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We want to talk with you!

～Encouraging speech dialogue using multiple robots～

Abstract

We are developing chat-oriented dialogue systems that can talk with people naturally. Current dialogue systems sometimes respond to user utterances in a wrong way because of automatic speech recognition errors and insufficient system's knowledge for dialogue topics. These errors make users to feel difficulties when they use such dialogue systems. To overcome the problem, we simultaneously improve the system's performance and leverage human's cognitive biases for multiple robots. When users talk with multiple robots those behaviors are coordinated in background, the robots can avoid dialogue breakdown and the users become easy to talk with them. Such robots that can talk naturally are natural interface between humans and information. Moreover, dialogues with the robots can help user to improve communication skills.

Previous: one-to-one dialogue

・Robots are required to have the same dialogue abilities as human users.

・Users have to recover dialogues when robots speak incorrect utterances.

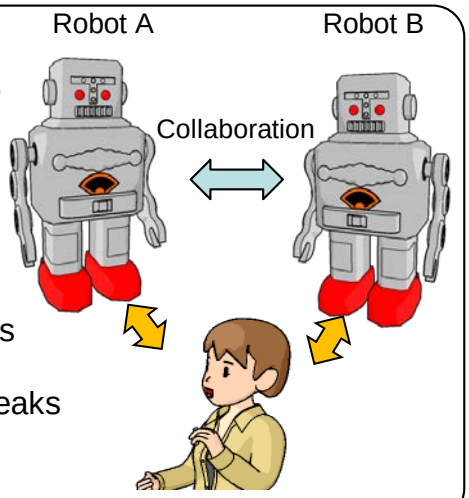
→ Heavy load and stress for users

Propose: dialogue with multiple robots

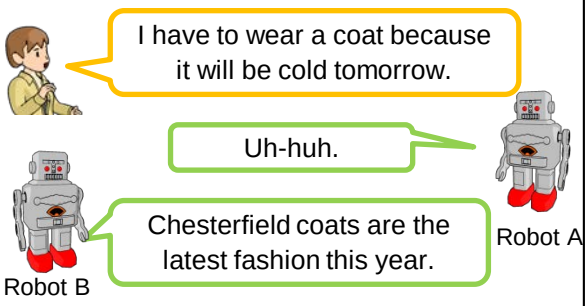
・The standard level of dialogue abilities becomes robots' one since robots are majority.

・Robots can recover dialogues when a robot speaks incorrect utterances.

→ Reduction of load and stress of users

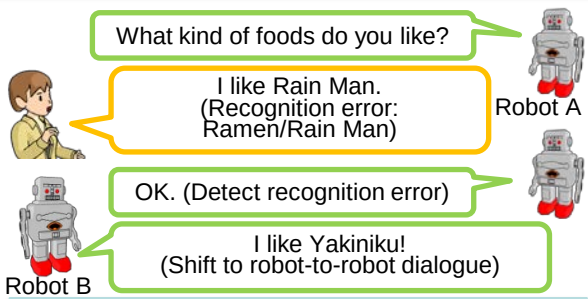


Easy to change dialogue topics



Since robot A responds to user utterances, robot B's utterances are easily accepted if the robot B's utterances do not directly match the user utterance.

Avoid dialogue breakdown in case of speech recognition error



If the recognized user utterance does not match the dialogue flow, the robots begin dialogue between robots to avoid dialogue breakdown.

【Reference】

[1] H. Sugiyama, T. Meguro, R. Higashinaka, Y. Minami, "Open-domain utterance generation for conversational dialogue systems using Web-scale dependency structures," in *Proc. the 14th annual SIGdial Meeting on Discourse and Dialogue (SIGDIAL)*, pp. 334-338, 2013.

[2] H. Sugiyama, T. Meguro, R. Higashinaka, "Large-scale collection and analysis of personal questions for dialogue agents," *Transactions of the Japanese Society for Artificial Intelligence*, Vol. 31, No. 1, pp. 1-9, 2016.

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