AI agent, Communication

Dialogue agents mediating diverse social relationships based on values models

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Abstract

The purpose of this research is to realize dialogue agents that mediate diverse human social relationships (human-centered interaction). First, I will establish a theory of agents that elicit self-disclosure and a method for modeling values. I will also develop technologies to facilitate diverse social relationships at the individual and community levels, and demonstrate them with upper grade elementary school students. I adopt a research approach that integrates AI and robot technology with humanities and social sciences to create a new research field: AI-Robot Social Relationships Research.

Background & Results

Recently, social problems stemming from discrimination and prejudice have emerged. To tackle them, we need to build diverse relationships, and dialogue is indispensable. This study addresses these issues by deploying dialogue agents to mediate diverse human relationships; these agents can process vast information and share it without bias, realizing human-centered interaction directed at social issues.

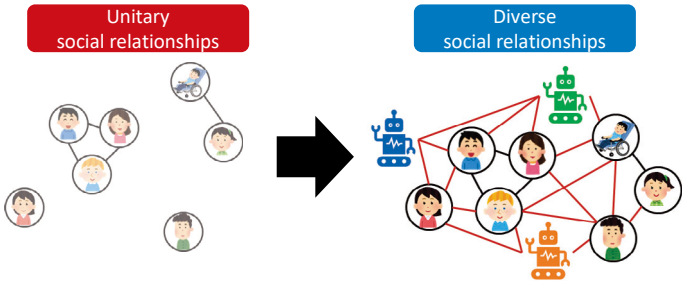
For self-disclosure agent theory (Study 1), we explored factors enhancing users' motivation for dialogue with robots. Results showed that users' topic interest and attributing opinions to a humanoid robot increased willingness to exchange opinions, and recognition of the robot's sensory abilities influenced subjective opinion attribution. Applying Goffmanian theory and conversation analysis, we developed a dialogue closing strategy that foster ongoing motivation; evaluation experiments showed the strategy raised robot likability and dialogue satisfaction.

For values modeling (Study 2), we built a dialogue robot that models users' values via conversation using large language model (LLM) and Infinite Relational Model (IRM). The method estimated users' values and fostered new awareness of their own values.

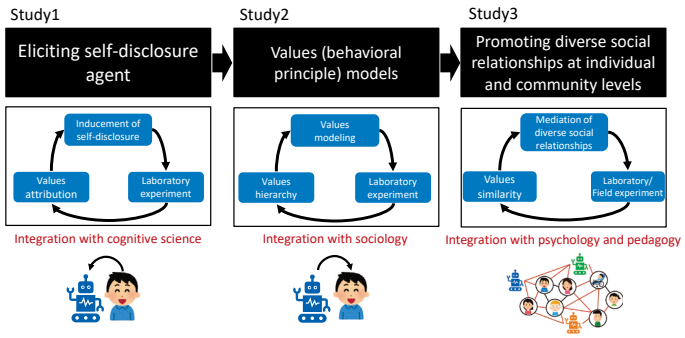
For technology promoting diverse social relationships (Study 3), we introduced robot into a six-grade elementary class to foster relationships among children through dialogue; we are preparing a paper on these results.

Significance of the research and Future perspective

For AI and robotics, this research provides a new methodology for engaging human society and facilitating social relationships, rather than a method of listening to human commands. It also provides cognitive science, sociology, psychology, and education with a new methodology for understanding humans and society by engaging dialogue agents in social relationships, rather than just by observing behaviors of humans. The technology developed in this research has the potential to realize a new methodology for solving serious social issues such as division, isolation, and bullying derives from discrimination and prejudice through field experiments in elementary schools. This research will create fundamental technologies that will contribute to the realization of a Human-Centered AI-Robot Symbiotic Society.



Promoting Diverse Social Relationships Through Dialogue Agents



How to Conduct Research

Patent

Treatise

Uchida, Takahisa; Minato, Takashi; Ishiguro, Hiroshi. Opinion attribution improves motivation to exchange subjective opinions with humanoid robots. Frontiers in Robotics and AI. 2024, 11, 1175879. doi: 10.3389/frobt.2024.1175879
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Keyword self-disclosure, values, social relationship, dialogue agent, human-agent/robot interaction (HAI/HRI)