The meta-opponent model in human-agent interaction: How do we attain a smooth communication between human and artificial-agent?

Mana Asada

The University of Electro-Communications, Chofu, Tokyo, Japan

Takeshi Ito

The University of Electro-Communications, Chofu, Tokyo, Japan

Abstract: Why we feel uneasy in communication against artificial agent? Previous research suggested that frequent changes of depth of reasoning to opponent generate rich communication between humans. The deepest reasoning was inference of own mental model based on opponent model. This research indicates that lack of depth of reasoning made human-agent interaction difficult. We defined the inference of own mental model based on opponent model as "meta-opponent model" and made an experiment to investigate whether the model can be used in interaction with artificial-agents. In this experiment, we executed verbal protocol analysis and fNIRS analysis using a simple selection game. The experiment has consisted of four conditions; we used as agents three different programs that explained "opponent is an artificial agent" and one program that explained "opponent is a human". As the results, when there were sufficient complex system and proper instruction, we observed the applying meta-opponent model to artificial agents.