



# Designing Interactions for Artificial Commensal Companions

Hunter Fong<sup>1</sup>, Selim Soufargi<sup>2</sup>, Maurizio Mancini<sup>2</sup>, Radoslaw Niewiadomski<sup>1</sup>  
University of Genoa<sup>1</sup>, Sapienza University of Rome<sup>2</sup>

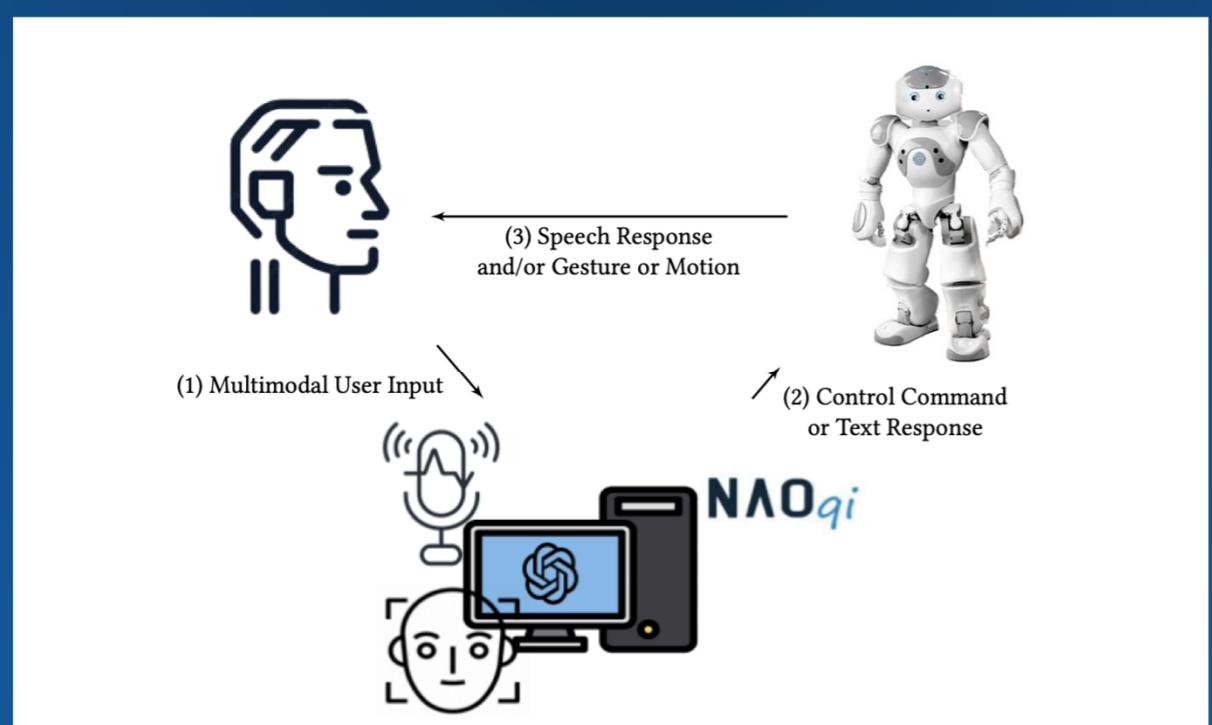
## Commensality

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

## Emerging System

A social robot acting as an artificial commensal companion (ACC):

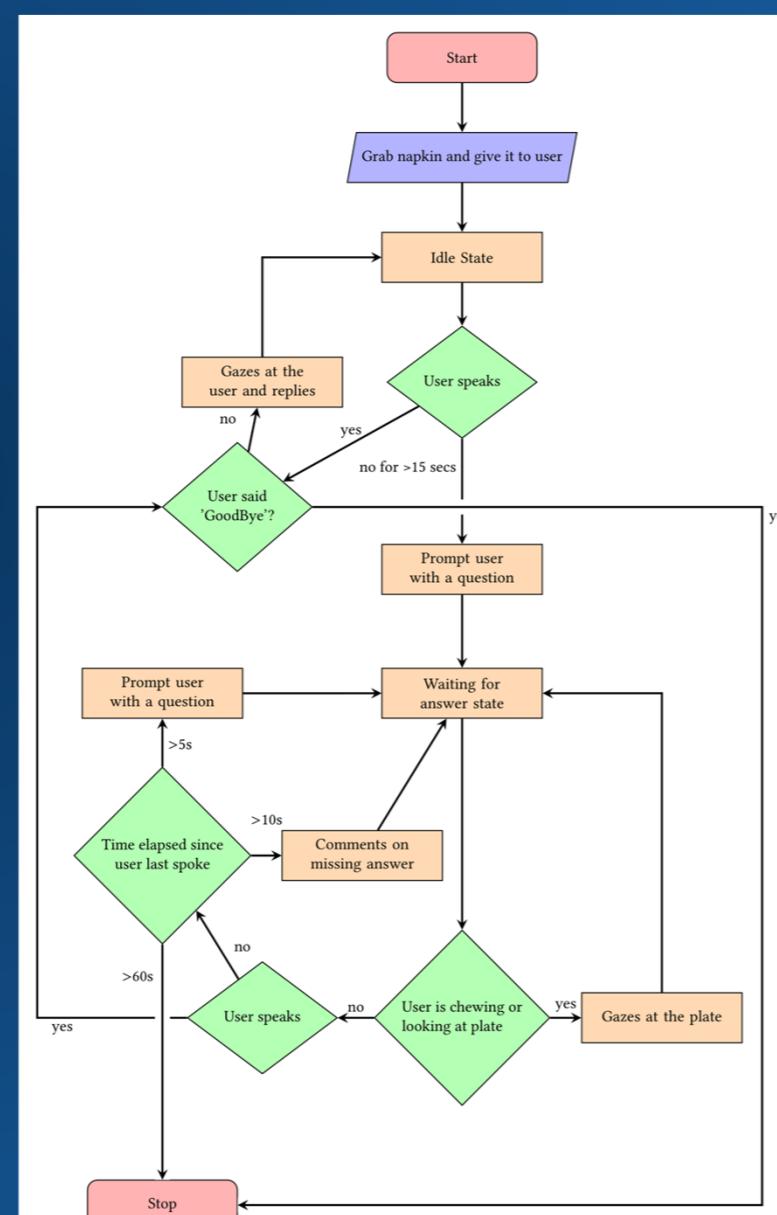
- the *NAO* robot
- dialog generated using existing LLM
- human commensal activities detection in realtime
- human speech recognition



## 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

- RQ1. Does our commensal robot provide a more enjoyable eating experience than eating alone?
- RQ2. Can our system be viewed as a social dining companion? If so, in which circumstances?
- 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

#### 22 Participants:

- come to the lab and eat their lunch with a robot
  - take several pre- and post-experiment questionnaires
  - receive post-experiment interviews
- during recruitment, they were not informed about the presence of the robot

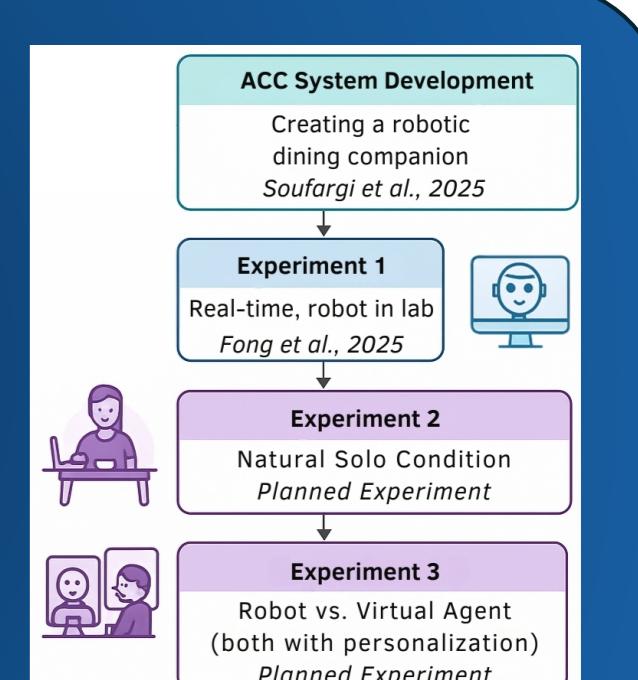


## Results:

- All participants enjoy the robot interaction and prefer the commensal robot to eating alone
- strong request for more personalized experience
- Limited conversational memory and lack of fluency are the main criticisms
- Possible applications: work-time lunches, solo-dining in care situations

## Ongoing works

- Other experimental conditions:
  - solo eaters,
  - non-interactive media,
  - virtual character



## Experiment Flow

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



### Lunch with Commensal Robot



- Enjoyment of interaction
- Connectedness during conversation
- Situational affect



- Qualitative interviews



### RQs 1&2

### RQs 3&4



Finanziato  
dall'Unione europea  
NextGenerationEU



Ministero  
dell'Università  
e della Ricerca

Italiadomani  
PIANO NAZIONALE  
DI RIPRESA E RESILIENZA

