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2022

Document Version:

Publisher's PDF, also known as Version of record

[Link to publication](#)

Citation for published version (APA):

Tanqueray, L., Castellano, G., Winkle, K., & Larsson, S. (2022). *The Universal User: Critically Reviewing the Assumptions around Users in the Care Setting from a Socio-Legal HRI Perspective*. Abstract from The First Workshop on Care Robots for Older Adults (CROA), RO-MAN 2022, Naples, Italy.

Total number of authors:

4

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The Universal User: Critically Reviewing the Assumptions around Users in the Care Setting from a Socio-Legal HRI Perspective

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ABSTRACT

Innovation is often viewed as adding value to society, however it can benefit the few at the expense of many, which usually results in benefiting only a certain type of user (usually one with more economic incentive) [6]. However, innovation within the care context is becoming critical to find a sustainable solution, as the demographics change worldwide, especially regarding the increase in the ageing population [12]. One possible (innovative) solution is offered by the human-robot interaction (HRI) community through social robots, especially socially assistive robots, as they can assist and interact with humans within the care setting (see for eg [1]). Current HRI findings point to health professionals (including doctors, nurses, carers) seeing the usefulness of social robots (see eg [2]) as well as elderly people (see eg [11]), children (see eg [8]) and pets [9] having a positive attitude towards social robots.

Although innovation within this sector is key for the reasons mentioned above, proceeding with caution in such a sensitive area is paramount. Accordingly, in this abstract, we focus on the (work-in-progress) conceptualisation of the users themselves in HRI studies: when the HRI community speaks of bringing robots into care, is the community defining "user" in the same way? Does it matter? How is the issue around the user understood by various HRI scholars? This abstract aims to shed a light on this through a systematic literature review, although currently a work-in-progress. This in turn also pinpoints to the knowledge produced specifically by the HRI community, and whether it is sufficiently representative for the

users [6, p.7] [14]. "Users" in this paper is used broadly, to include anyone who will be impacted by the social robot, such as the direct intended users (elderly persons, children with disabilities for example), as well as healthcare professionals, carers and, other people living in the same environment as the robot. Importantly, whilst using a broad definition of user, there is also a need to differentiate between users in order to avoid universalising users. Put differently, it is essential to avoid a one-size-fits all, although an issue beyond human-robot interaction (HRI) [5], but still problematic for users that do not fit the intended/assumed user within HRI. Accounting for those intricacies that differentiate users also means recognising the vast amount of stakeholders within the care setting, such as the direct intended user that will directly benefit from it, and stakeholders that will use the information from the robot whilst also maintaining it [14].

The purpose is to demonstrate that HRI is entering the care setting [1], with a critical reflection on how this is being achieved regarding the conceptualisation and involvement of users. To achieve this, we are doing a systematic literature review of the care setting to point out roboticists own black box. In other words, point out roboticists' own assumptions made when designing or conceptualising social robots in the care setting on users. We aim for our review to map:

- The geo-location of the study;
- The definition of "user" in the study;
- Which stakeholder(s) were involved in the study;
- The setting in which the study tested the robot;
- How the robot is deemed to help the user.

This mapping should serve to answer:

- 1) How do the HRI studies in the context of care conceptualise user(s) and setting?

This work was supported by the Wallenberg AI, Autonomous Systems and Software Program—Humanities and Society (WASP-HS) funded by the Marianne and Marcus Wallenberg Foundation and the Marcus and Amalia Wallenberg Foundation.

2) Is there a gap between the conceptualised and the studied user and setting?

These questions unveil (1) the roboticists' black box when they are developing in this area and also (2) the assumptions which may be problematic as they may reproduce a certain kind of rhetoric.

Whilst this is fundamentally a review of HRI work, and ultimately we believe it will be a contribution to HRI literature (identifying future directions for robotics research) these lenses open up different research questions' that might not be considered in typical HRI reviews. There have been increasing critical reviews of HRI recently, including challenging gender norms [17]; understanding the gendering of robots [13]; using Sociology of Law (SoL) to inform the design in peripartum depression screening [16]; and the problematic conceptualisation of one representative universal user whilst also relying on human caregiving as the gold standard [5]. This review aims to place itself as a critical review, which will be evaluated through a feminist socio-legal understanding. SoL, as a critical discipline, bridges empirically the study of society and the law. This can pinpoint what social structures are involved, as well as the power-play this can cause, and the behavioural expectations emanating from it [7]. In HRI, especially during research stage there are not many formal laws to follow in order to inform the design [15], meaning that it is useful use SoL to (1) pinpoint formal and informal norms which guide developers as well as (2) the assumptions on the users which might reproduce an unwanted discourse. The two can lead to path dependency: that what has already been done will be reproduced and followed. An intersectional feminist standpoint is also used to allow for an inclusive approach to different type of users; through applying intersectionality, different factors can be accounted for, which includes the direct and indirect users as well as the developers [3] [4].

Turning to the systematic literature review, we apply a qualitative exploratory systematic review as robots within care is an emerging field [10, p.112]. Accordingly, we use Scopus and Web of Science (WoS) research databases to search with specific keywords and find peer-reviewed literature on robots within care. As our enquiry centres around users, we searched using the following terms using the boolean method in June 2022, in WoS and Scopus using the feature "in abstracts" only: ("Human Robot Interaction" OR "Social Robots" OR "Social* Assistive Robot") AND "care" AND ("user*" OR "stud*" OR "experiment").

Our keyword choice was decided between authors, after several iterations, which includes engineers and socio-legal scholars. The first bracket, "Human Robot Interaction" OR "Social Robots" OR "Social* Assistive Robot", was to ensure we found studies within the HRI field. We did not use acronyms as they were used differently in different fields – for example "HRI" could mean human-robot interaction, but also high-risk infant. "Care" was to limit our search to that setting only. The final bracket, ("user*" OR "stud*" OR "experiment"), was the most discussed. We attempted with solely "user*" however we wanted to ensure we found studies

on care settings, even if they did not use the term "user". The results we deem broad enough, Scopus yielded 447 hits; whilst WoS yielded 225 hits. We are still cleaning up the data in order to remove duplicates, but we hope to share some preliminary results at the workshop.

Our inclusion criteria consists of literature which refers to care robots, where we can assume there is an eventual, even if abstract end-user, regardless of whether or not there is an actual immediate experimental study described, ethics or position papers would fall into this category for example. The exclusion criteria focus more on the paper themselves: we exclude papers not written in English; studies not within care; technical reports and literature reviews.

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