

Online BARNGA using Touch Panel

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Abstract: Under researches of Human-Agent Interaction, we developed a simulation game: Online BARNGA WITH TOUCH PANEL HUMAN-HUMAN to evaluate how people deal with social problems, especially their emotions. Then we will analyze these data to make agents that have similar characteristics as those of human beings.

1 Introduction

The research of Human-Agent Interaction becomes more and more popular. Within the research of HAI, one of popular topics is about group behaviors in society. As human society is formed by groups, we are interested in the research on how people adapt themselves into an unknown group. Based on the observation of people, we will develop an agent which is able to adapt itself to an unknown group.

As the target domain, we selected Barnnga[4], which is a card game about inter-cultural awareness. The participants of Barnnga play a simple card game in small groups. Different groups have different rules. So, when a participant changes to another group, he has to learn the rule of the new group and adapt himself to the rules without talking to other participants. To observe behaviors of people, we have developed Online Barnnga[1][2][3]. The participant of Online Barnnga connects to the Barnnga server, and by exchanging several commands, he can enjoy the game. During the game, log of each participant is stored and will be analyzed to make a model of adaptation behavior of an agent.

The Online Barnnga is a useful tool to observe behaviors of people. However, this system has two problems. The first one is that its user interface is not

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natural. The participant plays the game by selecting command from menu window, which is clumsy to use. The second one is that the system cannot observe the emotional information at all. In real Barnnga, participants may observe other participants' emotions by attitude of playing.

To solve these problems, we developed Online Barnnga using touch panel. This system is a new version of Online Barnnga. In the new version, participants can play the game with a touch panel which enables the natural interface and the system can observe the emotional information by observing the speed of playing cards.

2 ONLINE BARNGA

Online Barnnga was developed to observe the behavior of a participant to adapt himself to a group. In addition to the original Barnnga, this system has an extended function which is a mechanism to decide a winner for each round. When the dealer decides the candidate of the winner, any player may deny the decision. If the number of refutation becomes majority, the participants get the score points and the dealer loses points. However, if the refutation fails to become majority, the participant who refused the dealer's decision loses points as penalty.

By introducing this mechanism, we have observed interesting facts. For example, in some groups, participants play the game according to rules of their group. However, in another group, participants may not obey these rules and almost every time, he may refute the dealer's decision. When the amount of penalty is large, participants obey the rules. But,

when the penalty is small, participants tend not to obey the rules.

According to the observation, we have a model of an agent which has a function to learn the rules of the group and to obey (or not obey) the rules.

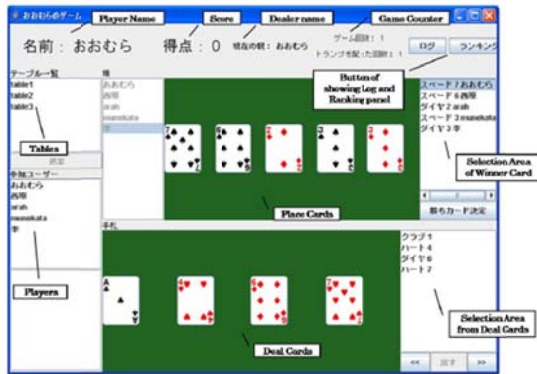


Fig.1 Screenshot of Online Barnga

3 Online Barnga with Touch Panel

As iPhone/iPod Touch/iPad is one of the most popular embedded systems in the world, having thousands of hundreds of users and fans; the user interface of these devices is very beautiful and friendly to users; and besides, these devices have strong mobility and system functions, so we chose these devices to be the platform of our new version of Barnga game. All these adventures give us an opportunity to make the game easier, more interesting and closer to real life, which may assure that logged behaviors of players could be as natural as possible.



Fig. 2 Screenshot of Online Barnga With Touch Panel client program

The whole Online Barnga with Touch Panel Human-Human system contains two kinds of programs, server and client, running in PC and iPhone/iPod Touch/iPad, respectively.

Three groups of players, each one of who is holding an iPhone/iPod Touch/iPad, sit around three PCs respectively (generally speaking, 5 players per PC) as they sit around a table when playing card games. The process of playing the game is almost the same as the previous Online Barnga, the experience and functions are totally different though. In this new version, each player should move his/her fingertip on the screen to play a card, there's no mouse anymore, so at this time all inputs are direct inputs. The client program will log information of each point of the movement of player's finger, such as the coordinate and time stamp, etc., and upload these data to the server program in real-time. These data will then be stored in XML files to be analyzed in the final stage, when we could see the trajectory and speed of the movement of the player's finger that we believe reflects the emotion of the player directly.

4 Summary

Based on data retrieved from the touch panel, we could figure out the emotion of players when they are playing the game and then model the behavior and emotion as real as possible, in the final stage we will build an agent that could imitate human behaviors.

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