University of Zurich[UZH]

University Research Priority Program
Language and Space

Accommodation in human-robot game interactions:
The effect of social and situational factors

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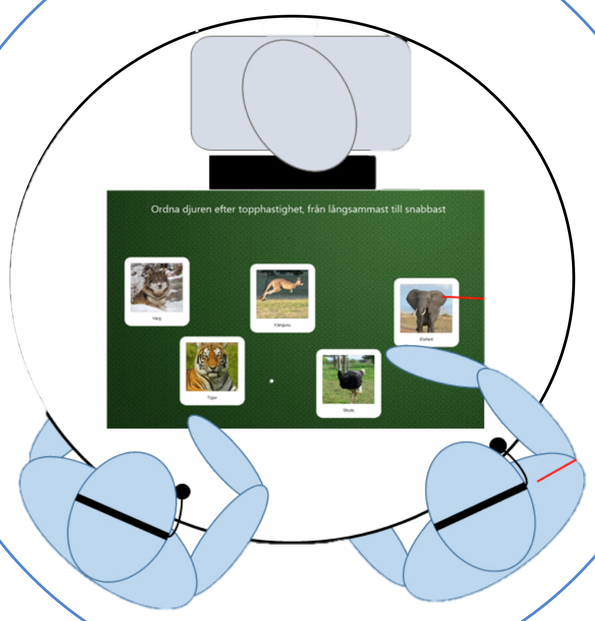
Background

- In human-human interactions, the situational context plays a large role in the degree of speakers' accommodation.
- There has been evidence that accommodation increases with the duration of an interaction.
- Listeners typically adapt more rapidly to their conversational partners' f_o than other prosodic features.

Furhat robot head

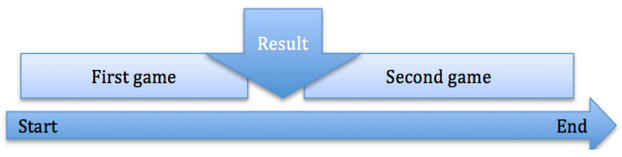
Research Questions

- To what degree do humans accommodate **to themselves** (H-H) and to what degree **to the social robot** (H-R) in terms of f_o?
- What are the **factors driving accommodation** behavior in H-H and H-R interaction?
- What the **effect of social and situational** factors on the accommodation over the time span of the conversation?



Method

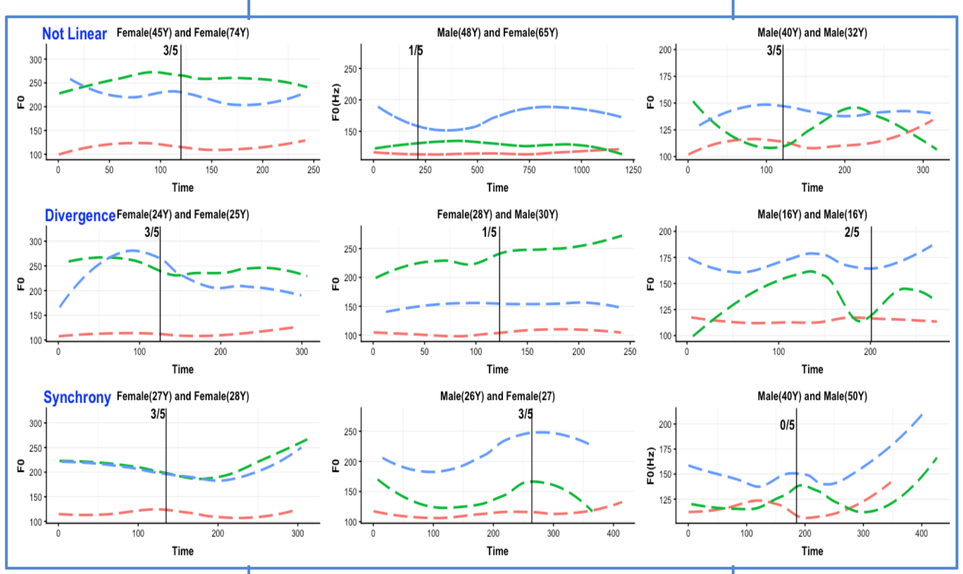
- 60 adult participants (males /females) who played several games with the robot.
- Setting: Playing collaborative card game and at the end of each game, they receive the game's result.
- Language: Swedish.
- Acoustic analysis : Fundamental Frequency (f_0).
- Goal: investigate the effect of game results and gender on the amount of the accommodation in the following game.



Preliminary Results

- Accommodation over time does not follow a clear pattern visually.
- The finding suggests that accommodation between speakers is **not necessarily a function of the duration** of a conversation, but situational factor like winning the game, can have a greater effect on speakers' convergence.
- Distance type (human-human and human-robot) and team gender composition (same or mixed gender interactions) have **no effect** on the degree of accommodation.

Dynamic of accommodation



Future work

- Adding the full data of adults and children.
- Omnia Ibrahim, Gabriel Skantze, Sabine Stoll, Volker Dellwo, "Prosodic accommodation in Human-Human-Robot interactions"(Planned), *Journal of Phonetics,* special issue: Vocal Accommodation in Speech Communication.