



A Social Robot Companion for Individuals Eating Alone

Selim Soufargi¹, Hunter Fong², Radoslaw Niewiadomski², Maurizio Mancini¹
Sapienza University of Rome¹, University of Genoa²



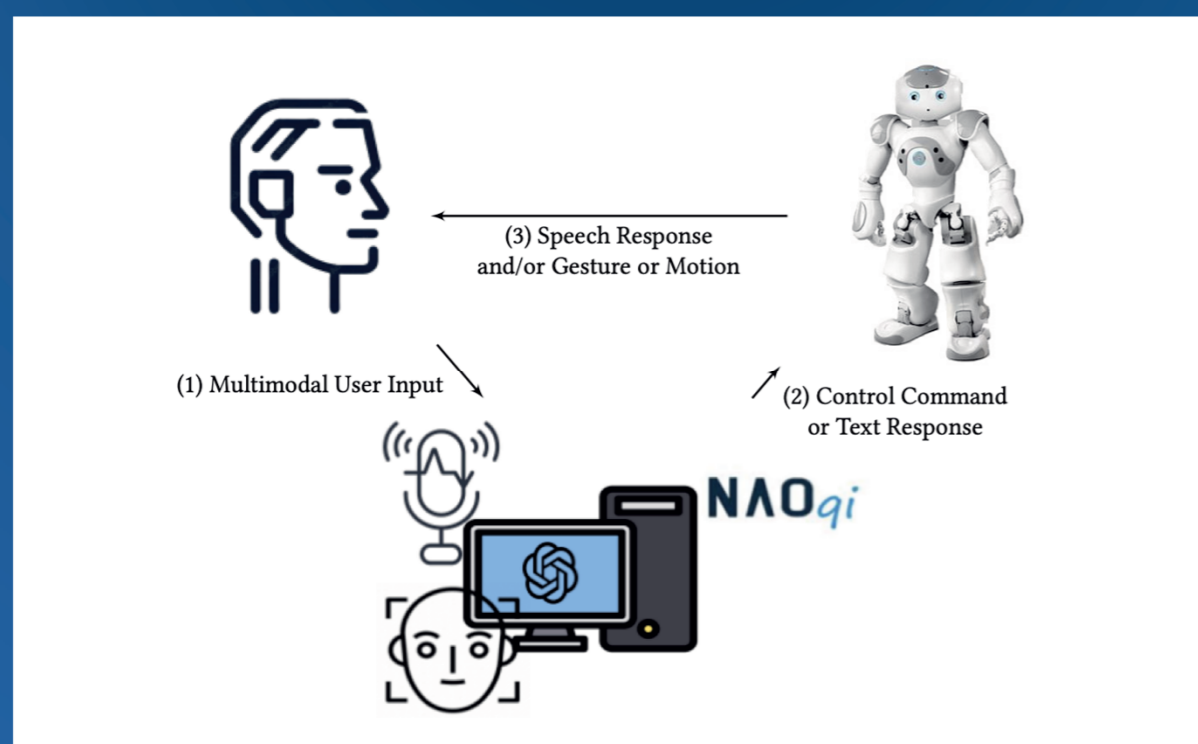
Commensality & Emerging System

Commensality:

- the act of *eating with others*
- many positive effects on mental and physical well-being
- eating alone is often related to detrimental health effects

We present a social robot acting as an artificial commensal companion (ACC) composed of:

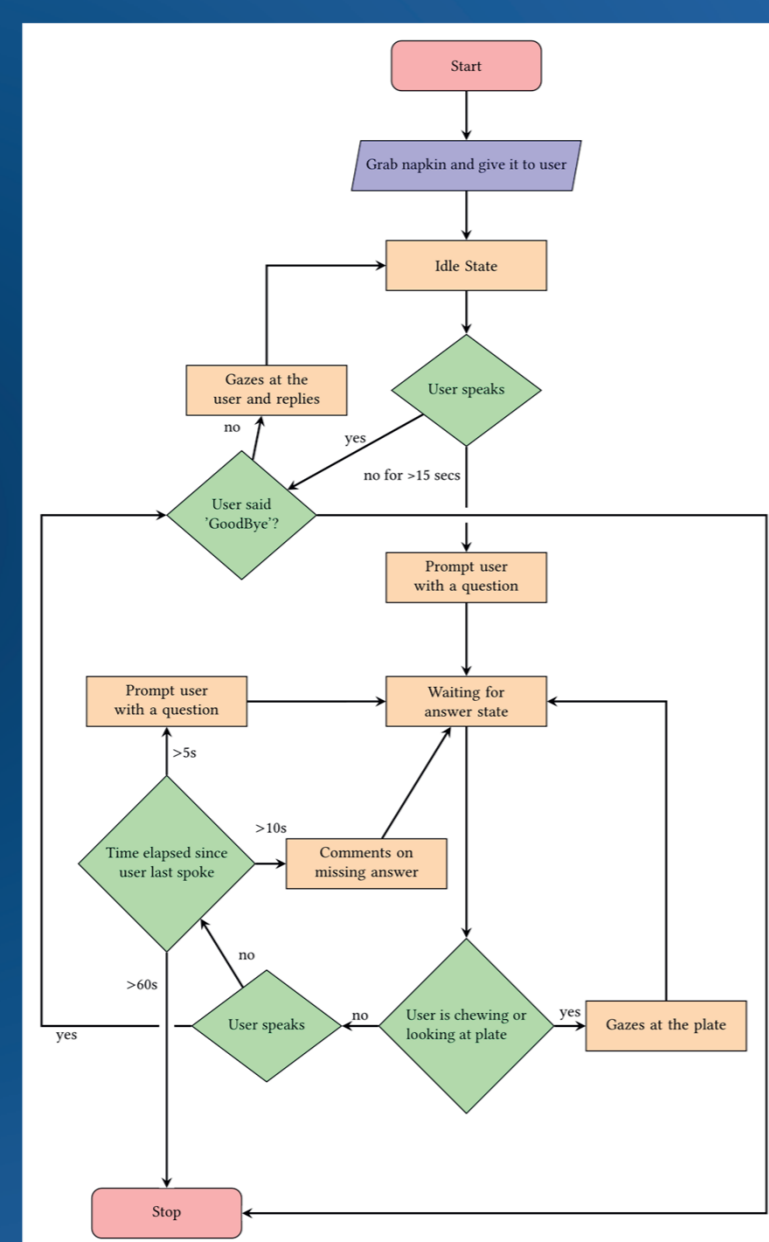
- the *NAO* robot
- dialog management based on existing LLM
- human commensal activities detection in realtime
- human speech recognition



System Design

Our ACC:

- detects human speech and nonverbal behaviors (gaze, food intake, etc.)
- initiates new conversations on various topics (e.g., preferences on food, activities, music)
- answers to human utterances
- displays appropriate nonverbal behaviors (e.g. gaze behaviors)



Evaluation

Research questions:

- RQ1. Does our commensal robot provide a more enjoyable eating experience than eating alone?
- RQ2. Does sharing a meal with our ACC lead to a feeling of connectedness?
- RQ3. What capabilities and conversations do users believe an ideal robotic dining companion should have?
- RQ4. What concerns do users have concerning robotic eating companions?

Mixed-Methods, Between-Subjects Study

Participants:

- come to the lab and eat their lunch with a robot
- take several pre- and post-experiment questionnaires
- receive post-experiment interviews
- have behavioral measures recorded (e.g., speech duration)



22 participants:

- enjoy the robot interaction
- prefer the commensal robot to eating alone

Ongoing works

Improved versions of the system:

- quicker response times
- longer memory within interactions
- more personalized conversations based on user preferences

Other experimental conditions:

- 1) solo eaters, 2) non-interactive media, 3) virtual character

Experiment Flow

- Demographics
- Big-5 personality test
- General commensality
- Use of technology
- General affect
- Loneliness



- Enjoyment of interaction
- Connectedness during conversation
- Situational affect

- Qualitative interviews



Lunch with Commensal Robot

RQs 1&2

RQs 3&4



Finanziato dall'Unione europea
NextGenerationEU



Ministero dell'Università e della Ricerca



Italiadomani
PIANO NAZIONALE DI RIPRESA E RESILIENZA

