

AVI 2024

International Conference on Advanced Visual Interfaces

TITLE

Robots for Humans (R4H) - Embracing Human-Centred Robot Design

ABSTRACT

The "Robots for Humans" (R4H) workshop bridges the Human-Computer Interaction (HCI) and Human-Robot Interaction (HRI) communities. The workshop encourages methodological exchange and explores theoretical, technical and design solutions in robotics. Join us to explore the intricate bond between humans and robots for thoughtful HRI advancements.

OBJECTIVES AND MOTIVATION

The R4H combines the Human-Computer Interaction (HCI) community with the Human-Robot Interaction (HRI) one. With this workshop, we want to bring together these communities by highlighting the commonalities of the two, stressing their differences, and encouraging the contamination of their methods and results. We aim to do so by recognising that human beings can be the bridge between these two communities and the main objective for a human-centred design approach.

Robot applications are proposed to empower humans in work and activities of daily living. "Human empowerment" in Human-Robot Interaction (HRI) refers to improving individuals' or groups' skills, knowledge, or potential through robotic technologies. This concept has been applied to healthcare [5] and education [2], to name a few. However, studies on HRI have also highlighted the risks associated with rejections and the lack of designers' consideration of the users' perspectives [3], gaps in understanding interaction failures [1], and risks associated with the reproduction and potential reinforcement of social stereotypes [4].

In this scenario, reflections on robot design and interaction can raise fundamental questions, ranging from the necessity of specific design features to the possibility that the proliferation of robots improves human life or risks becoming a space for reinforcing social dilemmas and divisions. The intersection of HCI practices with HRI can potentially define new methodologies and approaches. For instance, drawing inspiration from a well-established feminist approach within HCI [7], a recent proposal outlined a list of actions and questions that guide the design of robots [6]. These aim to foster a more ethical and activist stance in HRI, displaying the tangible impact of interdisciplinary collaboration on shaping robotics domains and their societal implications.

With these reflections in mind, our workshop invites HCI and HRI researchers to develop proposals for theoretical, technical and design ideas that highlight thoughts on empowerment and the new challenges posed by the design of robots. We ask researchers to propose both perspectives: the utopian, which imagines ideal scenarios, and the dystopian, which explores potential challenges, reflecting on the role of artefact design and interaction in shaping these visions. The contributions aim to promote the contamination of HCI and HRI domains to foster inclusivity and diversity by actively addressing existing

limitations, providing creative problem-solving approaches, and fostering multidisciplinary collaborations. Contributions will discuss HCI and HRI theories, empirical studies, and user-centred design case studies, working collectively to unravel the intricate relationship between humans and robots, with its strengths and weaknesses. The goal of “Robots for Humans” is to foster reflections on how research can help people and design to make the best of the opportunity robots offer while being aware of their limitations and exploring how to tackle them from a human-centred perspective.

ORGANISERS

Name: Francesca Cocchella

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Biography: Francesca Cocchella is a Social Psychologist and Ph.D. Student at the Italian Institute of Technology (IIT). Her main research interests include the social cognition of humanoid robots and group interactions. Francesca was one of the main organisers of [GROUND](#) (advancing GROUp UNderstanding and robots' aDaptive behavior), a workshop held at the [IEEE RO-MAN 2023 Conference](#). She took part in the organisation of the event, the dissemination of the initiative, and the presentation of speakers. Francesca has expertise in scientific communication on social media since she takes care of [CONTACT'S Unit Instagram Page](#).

Name: Omar Eldardeer

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Biography: Dr. Omar Eldardeer is a Post-Doc at the Italian Institute of Technology. His research interests lie in robot perception and learning, focusing on audio-visual biologically inspired models. Omar earned his M.Sc. in Artificial Intelligence and Robotics from the University of Essex, UK. Subsequently, he obtained his Ph.D. from the University of Genova and the Italian Institute of Technology. His doctoral research centred on multimodal cognitive architectures for Human-Robot shared Perception. Following his Ph.D. Omar contributed to the EU project VOJEXT.

Name: Marco Manca

Affiliation: Researcher at Human Interface in Information Systems (HIIS) lab, Institute of Information Science and Technologies "Alessandro Faedo" (ISTI) - National Research Council of Italy (CNR)

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Biography: Dr. Marco Manca is a National Research Council (CNR) researcher. His research interests lie within Human-Computer Interaction (HCI), specifically focusing on Human-Robot Interaction (HRI), End-User Development, accessibility, and usability of user interfaces. In Human-Robot Interaction, he has dedicated his efforts to studying the interaction between individuals with Mild Cognitive Impairment (MCI) and Humanoid Robots. He holds the role of Late Breaking Work co-chair for EICS 2024 and served as Poster/Demo co-chair for the IUI 2020 conference and Demo co-chair for the MUM 2019 conference.

Name: Marco Matarese

Affiliation: Postdoctoral researcher, CONTACT (cognitive architecture for collaborative technologies) unit, Italian Institute of Technology (IIT).

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Biography: Marco Matarese is a post-doctoral researcher at the Italian Institute of Technology. His main research interests go from the robots' influence to explainability in collaborative human-robot interaction. He obtained a bachelor's and an M.Sc. in computer science at the University of Naples Federico II. He subsequently completed a PhD in bioengineering and robotics at the University of Genoa and the Italian Institute of Technology. During his PhD, he collaborated with Paderborn and Bielefeld Universities in the TRR 318 "Constructing Explainability" project.

Name: Andrea Rezzani

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Biography: Andrea Rezzani is a cognitive psychologist and PhD student at the Free University of Bozen/Bolzano. Her supervisors are Prof. De Angeli, Free University of Bozen/Bolzano, Dr. Menéndez-Blanco, Free University of Bozen/Bolzano, and Prof. Bushman, The Ohio State University. Her research project aims to investigate robot abuse when users engage in aggressive behaviours against robots, focusing on understanding the role of robots' design. Andrea has been part of the Organising Committee of the 14th Edition of the Biannual Conference CHIItaly'21 as Local Chair.

Name: Eleonora Zedda

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Biography: Dr. Eleonora Zedda is a National Research Council (CNR) post-doctoral researcher. Her research revolves around human-robot interaction (HRI), specifically focusing on social robotics. Her primary research focuses on connecting users and robots by developing robot personalities and adapting robot behaviours to meet users' needs. Her approach aims to make human-robot interaction more intuitive and enjoyable for users by designing robots' behaviour that can understand and adapt to users' states.

TOPICS

Topics included in the workshop, but not limited to, are the following:

- HCI theories and methods and novel approaches applied to HRI, Cognitive Architectures for HRI.
- Concept papers on the role of technology and robots in empowering or challenging human well-being.
- Empirical studies for human empowerment with technology (e.g., SAR, Health care, educational context).
- Participatory design approaches for HRI applications (e.g., user-centred design for computer and robotic applications, human-centred, and interaction-based design)
- Research methods and challenges for different contexts (e.g., assistive and education) in the HRI field.
- Interaction with virtual or physical embodied agents, human factors and human-in-the-loop in HRI, group dynamics in HRI.
- Design relationship between humans and robots (multi-modal communication, robot personalities, gender robotics, empathy).
- Diversity, power dynamics, gender, racism, social stereotypes and vulnerable targets of users in HRI.
- Trust, acceptance and explainability in HRI; personalisation and end-user development of robot applications.

- Ethical issues (e.g. privacy, misuse and abusive interactions), social risks and fairness in HRI.

ORGANISATION AND DURATION

We plan to conduct a half-day workshop, which will last approximately 4 hours. We plan the following activities:

- Welcome and opening (10 min.).
- Keynote speaker: Dr [Giulia Perugia](#) (confirmed) (30 min.) and Q&A (10 min.).
- Papers/Poster presentations (1.15 min.).
- Coffee Break (15 min).
- Focus groups (60 min.) moderated by Dr [Carlo Mazzola](#).
- Closing remarks (15 min.).

The workshop, primarily in person, accommodates online participation for keynote speakers. Participants will propose discussion topics for a focus group session in the workshop's second part. Led by moderators, subgroups will facilitate idea exchange in designing HRI applications. Participants will then identify the most significant topics for the workshop at the session's conclusion.

Plan to Solicit Participation

Engage potential participants: connect with professionals and researchers in the HRI fields, extending invitations for their attendance at the workshop through mailing lists and emails to researchers belonging to the HRI network.

Establish an online presence: develop a dedicated workshop website featuring comprehensive details like the agenda, keynote speakers, panel discussions and include a user-friendly registration form for attendees.

Utilise social media: establish event pages on LinkedIn and Instagram to amplify the workshop's reach and draw in a broader audience. Regularly post updates and relevant information to sustain attendee interest and keep them well-informed.

Maintain communication: send reminder emails and reach out to confirm attendees' plans for participating in the workshop.

Encourage participation: encourage attendees to participate actively in the discussions, presentations, and panel discussions.

Post-event community engagement: keeping in touch with participants for future workshop versions. This will be a good opportunity to share relevant research updates, webinars, and initiatives, especially for young researchers to foster future collaborations among them. Execute a strategic follow-up plan to foster ongoing engagement by providing pertinent updates and information.

Statement of Inclusion, Diversity and Equity

We are committed to creating an inclusive, diverse, and equitable workshop environment. We celebrate attendee diversity, respect individual needs, and have a zero-tolerance policy for discrimination. All participants must treat others with respect, upholding their rights. We actively welcome contributions from underrepresented groups, valuing diverse voices. Feedback on enhancing inclusivity, diversity, and equity is encouraged and appreciated..

PAST EDITIONS, SIMILAR INITIATIVES, AND TARGET AUDIENCE

The present is the first edition of the workshop. Moreover, our goal to bridge the HRI and HCI communities is peculiar; as far as we know, it has never been explored in this venue.

We expect to target an audience mainly from the HRI community but also have contributions from the HCI one. In this regard, we expect 10-15 in-presence participants in the workshop.

PROCEEDINGS

We plan to ask attendees to submit an extended abstract (max five pages) about their ongoing or planned research and position papers. The accepted papers will be published in the workshop's proceedings on arXiv or the CEUR Workshop Proceedings (<http://ceur-ws.org/>), indexed by Scopus. Moreover, the organizers will consider organising a journal special issue to publish the extended version of the workshop's submissions.

PROGRAM COMMITTEE

The program committee of the workshop is composed of all its organisers. The program committee's members will be responsible for identifying experts in their network to provide valuable reviews of the submitted papers.

References

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