Interactive Online Shopping with Personalized Robot Agent

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ABSTRACT

Recently, the interaction between human and intelligent agents has become an increasingly hot topic. In this area, entertainment has always played a very important role as an essential element in enriching the user experience. At this research we combined Robohon, a new generation of smart robots, to act as a new type of agent to achieve a better shopping experience through interaction with personal computers and human, which we called as tripartite guiding system. A lot of voice and action is used as the main elements to interact with humans. In the process, the intelligent robot acts as a guide to help people with a better shopping experience step by step.

Author Keywords

Human-computer interaction; Intelligent agent; Shopping experience; Robohon.

ACM Classification Keywords

H.5.2 User Interfaces: Design of Interaction of human, computer and agent.

INTRODUCTION

In traditional online shopping, the information (items, price, and so on) displayed by the computer to human beings does not express the emotions, making the shopping a pure process and lacking in interest. In order to enhance the shopping experience [1], we have designed an intelligent tripartite system of human, computer and Robohon [2].

Figure 1. Robohon.

In human-agent interaction, robot plays an irreplaceable role compared to other types of agents. Robohon has many functions of language processing, artificial speech synthesis and motion performance, which is very suitable for us to be a carrier of intelligent guidance.

We use Rakuten's item searching API [3] as a portal for product search, and the information we obtain from it is intelligently filtered. Rakuten Market as information source to enrich the human's shopping experience.
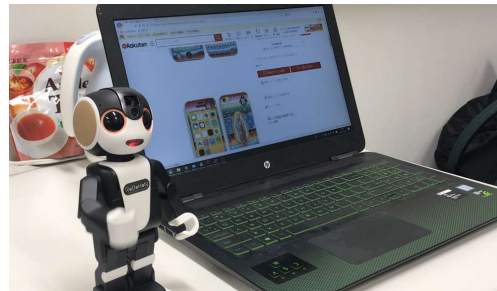

Figure 2. The Interaction between human, computer and computer (User is buying item by speaking to Robohon).

Robohon just like a real person who is helping you to shop. It plays a role as a spokesman because computer cannot directly communicate with human beings. It also can hear the expression of human beings, at the same time, it can search for the items according to the voice of human or the real item human showing. Expression of speech and motion of Robohon will make shopping very fun. Robohon can transmit information to computer, also human's actions on computers can affect Robohon's behaviors.

Our goal of this research is to explore the effect of tripartite systems of intelligent agent, computer and human in enhancing the user's shopping experience.

USAGE

There are two ways to search products, one is speaking directly to Robohon, another is putting the real product in front of it. When you want to buy, you can call it by "I want to buy something", and then it will confirm the keyword is right or not. After that, it will send a request by API to search products and read out the corresponding information for the user, asking the user to judge whether they like it or not. If they like, it will ask whether the user wants to

display it on the computer; If they don't like, it will skip it to the next product.
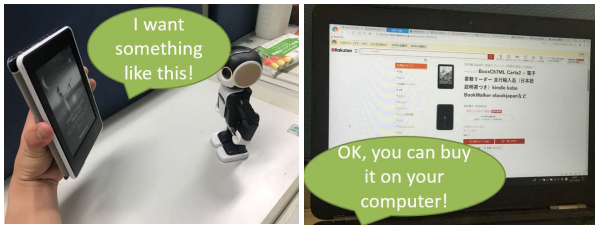

Figure 3. Showing on Robohon and buying item on computer.

Figure 4. Speaking to Robohon and buying item.

It is noteworthy that, whether users like it or not, these personal preferences of the historical records will be stored in the database. In the future it will search products based on these user habits, which makes shopping more effective.

Robohon will keep making motions throughout all process. For example, when you ask "I want to buy a watch", it will look at its own wrist to show the meaning of "watch".

For interaction between computer and Robohon, not only operation on Robohon can affect the computer, the operation of the computer will also affect Robohon's motion and speech. For example, when you buy a product on website, Robohon will introduce you about the product you are browsing.

SYSTEM ARCHITECTURE

The development for Robohon uses Robohon SDK [2], which performs various functions using the interfaces of its voice, image recognition, network, motion and so on. Robohon provides English, Japanese and Chinese speech recognition and vocal system.

Robohon offers a very powerful motion system that allows the body to act according to its voice content while speaking. For example, it is saying "May I confirm do you want to buy a watch?" And at the same time, he will look down towards his wrist, which representing the concept of "watch". More interactions with this can be very fun.

Because Robohon is an Android-based smart product, it meets Android's standards for network programming when connecting to the internet. After accessing the API of Rakuten Product Search, we have created a series of categories that are customized according to user's habits and requirements.

According to some previous research [4], we generate some categories and directories that according to users' habits. When the website returns the result, we will select and decide on the returned result.

RELATED WORK

Many researchers have worked to improve the shopping experience [5]. The users' emotion control, risk perception and situational variables [1] are very crucial parts.

Many people have proposed related concepts and methods in how to use agents to express human emotions. In the specific study, many researchers discussed the issue of whether an agent can become a well-qualified collaborator and have some degree of discussion on the collaboration with the robot [6]. For applications, many people have also developed very specific applications.

Based on this Robohon, some people want to use it as a platform to provide user services. Using Robohon as a smart agent is a good fit for agent research.

CONCLUSION

In this application, we propose an approach to use intelligent agents to enhance the user's shopping experience, making the agent more like a real guide through more human-like motions and languages. We used Robohon as a carrier, used Rakuten Market as a source of information, and developed a system to enhance the shopping experience. The tripartite system is both vivid and fun, which can add colors to the user's shopping experience.

Throughout the whole application, our intelligent agent behaves much like a real human in motions, speeches and recordings of user habit. This tripartite guiding system really makes the shopping experience more fun and interactive.

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