Proposal and Development of Artificial Personality(AP) Application Using the "Requesting" Mechanism

Yosuke Kanai and Takayuki Fujimoto

Abstract In recent years, people's interest in the artificial intelligence (AI) is increasing. Systems with AI technology are developed to be applied to various fields. The study model to create AI whose function simulates a human's mind and feelings and the developments are in progress. We assume that it is impossible to express "human-like qualities" by algorithm for autonomous AI with learning ability. Therefore, we develop the "Artifical Personality (AP)" that is a designed form of a personality without autonomous learning ability, a software to express more "human-like qualities" than AI by efforts for manual steps.

Keywords IT · AI · AP · OTAKU · MOE

1 Backgrounds and Motivations

In recent years, people's interest in the artificial intelligence (AI) is increasing. Systems with AI technology are developed to be applied to various fields [1]. AI is the computer system that is designed to play a role as a human substitute [2]. The study model to create AI whose function simulates a human's mind and feelings and the developments are in progress. For example, there are some products with AI system in widespread use: "Siri" equipped with iOS smart device and "Pepper", the personal AI robot that has the function of emotion-recognition. The most of them are the computers which aims to have human-like disposition. In other words, they have been developed along with the concept: "being close to humans" or "coexist with humans."

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These days AI has become very popular and AI-like mechanisms are incorporated with various products and services.

However, the most of the products and services which are supposed to be with AI, do not always reflect the original concept: "human-like qualities." For example, they sometimes choose the best choice by calculation in a limited situation. At other times, they find the one-size-fits-all answer from the database in the situation in which one option needs to be selected [3]. At still other times, they are the basic AI chat program with the simple conversational function and the learning function to repeat Q and A with the user in case of its encountering unknown words or keywords. Most of them are named as AI and the study results and technologies in the field of AI are utilized for their development. However, when we actually use these products, the impressions are much different from what we call "human-like qualities." As a program or system, they emulate "human capabilities." Also, they have a human-like learning system or decision making system. Nevertheless, we cannot have the impression that they have "human-like" qualities [4]. We will not accept the product of AI system unless it is equipped with human-like qualities that enables us to imagine AI [5].

For example, AIBO was developed as a toy and it became popular widely. Most of the users are satisfied with "the gimmick like a real pet". For the artificial products, the expressive approach is supposed to be essential to produce the impression of vitality and human (animal)-like qualities, and it should be different from the greater sophistication or the increasingly complex of the AI program. However, from "The survey of Siri use" (imore 2015), only 4.74% users answered they use Siri many times every day and the 49.88% users answered they use Siri once in a month, or do not use it at all. The results show that AI is not used very much even if it is a precise artificial intelligence with excellence [6].

We assume that it is impossible to express "human-like qualities" by algorithm for autonomous AI with learning ability. Therefore, we develop the "Artifical Personality (AP)" that is a designed form of a personality without autonomous learning ability, a software to express more "human-like qualities" than AI by efforts for manual steps.

2 Purpose of the Study

From "The survey of Attitude about the AI" (BIGLOBE 2016), In response to the question: "Do you expect good service from AI? Or do you fear it?" 17% people answered "considerably expect good service from it" and the 37% people answered, "moderately expect good service from it". The rate of the answers of "expect good service from AI" is 54% in total, a majority in the survey.

Regarding another question: "What do you expect from AI?" 32% people answered, "to be a friend for communication," and 7% people answered "to be a partner/lover" The results show that people want the AI program to have communication skills. There are two purposes of this study.

First, our AP system aims to raise the users' interest in AP by invoking interactive communication between them and AP. Second, AP would emphasize the "human-like qualities" by making requests to the users for some actions.

In AP programming, making a response to the user's one-sided remark is not defined as an interactive communication [7]. In this study, we pay more attention to implement the AP fiction to talk to the user. We aim to make the user feel that AP has more "human-like qualities" by this function. Also, by the "requesting" function, AP can give a soft and tender impression, which is different from cold AI's the requests make the user want to be supportive and give the impression of human-like familiarity. We produce the new design to attract people to use AP. The mechanism of the system is much different from the other AI systems today. AI is the computer system that is designed to play a role as a human substitute. However, AP system proposed in this study requests the user for some actions. This system presents the new relationship with the user by leaving the impression of "the perfect AI system" and creating the familiar impression, "charming and open to the caring eyes" We aim to design that enables the user to have an attachment to AP system and get the user interested in the AP system. This "requesting" gimmick is fundamentally based on the Japanese OTAKU culture, "MOE"

"MOE" is the most important keyword in OTAKU culture. Even the people who have no interest in OTAKU culture, know the word, "MOE". The word "MOE" is used like an exclamation for the charming actions, statements and personality, whether they are real or fictitious. It is usually used by a male who loves the character of the fictitious beautiful girl. In OTAKU culture, "the game to experience pseudo-romance" has been popular among introverted males. The trend that the hard-core fans adore the characters blindly created the word "MOE". Acquiring the factor of "MOE", and targeting males that have interests in OTAKU culture as the users, we aim to design to build a strong attachment bond between AP and the users. Today, although a lot of products with AI system are sold in the market, as far as the author knows, there are no products with AP.

3 Relevant Studies

3.1 Siri

Siri is implemented in iOS smart devices. It is an application software to play a role of the user's secretary for iOS and MacOS' That uses natural language processing for recommendations and invoking the Web Service in response to the user's questions. The sound recognition of Siri is excellent, and the system is very accurate. However, from "The survey of Siri use" (imore 2015), only 4.74% users answered they use Siri many times every day and the 49.88% users answered they use Siri once in a month,

or do not use it at all. The reasons for the answers are “no suitable occasions”, “machinery voice”, “I don’t know what I can do with Siri ”, and etc. The results show that AI is not used very much even if it is a precise artificial intelligence with excellence. For the users, the accurate system is not necessary because the user can use the voice input without Siri. we use SIRI for input through the voice, AI portray the “human-like” It will be more useful if get a result another answer from Google or web search. however, it is only reaction and joke if your input words have a keyword.

3.2 Pepper

Pepper is a robot with AI system, which is sold by Softbank. It is equipped with a function to estimate feelings from the human expression by a human’s voice or face. The various gestures and answers to the human words are known well. It is necessary to carry out various registrations in advance. It seems that programming and creation of the usage by the owners are more important than the functions of Pepper itself. Pepper is a learning type robot with the concept: communication and interaction with humans. However, according to the questionnaire (2015: Mynavi) to ask if the respondents would like to have Pepper, 88.4% of the people answered “No.” The reasons for the answer are “not cute”, “not necessary”, “too expensive”, “scary”, and etc. The results show that even though Pepper is known as the most artificial intelligence specialized in communication, it cannot actually communicate and interact with humans.

3.3 Aibo

Aibo is the animal type AI robot. Its first model “ERS-110” was released by Sony in 1999. It is said that more than 150,000 Aibos were sold in total before Sony’s retreat from the robot business in 2006. Aibo can do quadruped walking and moves like a puppy. The users can interact with it as if it was a real pet. In addition, it is designed to grow up through the communication with the users. This robot was provided not to be a substitute for human works but to be the creature with loveable behaviors. AIBOs were the beloved robots not just because of the functions but also because of their charms. Some users held funerals or organ transplants in case of their breakdown.

4 Development Environment

In this study, we develop the system with "xcode" provided by Apple. The development language is "objective-C". The software is for iOS and we are going to release it in App Store after development.

5 The App Design

5.1 The Concept of the Developed App

The proposed app does not have autonomous learning ability. The app focuses on the communication with the user by applying reactions and personality especially for the targeted base of the users and the usages. There are many apps that focus on communication. However, when we have conversations with these apps, we feel awkwardness [8]. And we get the impressions of the machinery talks. This does not match with AI's concept that functions are aimed to imitate a human's mind and feelings. Therefore, our app was designed to enable conversations like a human's and evoke the user's feeling of attachment. We introduced "requesting" function to the prototype system, which enables the close relationship with the user. This function imitates a human's mood shifts. The AP implementation is realized by using a minimum.

Natural language processing system and a minimum mechanism with learning algorithm, and also by creating reactions with efforts for manual steps. This program is like a chatterbot, which has a simple AI chat system, and only has a minimum communication function. However, this system input the action from all user's comments and user's expectations. We express "human-like qualities" Specifically, our app targets men who love OTAKU cultures.

5.2 Prototype of App

Headings, or heads, are organizational devices that guide the reader through your paper. There are two types: component heads and text heads.

Today, there are a lot of items and services that have concept "humanity" and "coexist with humans" There are items and services developed especially for com-

munication with humans. However, the most of the products and services which are supposed to be with AI, do not always reflect the original concept: "human-like qualities." We developed the app that includes new mechanism.

Answers and reactions to the comments

There are two patterns of reactions for the user's comments. AP choose an answer based on "the perfect match of the input word" or "the keyword extracted from the input word" This system has many answers to be chosen by perfect matching for the natural reactions. By registering answers to the user's remarks one-by-one manually, It resolves awkwardness of the AI chat programs. The learning type AI systems tend to generate awkward communication because they use frequently appearing words from the user's input in the past, and they simply put the word, input by the user as the answer of the questions, in the fixed phrases Our app has a response dictionary of many kinds of words, which enables the natural communication. Our study creates "human-like quality" by the perfect response dictionary. The accumulation of the registrations is in progress, asking 71 prospective users, so-called OTAKUs for advice and validation. Currently prototype system has about 1000 reaction words.

The requesting expression

We aimed to make the user think that AP has more "human-like qualities", which is unprecedented, by "requesting mechanism". In particular we pursued the satisfactory design to be a communication partner.

6 Prototype System

6.1 Main Mode

The following figures show the design image of the prototypic system. It is implemented by a dictionary with over 1000 reaction words now. The reaction is called by the word input by the user on a dictionary. This reaction is aimed to convey the impression of the humanlike lively comment based on humanlike thoughts. To make the impression, it is designed to generate more organic reactions, instead of the machinery and conventional reactions. Also, reactions are called with animation. This animation makes stronger feelings of the attachment. The screenshot of the app's main mode is indicated in Fig. 1.

A girl displayed in the center of the screen is the mascot (anthropomorphic image of AP) at the trial manufacture stage. The mascot's comment is displayed in the balloon on the top of the screen. The user can input the characters into a quadrangle column on the bottom of the screen. When the user presses the remark button, logs for remarks will be displayed in the quadrangle column. The comment on the user's

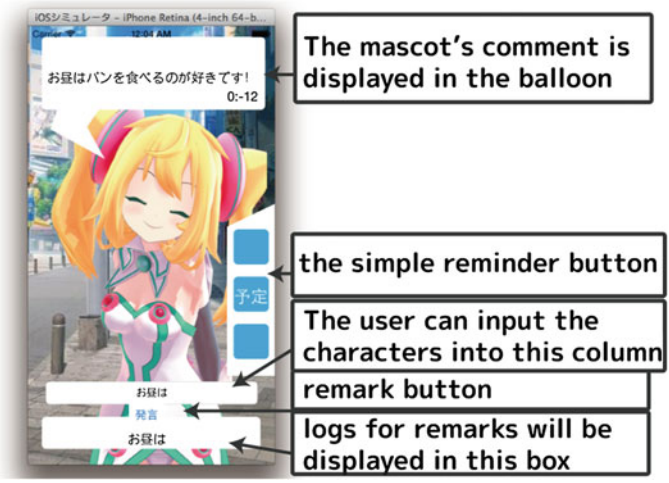


Fig. 1 Main mode

remark will be displayed in the balloon on the top of the screen. At the same time, the mascot's image is animated as the reaction. This animation makes the impression with more humanity. This animation is a cutoff animation. This animation will play for subside situation if user input the word. There are about 10 kinds of animations.We express more human-like quality through these animations Fig. 2 show pattern of animations.

When AP system reaction for user, this app plays voice.

This voice used cute voice like an animation character because we targeting males that have interests in OTAKU culture as the users. They like these voices and we aim to design to build a strong attachment bond between AP and the users.

6.2 The Requesting Mode

"Requesting mode" is a unique function. AI is the computer system that is designed to play a role as a human substitute, The developed system requests something for the user. The AP and the user make requests each other. We present more human-like AP with the relationship Fig. 3 is the screen that will be displayed requesting mode started. Fig. 4 shows the screen that After fulfillment of a request.

In the prototype, the requesting mode is designed to open automatically by the time lapse. AP system requests something for the user, this means that the user is relied on by the system and the user is used by the AP system. Conventional AIs have the structure that the system provides proper response to the data input by the user, Our AP system have the structure that the system uses the user by making requests

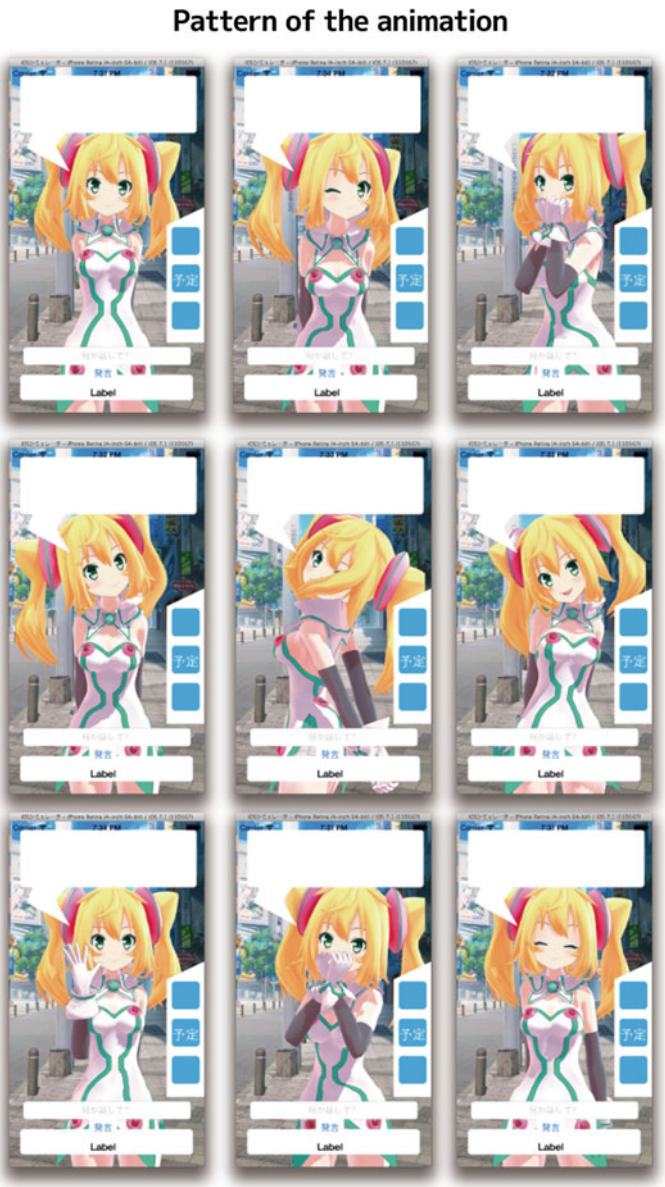


Fig. 2 Pattern of animations

Fig. 3 Requesting mode



besides of the conventional AI function. This may have the dilemma as the AI system to substitute the human's intellectual activity. However, by providing the two kinds of relationships: "The user uses the system" and "the system uses the user", This mechanism produces a pseudo-reliance between the user and the system. When a requesting mode opens, if the user do the action requested by the mascot, she will be pleased. By meeting the request, the point of reliance is increased. If this point is saved to some extent, AP's reaction will be provided in a more casual manner.

6.3 Simple Reminder Mode

Simple reminder mode is a simple function to set up a reminder to organize the schedule quickly.

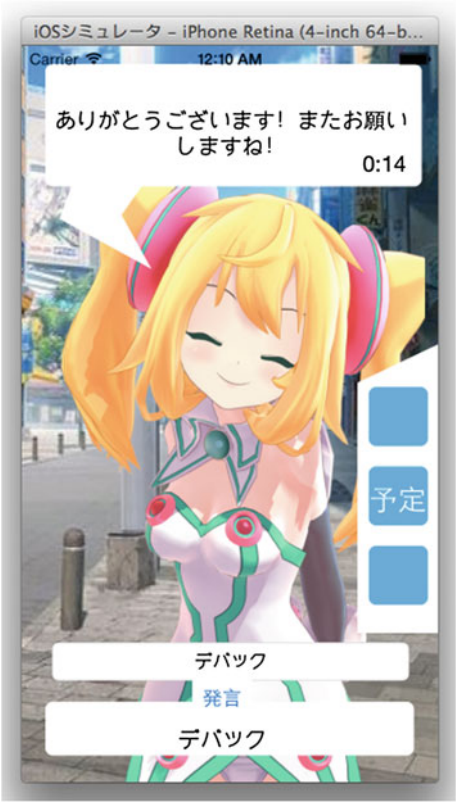


Fig. 4 After fulfillment of a request

Figure 5 is the screen that will be displayed when "the simple reminder button" is tapped. When the user presses the blue button displayed in the right of center on the screen, a simple reminder screen will be displayed and the user can set up a reminder by selecting alternatives. By choosing the time, place and action, a preview will be displayed in an orange quadrangle column on the bottom of the screen. When the user presses the "Confirm" button after choosing alternatives for all the items, the choices will be registered on a reminder. The user can come back to the main screen by pressing the "Back" button displayed on the bottom left of the screen. The user can confirm the input registration by pressing the red button displayed in the center of the screen again. Registrations for this simple reminder are limited for a daily schedule, and the user can organize the tasks of the day easily.



Fig. 5 Simple reminder mode

7 Conclusion

In this study, we have experimentally developed the "Artificial Personality (AP)" with a concept: "the system to request something to the user." This is different from the other existent systems with AI. The user's actions for the system's requests are required by the mechanism. This feature makes AP's impression become closer to a human comparing with the learning AI system for which the user needs to provide his or her information for AI's better human-like qualities.

Therefore, we developed the "Artificial Personality (AP)" that is a designed form of a personality without autonomous learning ability, a software to express more "human-like qualities" with efforts for manual steps [9]. As the relevant studies showed, AIs are not used very much even if they are artificial intelligence with excellence precisely. The main reason for the phenomenon was "no suitable occasions". There are no suitable occasions for the users to use AIs on large devices, or any mobile devices like smartphones.

The application of this study does not just target to establish the new relationship between the user and the system by the requesting system but also focuses on making the user have feeling of attachment by the fact that user think he or she is relied on by the system. By incorporating the action, "requesting" into the application design, we aim to attract the users to use the application with emotional attachments [10].

8 Future Work

At the current development stage, there are few variations of the requests from the system, and it makes the application impression monotonous. To improve this, we are going to add other kinds of requests for the users. Also we are going to pursue "human-like qualities" by setting the impressions of thoughts and feelings of the AP finely. There are only two patterns of AP requests: creation or confirmation of the user's reminder, and creation of AP's reminder. We are going to introduce other practical functions to make the user involved with the AP.

For example, they can be a mail function or a note pad function. This system requires the user's response to its request, and if the requests are highly demanding, the user would feel tired. We will develop requests that are not too much challenging but give the user feeling of accomplishment after fulfillment.

3DCG model is used as a mascot of the AP, We gave the "human-like movements" to the mascot, which is a good point of 3DCG by cutoff animations.

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