

SUMMARY OF Ph.D. DISSERTATION

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Title Proposition and Evaluation of an Information-Providing Method using Anthropomorphization of an Object		
Abstract <p>This study proposes interactive information-providing using an anthropomorphized object.</p> <p>Recently, many home appliances have acquired multiple functions due to the development of ubiquitous technology. The development of such intelligent environments increases the quantity of information passed from appliances to users. For users, it has become more difficult to understand all the appliances' functions and information.</p> <p>Related studies solve this user comprehension problem by constructing basic manuals or providing information via anthropomorphic virtual agents or robots. However, basic manuals are not sufficient to keep the users' interest. Providing information via anthropomorphic agents sometimes interferes with the users' attention.</p> <p>I propose a "Display Robot" that consists of attachable human-like bodily devices like eyes and arms. These devices are attached to the target object, making it into an anthropomorphic agent, and providing the target's functions or information to users intuitively. The Display Robot can use gestures, pointing, emotion, and expression to initiate interaction between a human and the object. Compared to text or vocal instructions, the Display Robot's anthropomorphic appearance allows users to focus more on their interaction. This method does not disturb the users' intentions more than a method that uses separate anthropomorphic agents, because its explaining style is in the form of a self introduction.</p> <p>To achieve my goal, I designed and implemented anthropomorphic robotic devices that resemble eyes and arms. I also conducted three experiments to evaluate the validity of my method. The first experiment evaluates that my parts can anthropomorphize the target object and users can understand instructions from the anthropomorphized target. The second experiment researches the perceived imaginary body that users imagine according to location of attached human-like devices. The third experiment evaluates the relationship between the sociability of the anthropomorphized object and the user's gender and age. The first experiment's results reveal that users can more easily understand the target's instructions through the Display Robot method. The second experiment's results reveal users' perceived imaginary body images due to the human-like devices. The third experiment's results reveal that female users, children, and elderly are more likely to enjoy interaction with an anthropomorphized object.</p> <p>Lastly, I implemented an information-providing system using a Display Robot on a normal office printer and compared its performance with a similar system that uses an independent anthropomorphic agent called Robovie. The results of this showed that in the display robot case, the user remembered more of the target's functions.</p>		