

# Anthropomorphization of a Space with Implemented Human-like Features

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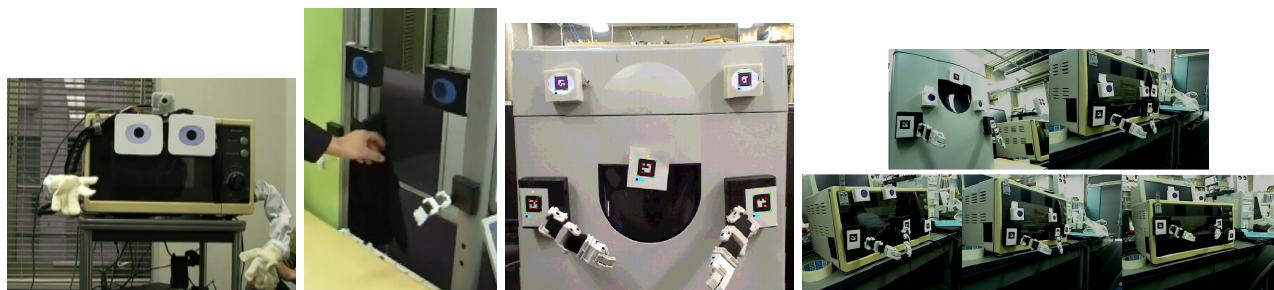


Figure 1: *Anthropomorphization of Several Spaces*

## 1 Introduction

We propose an anthropomorphization method that uses attachable human-like features like eyes and arms. These features are attached to the target, making it into an anthropomorphic agent, and providing the target's information to users intuitively. The anthropomorphized space can use gestures, pointing, emotion, and expression to initiate interaction.

We implemented robotic human-like parts for anthropomorphization and designed authoring tool that authors communication contents for embodied home appliance. Users easily convert an object into embodied agent and create their own contents interactively to the agent by our method.

## 2 Features

By our method, a user accepts a target's intention and imaginary body image. Our proposed method, in comparison to the use of an independent agent, is also better at gaining the attention of users for explaining the functions of artifacts [Osawa et al. 2009].

It is also possible to use metaphors for pointing at the location of an artifact by our method. For example, the printer can say "I have a stomachache" when it is jammed. These metaphors would be impossible to use for normal explanation using an independent agent. If we study these metaphors more closely, we might be able to use more understandable expressions for the artifact using our method.

This method also indirectly avoids an uncanny valley which is strong repulsion between an industrial robot and a human [Mori 1970]. Using human-like features, we can verify separately what parts or actions of parts are positive and empathic for users and what parts or actions are negative. We can research anthropomorphization that is not uncanny

by changing the humanoids parts, without constraining the humanoid.

## 3 Principle

Our system consists of a camera, a skin-sensor, human-like eye-parts, human-like arm-parts, mouth-parts, and a computer. Our anthropomorphized object did not need to manipulate other objects using its attached hands. Because the target already has its own task, and our devices are used for just expressionism. Instead of manipulation, these devices must be simple and light so they can be easily attached. We developed human-like robotic devices and attached them to our target by using hook and loop fasteners. Our system uses a Bluetooth connection to each body part. Our system uses a visual marker-detection technique by ARToolKit for calculating positions of each part and pointing targets [ARToolKit].

## 4 Conclusion

We proposed the anthropomorphization method and the authoring tool. In future, we conducted user study with non experts to evaluate our tool.

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