

Queer Perspectives on Equitable Robotics for Wellbeing

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Abstract

As robots increasingly support everyday functioning, care, and wellbeing, questions of equity, trust, and social acceptability become central to their long-term success. Yet many socially interactive robots are designed around normative assumptions that can marginalize users whose identities, safety, and privacy needs are excluded by default. Drawing on queer (LGBTQIA+) human–robot interaction research and analysis of our prior participatory, community-led empirical study, we examine how robots can be designed and evaluated as equitable wellbeing technologies. We show how common design practices, including implicit identity inference and simulated empathy, can undermine trust even when systems function as intended. We synthesize these insights into design and evaluation principles that operationalize equity through bounded roles, user control, transparency, and data minimization. Although grounded in queer lived experience, these principles generalize to broader wellbeing robotics contexts involving marginalized and underserved users.

Keywords

Human-Robot Interaction, Robot Companions, Participatory Design, LGBTQIA+, Queer, Wellbeing

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1 Introduction

Robots are increasingly proposed as long-term assistants and companions, raising new questions about what makes these systems useful, trustworthy, and socially acceptable in everyday life [3, 26].

As such systems move from laboratories into homes and care settings, they increasingly function as wellbeing technologies rather than purely functional devices, shaping how people coordinate daily life, manage care, and maintain independence.

Despite rapid advances in robot capabilities and interaction design, many household and companion robots continue to reflect normative assumptions about users, identities, and relationships [28, 29]. These assumptions can create barriers to adoption for people whose identities or household structures fall outside dominant defaults. Research in HRI further shows that robots are interpreted as social actors, with embodiment and interaction cues influencing trust, expectations, and perceived appropriateness [2, 15]. For marginalized communities, failures in privacy, identity recognition, or transparency are not merely usability issues but risks that undermine trust and wellbeing.

We argue that queer (LGBTQIA+) perspectives provide a critical lens for addressing these challenges in equitable robotics for wellbeing. Prior empirical work centering queer users demonstrates how identity misrecognition, surveillance, and lack of user control shape whether interactive systems feel safe or acceptable to live with [18, 19]. By foregrounding these experiences, queer perspectives surface design risks that often remain invisible in homogeneous user testing but have broad implications for diverse and underserved populations.

This paper does not present new empirical findings. Instead, it analyzes and synthesizes results from our recent participatory, community-led empirical study with queer participants [12] together with insights from existing HRI, HCI, and AI literature. We re-examine these findings through the lens of equitable robotics for wellbeing, distilling new relevant insights about trust, safety, and social acceptability. Our contributions are:

- A synthesis of prior empirical findings from a community-led study with queer participants, reinterpreted in the context of equitable wellbeing robotics.
- An analysis of how common design choices in robotics can undermine trust, safety, and long-term acceptability for marginalized users.
- A set of design and evaluation principles that operationalize equity in robotics, emphasizing bounded roles, user control, transparency, and data minimization.



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These contributions position queer perspectives as a methodological and design resource for developing robots that are not only technically capable but also equitable, accountable, and safe to live with over time.

2 Related Work

Prior work on robot companions has emphasized emotional connection, rapport, and perceived empathy as pathways to trust and engagement [1, 9, 10]. Across domains such as wellbeing, education, and healthcare, companion robots have been deployed with anthropomorphic and zoomorphic forms, with increasing attention to longitudinal and in-the-wild studies that examine adoption beyond short laboratory trials [7, 13, 20].

At the same time, research on domestic deployment highlights that usefulness alone does not guarantee acceptance. Studies of service robots show that perceptions of responsibility, privacy, and social fit strongly influence whether systems are tolerated in everyday environments [3, 26].

Robots are often interpreted as social actors whose embodiment and interaction design reflect assumptions about users and norms [2, 3, 5, 24, 26]. Embodiment, voice, and interaction cues can lead users to attribute gender, personality, or social roles to robots, sometimes reinforcing stereotypes or excluding those who do not align with intended defaults [4, 14, 15]. These dynamics are especially consequential in intimate domestic contexts, where misrecognition or misplaced trust may affect everyday wellbeing.

Empirical work explicitly centering queer users in robotics remains limited despite evidence that queer perspectives surface critical design risks [19]. Studies show that queer participants emphasize identity respect, privacy, safety, and user control when evaluating robot companions [4, 16–18, 25]. Broader HRI, HCI, and AI scholarship similarly documents systemic marginalization through erasure or binarization of sex, gender, and sexuality [8, 19, 21, 22].

Building directly on our prior participatory and community-led study with queer participants [12], this work translates these insights into design and evaluation guidance for equitable robotics for wellbeing.

3 Equitable Wellbeing Robot Tasks

Robot value is often framed in terms of task coverage and frequency of use [6, 23]. For wellbeing-oriented and equity-focused deployments, however, our findings suggest that value is better understood in terms of how effectively a robot supports everyday functioning without introducing new social, cognitive, or safety burdens [12]. In this sense, robots operate not only as convenience technologies but as elements of wellbeing infrastructure whose design can either reduce or compound existing inequities.

Participants consistently described value in relation to predictable, bounded forms of assistance that fit into existing routines, such as reminders, coordination of daily tasks, accessibility support, navigation, and environmental control. These forms of support were perceived as beneficial because they reduced friction in daily life while preserving user autonomy, dignity, and control. Crucially, participants did not want to adapt their behavior, identity, or emotional expression to accommodate the robot; instead, equitable systems were expected to adapt to users' lived realities.

Participants were notably skeptical of robots framed primarily as companions or emotional partners. While emotional expressiveness and personalization are often presented as mechanisms for increasing engagement, many participants experienced these features as unnecessary or intrusive when deployed without clear constraints. Rather than increasing perceived value, simulated empathy and affective performance often raised concerns about manipulation, misinterpretation, or inappropriate expectations of care. Clear role definition and bounded functionality were more strongly associated with trust, safety, and long-term acceptability than social performance.

Value was also shaped by context and lived experience, particularly for users whose identities or household structures diverge from normative assumptions. Participants identified potential benefits for robots in domains where marginalized users frequently encounter inconsistency or misrecognition, such as coordinating healthcare-related tasks, managing bureaucratic processes, or supporting accessibility needs. However, these benefits were contingent on strict expectations around identity respect, privacy, and the ability to recover from errors. Tasks involving surveillance, inference of sensitive attributes, or escalation beyond the household were widely rejected, as they conflicted with participants' expectations of safety and autonomy.

These findings suggest that equitable wellbeing robots should prioritize reliability, legibility, and user control over expressive social behaviors. Designing for bounded, clearly accountable assistance may better support diverse and underserved users than approaches that emphasize companionship or emotional attachment.

4 Trust, Safety, and Social Acceptability in Wellbeing Robotics

For robots intended to support everyday wellbeing, social acceptability is a prerequisite for safe and equitable long-term adoption. Our findings indicate that acceptance is shaped less by a robot's technical capabilities and more by how it handles identity, authority, visibility, and control [12]. For marginalized users in particular, these factors directly affect perceived safety and dignity, making them foundational rather than secondary design concerns.

A recurring source of discomfort and distrust was identity inference. Participants described loss of trust when robots assumed gender, language, or social norms by default, even when those assumptions were made implicitly through voice, embodiment, or interaction style, consistent with prior work [4, 25, 27]. Such inferences were experienced not simply as usability issues but as forms of misrecognition that can compound existing harms. Acceptance increased when robots relied on explicit user input and made it easy to correct, update, or remove stored information.

Anthropomorphic design choices often undermined acceptance rather than supporting it. Human-like faces, emotional displays, and simulated empathy were frequently described as uncanny or misleading, particularly in household settings where users expect clarity and accountability rather than performance. Participants preferred designs that clearly communicated the robot's non-human status and limitations, which supported more accurate expectations about capability and responsibility. These preferences reflect

Table 1: Design and evaluation principles for equitable, socially acceptable wellbeing robots, distilled from our prior community-led empirical study with queer participants [12].

Principle	Description	Design & Evaluation Implications
Bounded Functional Roles	Robots should have clearly defined functional roles rather than general-purpose companionship.	Design robots with explicit task scopes; evaluate whether users accurately describe their role & limits.
User-Defined Identity	Names, pronouns, and identity information should be explicitly set and editable by users, not inferred.	Provide explicit identity settings; evaluate ease of correction and absence of implicit identity inference.
User-Controlled Memory	Users should be able to update, delete, or limit stored interaction and identity data.	Expose memory controls; evaluate whether users understand what is stored and can remove it with ease.
Transparent Behavior	Robots should clearly make sensing and decision-making processes legible to users.	Surface sensing status and data use; evaluate users' ability to anticipate robot behavior and data flows.
Granular Control	Users should be able to adjust robot autonomy, behaviors, and sensing across contexts and shared spaces.	Support context-specific settings; evaluate control in multi-user or shared household scenarios.
Data Minimization	Core functions should operate on-device by default, minimizing unnecessary data sharing.	Prioritize local processing; evaluate perceived privacy risk and trust under reduced data collection.
Non-Deceptive Social Cues	Social behaviors should avoid anthropomorphic signals that simulate empathy or emotions.	Avoid affective deception; evaluate whether users correctly interpret robot capabilities and intent.
Context-Aware Presence	Robot visibility and interaction should adapt to location, co-presence, and user-defined safety needs.	Enable presence controls; evaluate comfort and perceived safety across locations and social contexts.

broader concerns about overpromising social intelligence, encouraging emotional reliance that systems cannot meaningfully support, and obscuring where authority or decision-making resides.

Privacy and transparency were central to acceptability. Participants expected robots to be legible in their behavior, including when they were actively sensing, what information was being stored, and how that information was used. Opaque data practices raised concerns not only about surveillance but also about loss of control in shared or multi-user spaces, where sensitive information may affect others. Social acceptability was therefore closely tied to governance and accountability, reinforcing that privacy and security are core design requirements for equitable wellbeing robotics rather than after-the-fact policy considerations.

These findings suggest that trust in robots emerges from legibility, bounded authority, and user control more than from expressive social behaviors. Designing for transparency, consent, and recoverability from errors may better support diverse and underserved populations than approaches that prioritize anthropomorphic engagement.

5 Discussion, Implications, and Limitations

For equitable robotics for wellbeing, queer perspectives function as an early signal for systemic design risks that may not emerge in homogeneous user testing. Many of the concerns identified in our study, including identity misrecognition, emotional overreach, opaque sensing, and persistent data collection, are not unique to queer users but are amplified for communities who already experience marginalization, surveillance, or exclusion in everyday systems. Designing to mitigate these risks, therefore, strengthens safety, trust, and accessibility for a broader range of users. In this sense, queer perspectives provide not only community-specific insight but also a generative lens for more equitable robotics more broadly.

Beyond contributing specific design principles, this work draws on queer epistemologies as a way of interrogating how knowledge,

norms, and assumptions are embedded in social robotics. Queer epistemologies challenge taken-for-granted categories, defaults, and inferences, emphasizing situated knowledge, lived experience, and skepticism toward systems that claim neutrality or universality [11]. Applied to robotics for wellbeing, this perspective foregrounds questions of who a system is designed for, whose identities are legible or protected, and whose risks are rendered invisible. Rather than treating deviation from normative use as error, queer epistemologies treat it as a source of insight, revealing how design decisions around identity, memory, and social performance can reproduce harm. In this way, queer perspectives do not simply add another user group to existing frameworks but reshape how equitable robotics problems are framed, evaluated, and addressed.

Our findings suggest shifting design priorities away from novelty and social performance toward treating robots as accountable, long-term supports whose failures can have material consequences for users' wellbeing. When robots operate in settings like homes, they mediate access to information, coordinate care, and shape how people manage daily functioning. As such, failures in privacy, transparency, or identity respect have consequences that extend beyond usability and directly affect dignity and perceived safety. Approaches that prioritize anthropomorphic engagement or emotional attachment may therefore be misaligned with the needs of users who prioritize legibility, bounded authority, and control. Instead, equitable wellbeing robotics may benefit from designs that emphasize clearly defined functional roles, explicit consent, and recoverability from errors.

Building on these insights, we contribute both design and evaluation guidance. The design principles summarized in Table 1 translate community-derived concerns into actionable practices, including bounded functionality, user-defined identity, user-controlled memory, transparent behavior, granular autonomy controls, and data minimization. Equally important are evaluation strategies that extend beyond task performance to assess perceived safety, dignity, and agency. From a queer perspective, wellbeing robotics should be

evaluated not only on functional success but on whether systems remain legible, correctable, and safe under conditions of misrecognition, ambiguity, or disagreement. We recommend that future deployments examine (i) users' ability to understand what the robot senses and stores, (ii) control over identity and personalization settings, (iii) recoverability from misclassification or errors, and (iv) trust in multi-user and shared or contested contexts. Such criteria help ensure that systems are accountable to the people they are intended to support. Incorporating evaluation scenarios that surface identity errors and ambiguous social situations, particularly in shared spaces, would also help ensure that robots support wellbeing across diverse lived experiences rather than only under idealized assumptions.

This work also highlights the value of participatory and community-led approaches for equitable robotics. Centering marginalized users during problem formulation and evaluation surfaces design risks and priorities that might otherwise remain invisible until after deployment. Rather than treating inclusion as an afterthought, these approaches embed equity into requirements, methods, and success metrics from the outset.

This work has several limitations. The insights presented here are derived from community-led research with queer participants in the United States and should not be assumed to represent all cultural, geographic, or socioeconomic contexts. Queer perspectives are best understood as one critical lens among many, complementing research with other marginalized communities whose priorities may partially align or diverge. In addition, stated preferences and design expectations may not directly translate to long-term acceptance once robots are deployed in everyday settings. Future research should therefore examine how these principles perform in situated, real-world contexts, including longitudinal studies of use and comparative studies across underserved populations to better understand shared and distinct needs.

6 Conclusion

Robots are increasingly positioned as technologies that shape everyday wellbeing, yet their design often reflects narrow assumptions about users. Through a community-led study with queer participants, we show that trust, safety, and social acceptability depend less on expressive social behaviors and more on designs that respect identity, preserve privacy, and maintain user control. By translating these insights into design and evaluation principles, we argue that centering marginalized perspectives can guide the development of robots that are more equitable, accountable, and robust across diverse populations. Designing for those most at risk of harm ultimately produces wellbeing technologies that are safer and more acceptable for everyone.

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