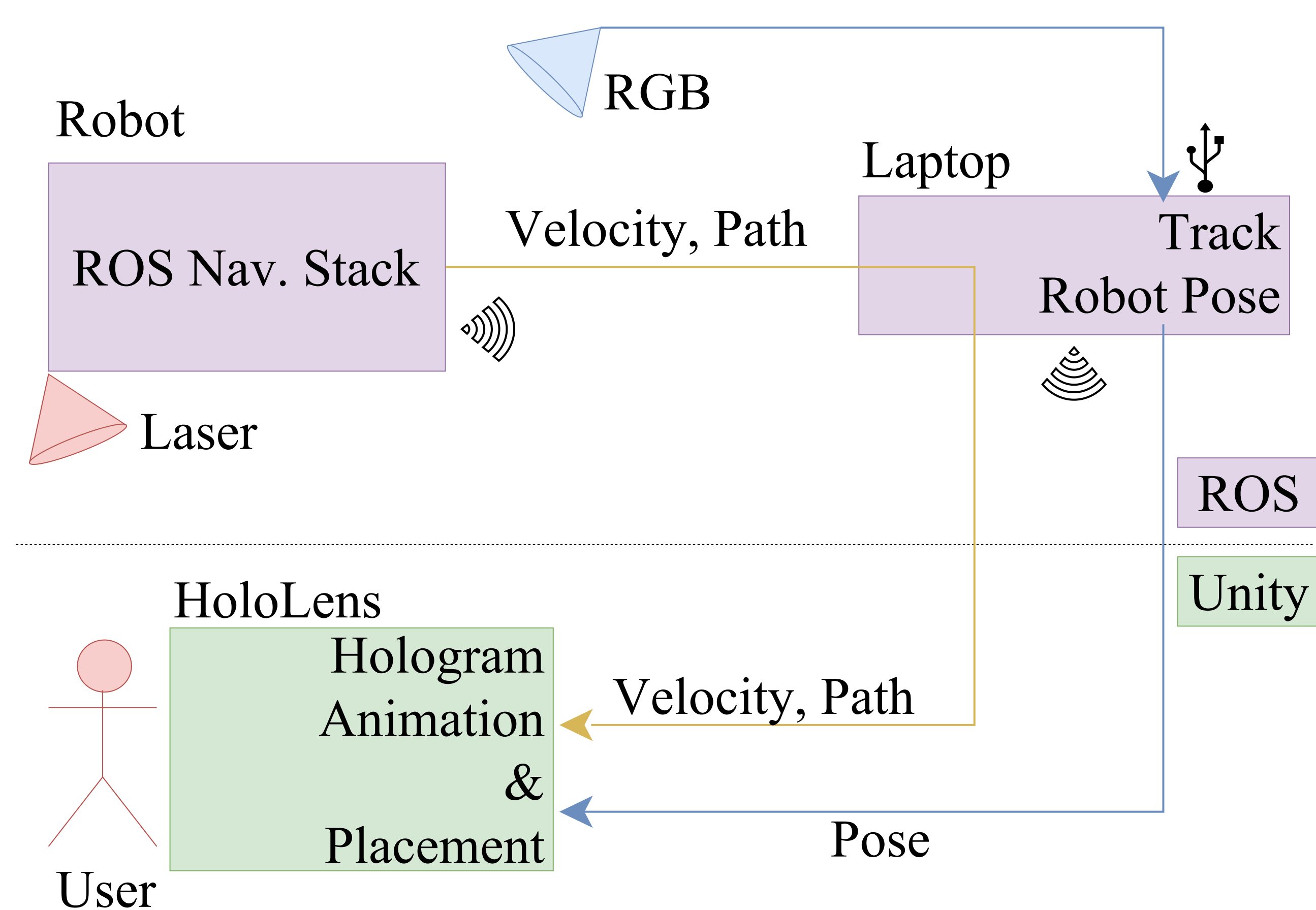


Figure 2: Experiment apparatus system diagram.

EXPERIMENT DESIGN

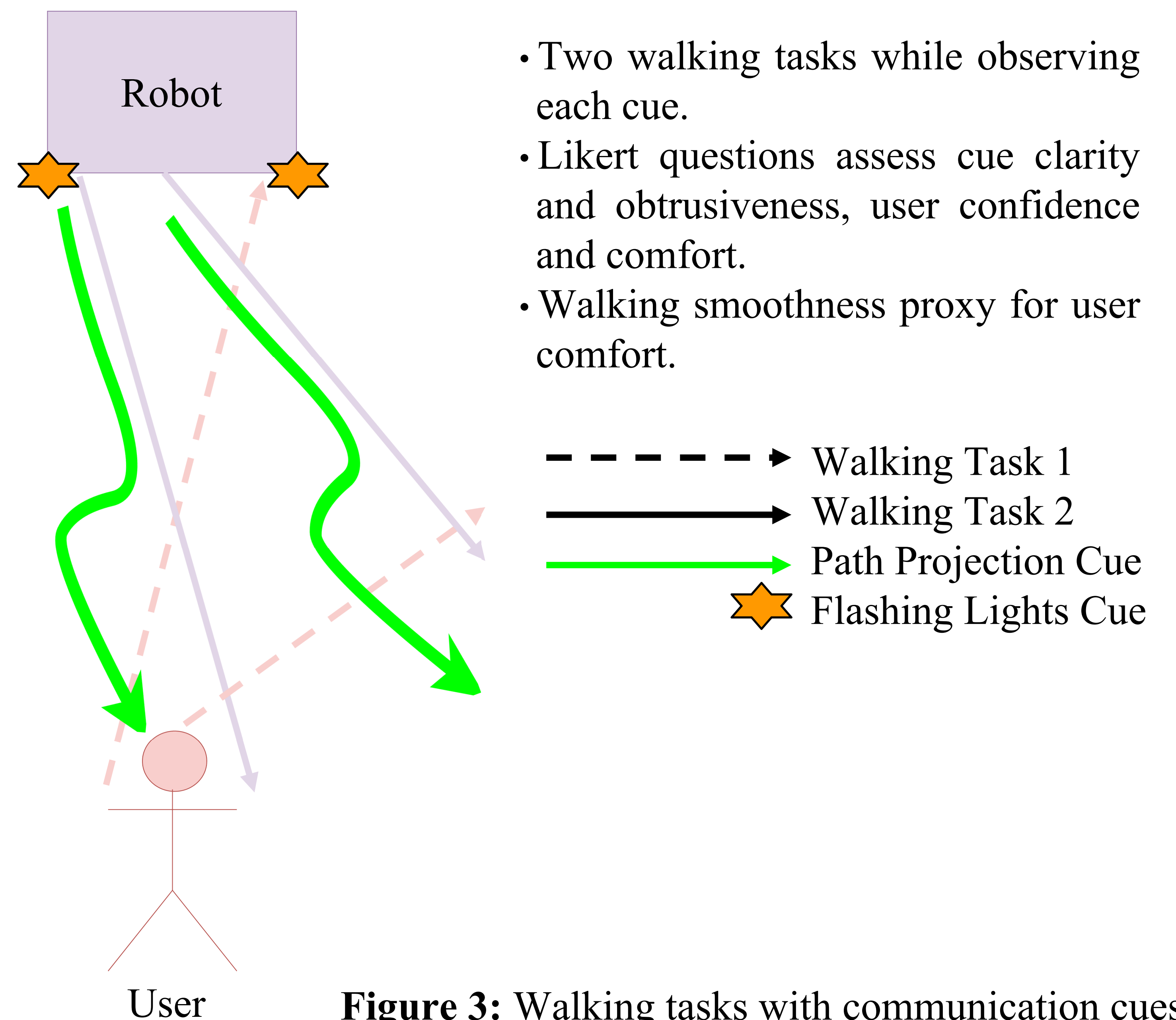


Figure 3: Walking tasks with communication cues



Figure 4: HoloLens measures user velocity (v) and trajectory.

CONTRIBUTIONS and FUTURE WORK

- Increase human understanding of robot movement and thereby social-acceptability of robots on the sidewalk.
- First to compare flashing lights and path projection motion communication cues on a mobile robot.
- A subsequent field study will physically prototype the more effective cue from this lab. study and evaluate the physical prototype in a shared space with multiple pedestrians.

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