UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II

PHD PROGRAM IN INFORMATION AND COMMUNICATION TECHNOLOGY FOR HEALTH

PHD PROGRAM IN INFORMATION TECHNOLOGY AND ELECTRICAL ENGINEERING

PhD course announcement

Title: **Social Robotics**

Lecturer: **Prof. Alessandra Rossi**

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Credits: 15

Short bio notes

Overview

In this module, students will learn the key aspects of designing and developing robots' behaviours that are accepted and familiar to people. Particular attention will be given to robotics applications and scenarios where robots are expected to have close interactions with people and support therapists and caregivers. Students will be provided with an overview of the multidisciplinary aspects to consider in order to design a human-robot interaction (HRI) by discussing and learning aspects and techniques from different relevant fields, such as robotics, computer science, engineering, psychology, and artificial intelligence (AI). Students will learn how to design and conduct a HRI study, and how to choose subjective and objective measures to evaluate the interaction with the robot, and people's perception of the robot's behaviours and their effect on users. Students will also be exposed to different robots, such as Pepper and Furhat, that are used in human-centred scenarios, such as assistive robots in private homes, care facilities and hospitals, robotic companions in home environments, and robots in rehabilitation centers.

There will be a final assessment.

Dates and Locations

The lectures will be held on dates in January in room PT-II-N, second floor, room N, at DIETI in Piazzale Tecchio, 80125, Naples.

The assessment will be on 03 February at the PRISCA lab, backward-left building, third floor in Piazzale Tecchio, 80125, Naples.

Schedule

Lecture	Date	Time	Topics	Lecturer
1	07/01/2026	9:00-11:00	Introduction: Human-Robot Interaction (HRI)	Alessandra Rossi
2	09/01/2026	9:00-12:00	Perception in HRI	Alessandra Rossi
3	20/01/2026	9:00-12:00	Intentional Action	Alessandra Rossi
4	22/01/2026	9:00-13:00	Social Robotics Applications	Alessandra Rossi
5	23/01/2026	9:00-13:00	HRI Experiments	Alessandra Rossi
6	03/02/2026	10:00-13:00	Assessment test	Alessandra Rossi

Content details

Lesson 1 – Introduction (200-300 car.): In the first lecture, we will introduce the Human-Robot Interaction field, and the fundamental principles shaping the dynamic interplay between humans and robots, delving into communication, design, and ethical considerations.

Lesson 2 – Perception in HRI (200-300 car.): We then are introducing the sensors and perception system of robots, how robots can recognise and track humans, techniques for speech recognition and dialogues, intent recognition and affective technologies.

Lesson 3 – Intentional Action (200-300 car.): We will look at the Intentional Action in Human-Robot Interaction with particular attention to the techniques for understanding and interpreting human intentions, pivotal for fostering intuitive and effective collaboration between humans and robots.

Lesson 4 – Social Robotics Applications (200-300 car.): Examples of modern social robotics applications will be provided to show how it is possible for robots to build long-term relationships with particular attention to people's perception of acceptance and trust of a social robot.

Lesson 5 – HRI Experiments (200-300 car.): We will provide key points for designing a user study for Human-Robot Interaction, beginning from research methods, metrics and measurement to be used, and concluding with inferential statistics and analysis of variance (ANOVA) of the data collected.

Lesson 6 – Assessment test (200-300 car.): Students will choose a scientific paper within HRI topic from one of these two journals "international journal of social robotics" or "transactions on human-robot interaction". Then, they will prepare a 10-minutes presentation describing the article in a critical manner. Noting the research hypotheses, methodology, the results, and provide conclusions by paying particular attention to user studies.

Participants are requested to send an e-mail to alessandra.rossi@unina.it and silvia.rossi@unina.it by 27 December 2025, with the following information:

Student name and surname, name of the PhD course, PhD cycle.

For information: Prof. Alessandra Rossi (DIETI, UniNA) – alessandra.rossi@unina.it *(organizer)*

Prof. Silvia Rossi (DIETI, UniNA) – silvia.rossi@unina.it *(organizer)*