ETH zürich

SpotOn: Mixed Reality Interface for Multi-Robot Cooperation

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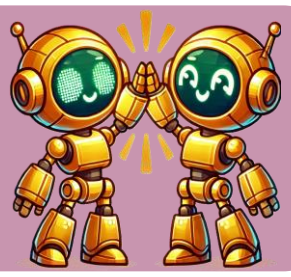
1 Introduction

Objective:

- Collaboration of two robots
- Control via MR headset
- Extending semantic understanding from observations



2 User Interface

Prior Art

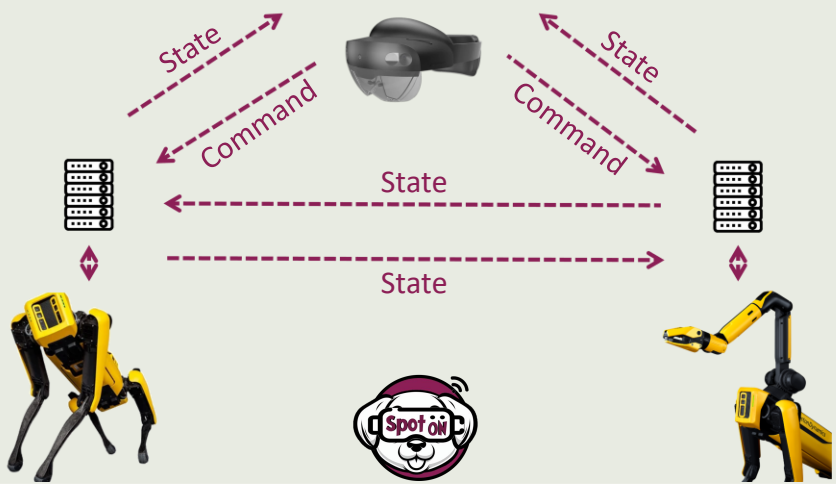
- Single robot
- Basic interactions
- Predefined voice commands

SpotOn application:

Interactive Scene:

Issue commands & navigate via the menu:

3 Networking Architecture



4 Results

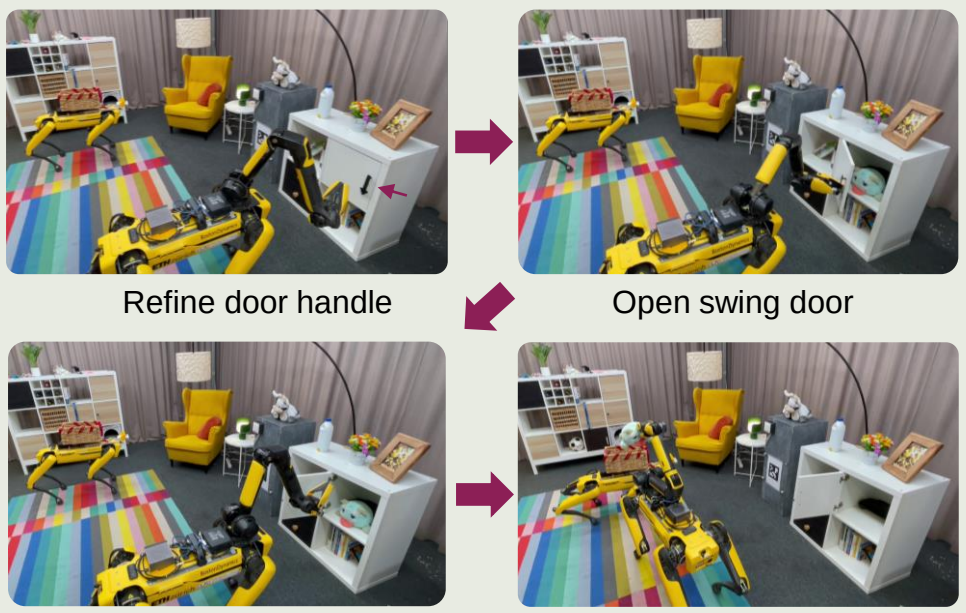
Collaborative Light Switch Status Check

First robot checks lamps | Second robot presses switch | Semantic update

Collaborative Drag-and-Drop

First robot grabs object | Second Robot awaits object

Collaborative Swing Door Search



Refine door handle | Open swing door

Search drawer for item | Place it in second robot

5 Conclusion & Future Work

Summary:

- Solving a larger set of complex tasks more robustly than state of the art
- Faster execution of tasks due to distribution of workload

Improvements:

- Enhanced path planning
- Map extension via internal sensors
- Completely open language interface