

Communicate, Share, Adapt: A Mixed Reality Framework for Facilitating Robot Integration and Customization

Award #: IIS – 1925083

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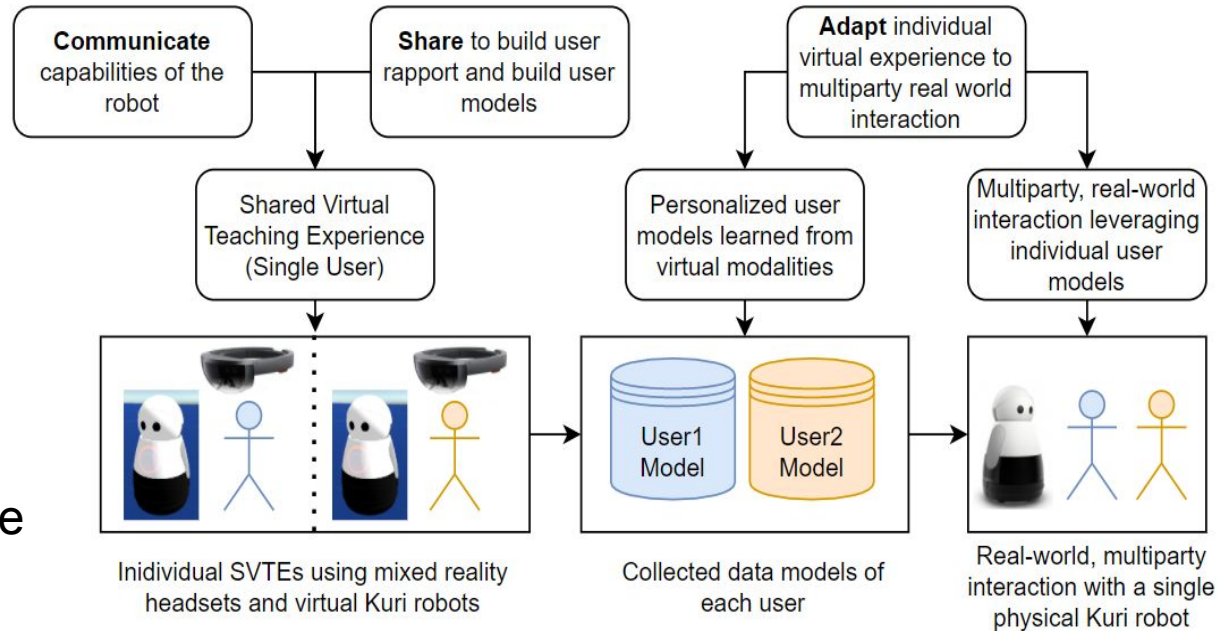
Poster #75



Developing a Shared Virtual Teaching Experience (SVTE) validation with older adults

SVTE is a mixed reality teaching experience designed to:

- Teach users how to **communicate** with robots
- Build user-robot rapport through **sharing**
- **Adapt** to real-world, personalized, multiparty interactions based on the SVTE training and data



Isolated salient Virtual Design Elements (VDEs) for SVTE signalling capabilities

Study Design:

- Explored signal visualizations in Unity for 6 robot capabilities: **navigation**, **LiDAR**, **camera**, **face detection**, **audio localization**, and **natural language processing (NLU)**
- Evaluated each signal's VDE combinations with an Amazon Mechanical Turk study (n=150) for clarity and visual appeal

Key insights:

- Defined a set of the most clear and visually appealing signal visualization designs
- Determined VDE interaction effects
- Contributed design recommendations and a baseline for research into AR robot capability signalling



Example Visualizations for each signal

Current work: user interaction preference model transfer from SVTE to real world

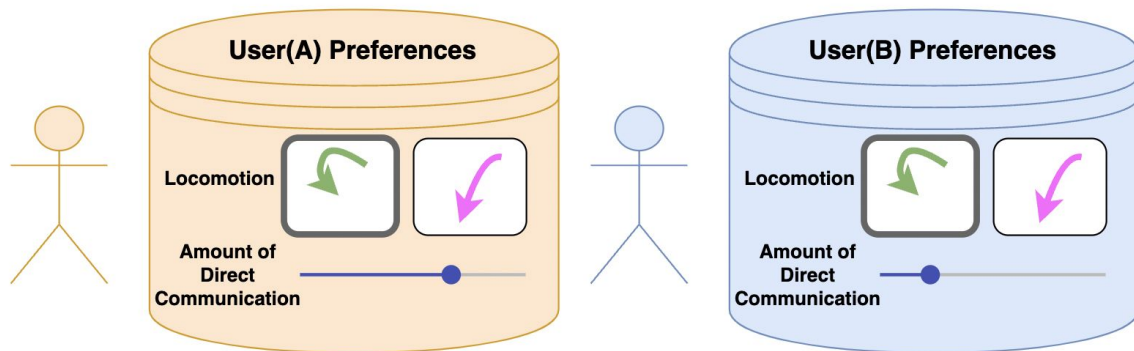
- User interaction preference models based on data-efficient recommender systems
- Initial convenience sample study for data collection
- SVTE deployment with our partner institution

Front Porch

Partner Institution



Testbeds: Kuri [left] and Quori [right]



Different user interaction preferences learned during the SVTE



Interview participants from Front Porch