

# Bachelor Projects in Social Robotics

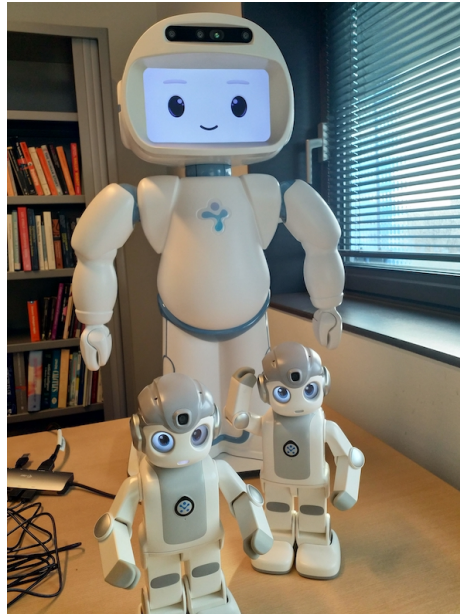
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## 1 Project descriptions

While I am in the process of setting up a social robotics lab, I am happy to host several bachelor projects on social robotics. The following topics are examples in which projects can be done:

- **Social robotics in elderly care** Social robots are increasingly being employed in elderly care, especially to provide elderly some daily structure and company to improve their well-being. In this project, the aim will be to improve the interaction between elderly and a small humanoid robot (Alpha Mini) by designing short dialogues about certain topics that serve their well-being.
- **ChatGPT for social robots** Now that ChatGPT appears everywhere, it is also used to implement dialogues with social robots. How should one best set up an interface where a small humanoid robot can use ChatGPT for various purposes? And, how do different users experience interacting with such a robot?
- **Co-speech gesturing for social robots** When humans interact with each other, they often use hand-gestures and facial expressions to accompany their speech. How can we design robots that use such *co-speech gestures* in a natural way that mimics human behaviour?
- **Empathy for social robots** Ideally, social robots are capable of displaying emphatic behaviour, reading human's emotions and expression emotions themselves. How can we design a robot that learns to behave emphatically in an human-acceptable manner?
- **Playing charades with QT Robot** In a previous study, we have developed a game of charades to be played with a NAO robot [1]. In this study, we want to transform this to be implemented in QT. Can the robot learn this game from interacting with humans?
- **Free project** Other relevant project proposals will be considered, provided that it fits the general theme of social robotics and is feasible.



## 2 Work expected from student

Students are to be expected to work with either the Alpha Mini robot or the QT robot. For all projects, the following activities are expected from the student:

- Read the relevant literature.
- Design and program a solution to the posed research question on a real social robot.
- Test and evaluate the implemented solution with human participants.

Note that the Alpha Mini robot can be programmed in Python, Javascript or Android, and the QT robot in ROS. Strong programming skills in ROS are required for working with the QT robot.

If you are interested and want to know more about a project, you can contact me through email ([p.a.vogt@rug.nl](mailto:p.a.vogt@rug.nl)).

## References

- [1] Jan de Wit, Emiel Krahmer, and Paul Vogt. Introducing the nemo-lowlands iconic gesture dataset, collected through a gameful human–robot interaction. *Behavior Research Methods*, 53(3):1353–1370, 2021.