

“Chindogu” as An Inspiration for Designing Human-Robot Interaction

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ABSTRACT

In this position paper we investigate and explore application of Japanese *Chindogu* as an inspiration and a Research through Design (RtD) approach in human-robot interaction. We (1) present observation and interpretation of Chindogu principles and how it can be applied to interaction design for HRI, and (2) develop speculative concepts of interaction that demonstrate these ideas of application of Chindogu in HRI. Our aim and contribution of this work is to further expand interaction design in HRI beyond utilitarian approaches, and bring a novel perspective on alternative, ludic interactions between human and robots.

1 INTRODUCTION

Non-utilitarian interactions and qualities of artefacts have been embraced by human-computer interaction (HCI) community [2, 11, 12]. Recently, there have been bodies of work in human-robot interaction (HRI) that follow the footsteps of HCI, especially through the means of Research through Design (RtD) [5, 7, 8], which explores “*what is the right thing to design*” in contrary to “*how to make thing right*” [6]. RtD enables knowledge generation from the process of making, discussing, and reflecting on design [6], thus allowing HRI researches to break through technological restrictions or task-determined fixation [8]. With an aim to contribute to an emerging practice of RtD approach within HRI community, we introduce the application of the art of Chindogu developed by Kenji Kawakami - a philosophy and inventions that are not exactly useful, but somehow not altogether useless - [3, 4, 10] as one of the potential means of RtD to experiment and speculate about non-utilitarian interactions with robots. We do so by (1) observing and interpreting the principles of *Chindogu* and how it could be applied to HRI, and (2) develop speculative concepts of interaction to demonstrate the application ideas. Through this paper, we hope to evoke discussions and prompt creative ideas on the topic of HRI and robot design.

2 RELATED WORK

Chindogu has caught attention of researchers in the HCI field. For instance, Norman (2006) names Chindogu as a source of some of the best inspirations in speculating designs of future appliances [9], and Dix and Silva (2006) employ ‘Chindogu spirit’ as creativity triggers in solving HCI-specific problems by interdisciplinary teams [1]. The following sections demonstrate how application of the Chindogu approach could be applied to HRI.

3 CHINDOGU

Literally translated, Chindogu means strange (chin) tools (dogu), the term coined by a Japanese inventor Kenji Kawakami [3]. Kawakami describes the idea behind Chindogu as “*unuseless*”, meaning “not exactly useful, but somehow not altogether useless [3].” Below we

introduce ten principles of Chindogu as suggested by Kawakami [3], followed by our interpretation applied to the context of HRI.



Figure 1: Examples of Chindogu:(from left) umbrellas for heels, fan to cool down noodle, butter stick [3]

3.1 Principles of Chindogu

Kawakami suggests the following as Ten Tenets of Chindogu [3]: (1) *a Chindogu cannot be for real use* - “it is fundamental to the spirit of Chindogu that inventions claiming Chindogu status must be, from a practical point of view, (almost) completely useless”; (2) *a Chindogu must exist* - “in order to be useless, it must first be”; (3) *inherent in every Chindogu is the spirit of anarchy*- “Chindogu are man-made objects that have broken free from the chains of usefulness”; (4) *Chindogu are tools for everyday life* - “Chindogu are a form of nonverbal communication understandable to everyone, everywhere”; (5) *Chindogu are not for sale* - “Chindogu are not tradable commodities”; (6) *humour must not be the sole reason for creating Chindogu* - “humour is simply the by-product of finding an elaborate or unconventional solution to a problem that may not have been that pressing to begin with”; (7) *Chindogu are not propaganda* - “Chindogu are innocent”; (8) *Chindogu are never taboo* - “cheap sexual innuendo, humour of a vulgar nature, and sick or cruel jokes that debase the sanctity of living things are not allowed”; (9) *Chindogu cannot be patented* - “Chindogu are offerings to the rest of the world - they are not therefore ideas to be copyrighted, patented, collected and owned”; (10) *Chindogu are without prejudice* - “[...]all should have a free and equal chance to enjoy each and every Chindogu.”

3.2 Chindogu Principles in the Context of HRI

Based on our interpretation of the Chindogu philosophy, the following three statements describe and summarize our interpretation of how it could be applied to HRI: (1) everyday interactions with robots that are free from utilitarian requirements; (2) human-robot interactions that are humorous yet understood by everyone; (3) robot behaviors that are occasionally frustrating yet charming. It is not our intention to suggest these three as the only and right way to apply Chindogu to HRI applications - rather our objective is to evoke curiosity and a conversation on if Chindogu may or may not be beneficial to expand HRI work beyond utilitarian convention. In the next section, we present some interaction ideas

generated through rapid sessions built on the three Chindogu-HRI perspectives, followed by auto-ethnographic reflections.

4 SPECULATIVE HRI-CHINDOGU IDEAS

As an experiment, we attempted to generate speculative ideas on HRI-Chindogu interaction through observations of an everyday context. Since Chindogu are gadgets highly situated in people’s everyday lives, this approach allowed us to pay close attention to and to seek interaction opportunities in mundane situations. Below we present some of the ideas emerged from the experimental ideation in the form of sketching and story-boarding.

4.1 Speculative Idea Examples



Figure 2: Guard dog robot that barks at every visitor to scare away potential thieves

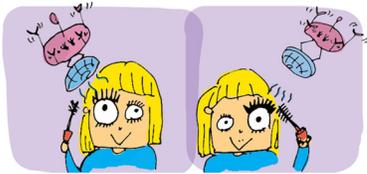


Figure 3: Fan carrying drone to dry mascara quicker

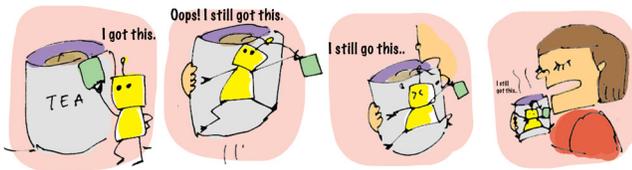


Figure 4: Robot that holds tea bag string and tag to prevent it from falling into the cup

4.2 Reflection

Speculating potential HRI-Chindogu ideas from every day contexts allowed us to focus on and address little problems within our mundane routines in a playful way. We paid close attention to our daily life and used those little problems and tiny frustrations that otherwise would be ignored as a starting point for generating ideas. For example, the idea shown in Figure 2 originated from the experience of living alone and feeling anxiety to answer the door to a stranger. Figure 4 also addresses one little problem of that can happen when drinking tea - the tag falling inside the cup. All these robot behaviors could be frustrating yet charming, depending on the frequency and context, and have little practical values. Admittedly, it may be challenging at first to not generate purely practical solutions,

however, we found that thinking from the perspectives of Chindogu enables discovery of opportunities for alternative and creative ludic interactions, by keeping an attentive eye on everyday occasions to seek potential for those interactions.

5 DISCUSSION AND CONCLUSION

In this work we present the principles of Chindogu as a potential Research through Design (RtD) approach to expand the design of human-robot interactions beyond utilitarian approaches. Imagining HRI from perspectives of Chindogu could be one of the creative ways in which HRI researchers can address the utilitarian convention of social robots and discover new and surprising opportunities for alternative ludic interaction. Nonetheless, the conceptual nature of Chindogu as well as a diverse set of criteria is a challenge that requires further exploration of this topic.

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