

Goal of the project

Develop a **biographical platform** composed of web application and **personal serious games (SGs)** solution integrated into a **humanoid robot** to enhance cognitive and social functions in MCI older adults, aiming to prolong independent living [1,2].

Include two **robot personalities** to improve engagement and attention during repetitive cognitive tasks [3].

The SERENI Approach

BIOGRAPHICAL PEPPER APP

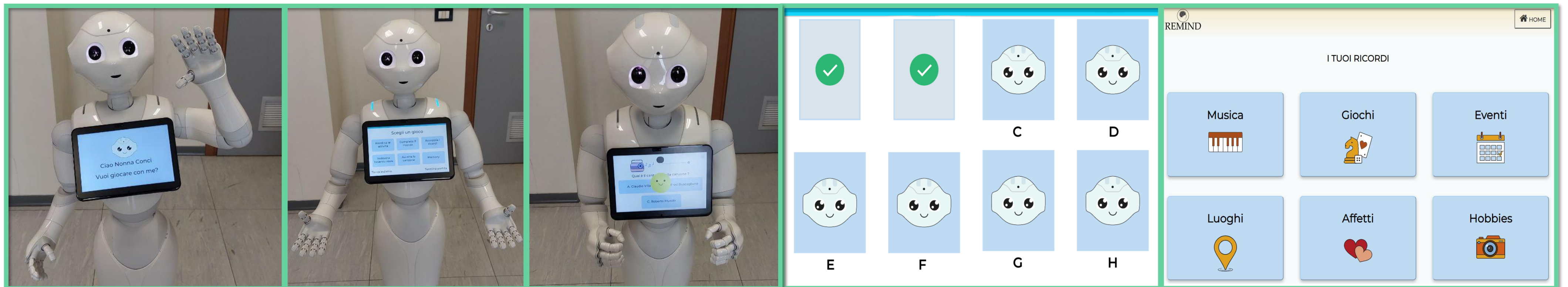
It incorporates biographical information into six SGs into the humanoid robot, which has potential utility and cognitive stimulation benefits.

- Memory completion;
- Activities ordering;
- Memory Association;
- Memory-related event question,
- Music game;
- Memory game.

WEB APP

Web App to collect user personal memories used for personalising games.

- Creation User Profile;
- Collect the user's favourite music, hobbies, photos and childhood information;
- In the trial, 428 memories were collected;
- Caregiver profile for managing all the information;
- Visualization of game session data.



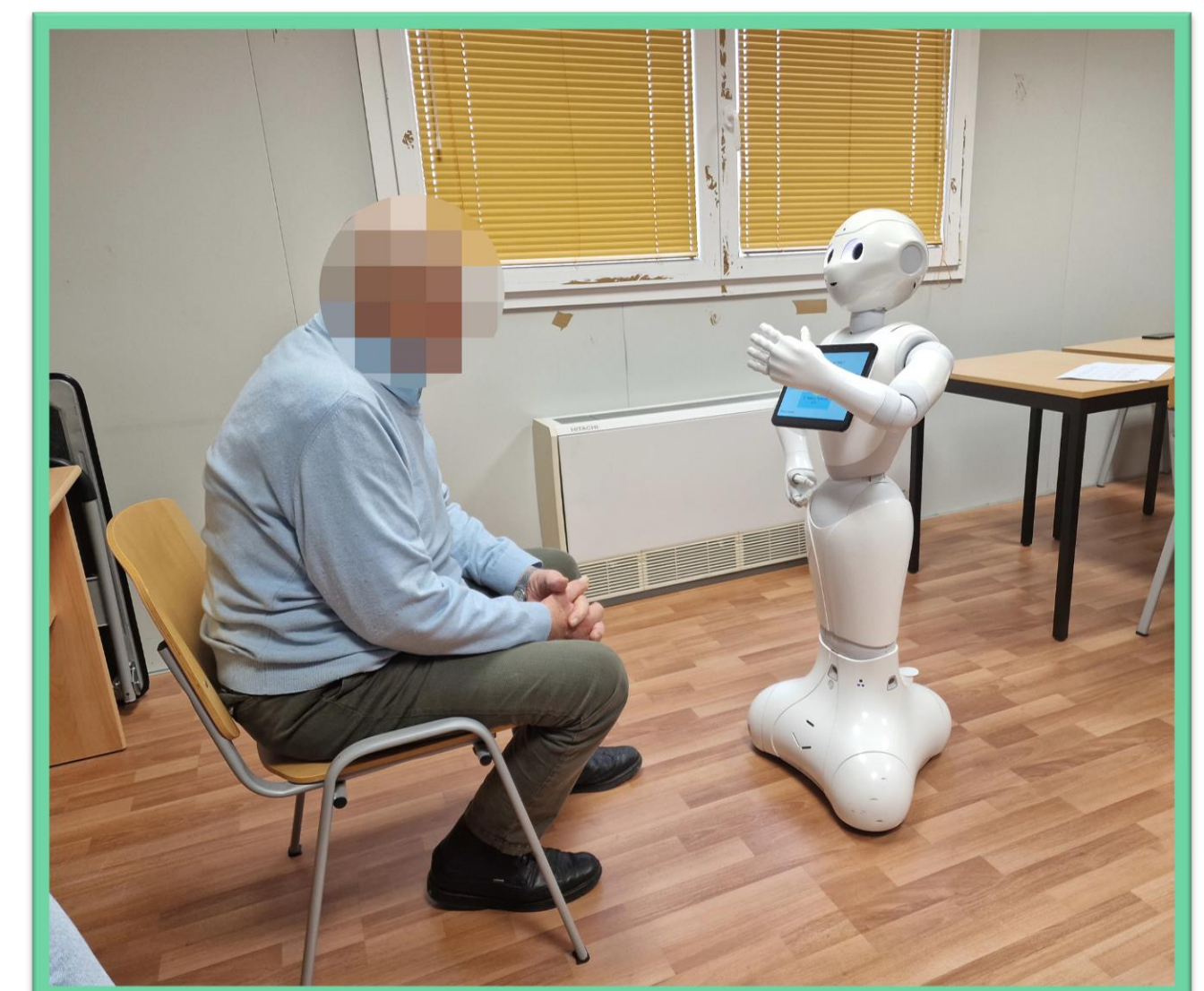
Trial Test in Train the Brain Programme

Trial March-May 2023 involved 15 MCI older adults (67 – 88 y.o.) in the clinic of the Train the Brain programme (Neuroscience CNR Institute).

Goal: understand the impact of personalisation using personal memories in the user experience and the game performances vs a non-personalized application.

Results:

- The personalised version seems to stimulate slightly better performance (reaction time, number of errors).
- Users praised memory-based games for evoking emotions and triggering memories.



Conclusions and Future Work

- Data collected in the first trial show some preference for the personalised version.
- We plan a new round of trials with a new version of the games.
- The platform is a solution for day-care centres, enabling MCI users to engage in relevant exercises.

References

- [1] M. Manca et al., The impact of serious games with humanoid robots on mild cognitive impairment older adults, [Int J. Hum. Comput. Stud.](#) 145 (2021)
- [2] Catricalà et al., Biography-based Robot Games for Older Adults, [CHI Workshop23](#)
- [3] E. Zedda et al., Older adults' user experience with introvert and extravert humanoid robot personalities, [UAIS, 2023](#)