



# Disfluency Handling for Robot Teammates



# Tufts UNIVERSITY

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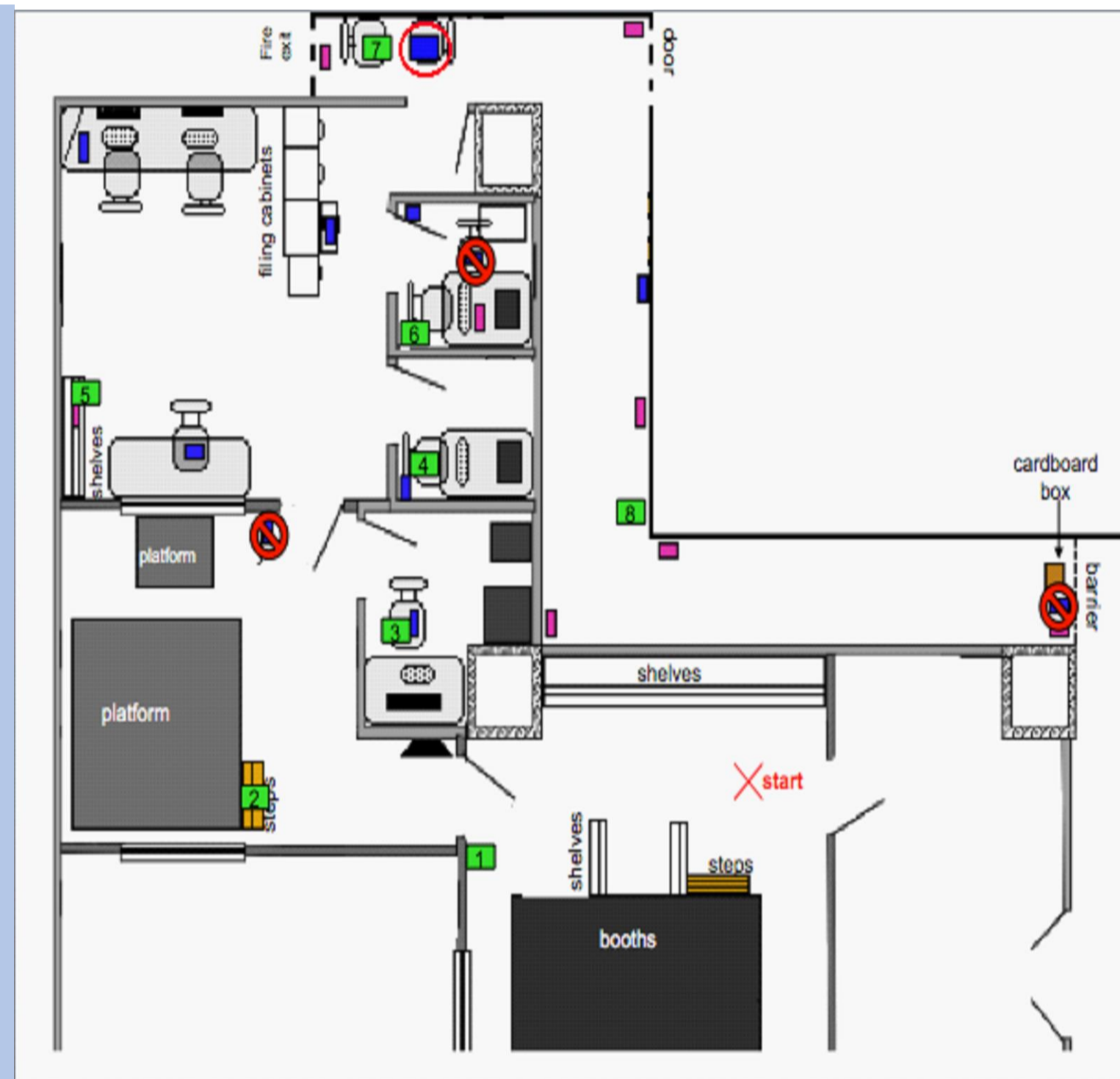
## Project Aims

### Human-centric:

To understand how communication in human teams contributes to effective coordination.

### Robot-centric:

To inform computational mechanisms for effective human-robot teaming.

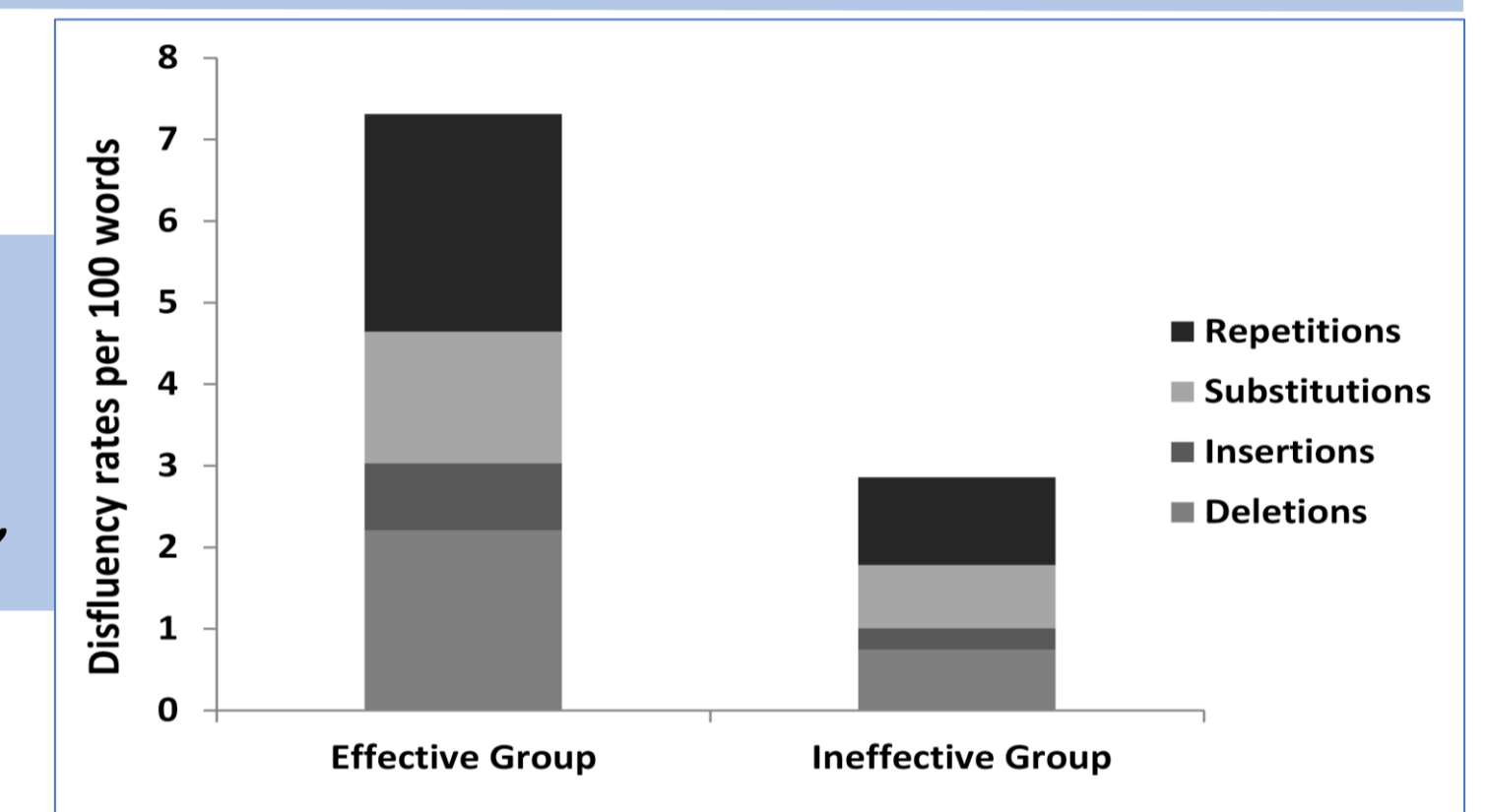


## Method and Results

We analyzed an annotated corpus of task-oriented dialogue to investigate the kinds of communication strategies that humans employ in team settings.

Our results found that effective teams used more self-repairs to improve grounding and coordination.

**Repetition** : “Look- look in the box”  
**Substitution** : “Pink- I mean blue box”  
**Insertion** : “In the room- the nearby room”  
**Deletion** : We don’t have- uh let’s hurry up”



## Mechanisms for Human-Robot Teaming

### 1. Handle Overlapping speech

S: Okay so now what am I doing again [with the] yellow-  
D: [g r a b] [pause]  
D: You wanna put a yellow block in each pink block [pause] er [b o x]  
S: [o k a y]

### 2. Accommodate Clarification self-repairs

S: Well [pause] see the two pink boxes?  
D: Yes  
S: On the right corner – the inside corner  
D: Yes

### 3. Incremental Prediction

D: There’s also one in the second – [pause] uh, we only have three minutes to do this , okay  
S: Okay, second cubicle, I got that.

## Conclusion

To serve as truly effective partners, robots need to utilize the kinds of natural communication strategies that humans use to establish and maintain common ground. This work serves to uncover some of these strategies to inform the design of computational mechanisms for more effective human-robot teaming.