

A Study on the Design of Children Intelligent Guardianship Product Based on Artificial Intelligence Technology

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Abstract. The rapid development of AI has affected the design process. The ability to analyze big data and AI's efficiency, rapidity will bring great changes to the monitoring products especially for children. At present, the vast majority of intelligent child care products are based on the parental experience, designed in the aspect of parental supervision, and the children who use the product are often neglected. So change the way of designing, from the perspective of children using Intelligence technology, the ultimate child care products can play the most important role.

1 Introduction

Design has been deeply influenced by the times and related to the living environment. In Europe, for example, during the Franco-Prussian War, almost all supplies, displays, costumes and patterns reflect the color of war, rigorous and rigid military image and uniform color, which is full of the streets and alleyways. The color of design has the basis of science and aesthetics. The development of generations has a great influence on people's perception of time, space and movement, on the way of thinking about the relationship between people themselves, technology and art, and even on the whole way of life in reality. With the development of the times, the High-emerging technology industry, as a supporting industry, undertakes most of the output of production in social production. Today can also be called the era of Artificial Intelligence. The vigorous development of artificial intelligence technology makes design progress rely on technology, and the birth of each new technology revolves around its development. Design also came into being, such as life recognition technology in artificial intelligence, recognition of life features such as voice, fingerprint, facial contour and pupil. This kind of life recognition technology is often applied to design, such as Alipay face payment, smart phone speech recognition, unlocking screen and other popular applications. The powerful logic ability of the artificial neural network enables it to be used in a wide range of designs and become an independent processor and design center.

2 Literature Review

As used in this paper, image refers to the symbolic meaning of an object which has been presented by means of past experiences or conscious memories. Moreover,

when the artificial intelligent has been applied to children guardian products, the positive advantages will be far-reaching.

2.1. Development of Artificial Intelligence

We call it the era of artificial intelligence; the emergence of the network has accelerated the change and renewal of lifestyle. Nowadays, computers, mobile phones and other terminal devices are all working in the network. Without network coverage before, these devices work in a single computer, and their efficiency is extremely low. Similarly, the term "multi-function" is used to fill the gap. In the late 20th century and the early 21st century, a machine was fully functional, but it still needed the support of a large group of multi-equipment to carry out a type of work. But in the era of artificial intelligence, through the specialized equipment Internet of Things system, different interface forms of network ports and serial ports and different CNC systems were made [1]. In this mode of equipment Internet of Things, whether the design of development and production still has aesthetic factors, whether it still follows the original designer's intention, and whether the design serves the people themselves.

2.2. Design of Intelligent Child Monitoring Products in Existing Market

In the process of investigating the existing children's monitoring products, the proportion of children's products to the technology application of mobile terminals accounts for the vast majority of all children's monitoring products. Designers are already familiar with the technology application of mobile phones. Through such sensors, they can be transmitted to the information processing center and sent to parents who use mobile phones for monitoring, some APPs, or even through such a home. Long terminal

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operation, then remote-control devices in the home for stress changes. This child monitoring product is a wearable child monitoring device. Babies wear small communication devices to achieve the first, a series of information transmission, body temperature, heartbeat, blood pressure, length of sleep, depth of sleep and so on (Figure 1). Parents can judge the baby's physical condition and mental condition by receiving information [2]. This intelligent terminal, the main voice function, parents through mobile phone APP, remote communication, voice comfort baby, voice through the chest wearing equipment to play, to achieve parent-child interaction.



Figure 1. Parent-child interaction using intelligent terminals

In addition to the products on mobile intelligent terminals, children's custody products with physical image also occupy a large share in the market. These products often exist in the image of household appliances with rich connotations. Such products can accompany children's growth. When children pass the applicable age, the products will be regarded as a "wholehearted" [3]. This Smart Monitor uses Qualcomm processor and Microsoft developed system, which can collect all kinds of data with parents' permission, upload it to the cloud, and respond accordingly to the needs of babies. Mattel even gave Aristotle a rather strange identity, a descendant of Aristotle, who would tell users: "My goal in life is to help comfort, entertainment, education, and learn from you (Figure 2).



Figure 2. Mattel has launched an intelligent baby monitor, Aristotle

Exmovere's baby smart clothes, which have built-in "biosensors" to monitor the different emotions of babies in real time, can detect any slight signs of wetting in their underwear. Parents can receive sensor information through a small receiver. It is reported that the baby clothes named "Exmobaby" have thermometers, rhythm monitors and motion sensors. The data recorded by these devices can show the baby's emotional state and update the data every minute [4]. Researchers have developed special computer and smartphone programs for the suit. Babies' status data will be sent to users in the form of e-mail or SMS to let them know the latest developments of their children. Clothing can also monitor their own humidity, timely notification of parents to change diapers for their children. The "smart" clothes also have learning functions. Parents can manually adjust the clothes to record their children's state and motivation, such as "hunger" and "fatigue", so that the system can predict the

time of their children's appearance in advance according to the data. Searching for insertion points and adding monitoring devices is undoubtedly a cost-effective design of monitoring products. This smart bracelet is suitable for people who can use a telephone watch for 0-5 years old infants [5]. It can not only avoid the loss or disappearance of children in time, but also effectively assist the police or parents to recover the lost children and achieve remote rescue. The advantage of this bracelet is that, there are corresponding design compare with others. (Figure 3).



Figure 3. Xiaoya smart Bracelet

"Watches that can make phone calls" by voice function, the telephone number stored in the telephone book is limited, and when answering the phone, whether the speaker mode should be improved, when listening to the phone, whether the movement of the hand up to the ear conforms to the normal and comfortable behavior mode, the function of speaking and listening to the phone, It is necessary to incorporate the problem of whether the multi-step behavior operation is complex and not fully synchronized into the research scope of the designer in the analysis of children's behavior patterns. When the product is designed to be what shape and function, children will be more willing to use it, and in the process of children's use, whether the existence of the product is meaningful or not, and whether it has any function. It can affect other behaviors of children.

2.3 Summary

User's emotional appeal to the product can consciously induce the object's emotion, influence and induce their evaluation and judgment. In children's products, the main manifestations are the shape, color and comfort of the product, which are the main factors to attract children to use. However, the design of existing products is based on the analysis of user's psychological model. On the one hand, there is a lot of room for improvement. When designers design child care products, "guardianship" is the main focus, but they neglect "children" - the user experience of the main users of the products. Whether it is smart children's mobile phones or smart children's watches, the designer's perspective should be greatly changed. When the user model is defined as a child, the designer's analysis from the perspective of children is not enough. A series of inconveniences ensued, and so did child care products. It is necessary to incorporate the problem of whether the multi-step behavior operation is complex and not fully synchronized into the research scope of the designer in the analysis of children's behavior patterns. At the same time, children's psychological acceptance of such products is also a factor that needs to be investigated. Children's emotional appeal for guardianship products, when the product is designed to be what shape and function, children will be more willing to

use it, and in the process of children@ use, whether the existence of the product is meaningful or not, and whether it has any function. It can affect other behaviors of children.

3 Research Methods

For existing children@ smart monitoring products and their use, we conducted a survey of both children and parents. The questionnaire is evaluated according to 1 to 5 points. (Table.1)

Table 1. Basic format of questionnaire

Are you satisfied with the existing intelligent child care products?
<input type="checkbox"/> 1 Dissatisfied
<input type="checkbox"/> 2 A little dissatisfied
<input type="checkbox"/> 3 Somewhat satisfied
<input type="checkbox"/> 4 Mostly satisfied
<input type="checkbox"/> 5 Completely satisfied

Firstly, 95 parents were surveyed by qualitative research, questionnaire survey and spot market survey, and 52 children were interviewed by random sampling, because the age level of children@ guardianship products involved was 0-12 years old, so the basic shrinkage of the survey was based on. (Table.2)

Table 2. Questionnaire survey of 54 children and 95 parents

Questionnaire survey of 54 children		
24	44.4%	Who has intelligent children care products in home
25	46.3%	not satisfied with it
Questionnaire survey of 95 parents with the existing children@intelligent monitoring product		
51	53.6%	somewhat, mostly satisfied with it

From the perspective of parents and children, children@ intelligent monitoring products are completely different. Parents are basically satisfied with existing products, while children are not. It is not difficult to see that the designers take good care of the parents' need, but children@ interests are not fully adopted. We couldn't deny that the existing products do in function, however, there are still many hopeful points to be improved. The questionnaire also shows that the most important thing for guardianship products is safety, followed by communication function. Modern parents are too busy to accompany children in their daily life, but they also hope to participate in the growth of children and accompany them in childhood. How to balance work and family with education is still a problem. As a result, increasing children@ use experience has become a real child care product designed for children as the main design point of children@smart home design.

In the design process, the sketch drawing adopts KJ method, also known as affinity graph method. According to the questions, facts and opinions set up in the questionnaire, the data are summarized and completed

according to the similarity. The existing problems are that the intelligence function is not obvious, the children@ language cannot be analysed and recorded in time, the parents@operation cannot operate remotely and timely, and the products are not available. Form appliances cannot attract children, function buttons are too complex for young children to operate, product material safety, unable to access long-term monitoring records, etc. Finally, KJ method classification, function, shape, man-machine, collation and conclusion, a child intelligent monitoring product that can solve these problems is imminent.

4 Design of children's smart home products

Artificial speech intellectualization, using artificial intelligence speech to improve the daily life of parents busy with work cannot get along with children at home, on the one hand, real-time voice transmission, on the other hand, artificial intelligence speech, through the analysis of the language form of parents on weekdays, voice, intonation, commonly used words, etc., to imitate sound, Communicate with children to solve the minor problems in children@daily life.

Real-time monitoring of sound and image, parents can observe according to the external camera, L-melody can connect the external camera with Bluetooth function, and sleep into the voice monitoring function, real-time recording of sound.

Alarm function, L-melody presupposes intelligent voice for crisis situations, guides children to avoid danger by themselves, and acts according to the instructions issued by parents of L-M APP mobile terminal. Temperature-sensitive, heat-sensitive, smoke sensors, automatically alarm within 3 minutes after correct operation and identification.

Voice childhood growth diary, timely record children@ "little secret" to L-melody, automatically record the voice of dialogue for more than one minute, can play 5 short words except the latest stored period, and self-update and eliminate, retain only 5 voices.

In terms of exterior moulding materials, Appearance adopts the legend of childhood sea, "There is the sound of the sea in the sound of the screw". The bottom of the screw is placed with a stable rechargeable tray, contacting and charging. It is a winding image of the beach. It is vivid and lively. Speaking to the screw slogan, it is raised to the ear to listen to the screw slogan. The voice is interesting.

Color, shells and beach waves of pearl rice white, do not choose bright yellow, bright red, green and blue, according to design psychology, children@color, so that it is not only a toy, but also can ease children@ impatient mood, even as the increase of age can become a work of art.

4.1 Material, high-strength PPFG130 plastic, anti-hand external pressure, anti-collision, rotary button using white wax wood external surround, increase product texture, return to nature. (Figure.4)



Figure 4. External Image of L-melody Children Intelligent Monitoring Device

5 Conclusions

When a scientific and technological product with self-thinking logic, or just a conceptual form, has the ability to execute and operate, its danger and uncontrollability are greatly increased; however, when Alpha dog wins the Go players in the World Go Competition, it will make people wonder how well AI has developed, such as Microsoft® launch. Language imitates the communication robot Miss Tay, because she quickly learns and grasps a lot of rude words when communicating with netizens, and is forced to go offline 24 hours after going online. While we lament the rapid and efficient development of AI era, whether the intelligent system can correctly judge moral concepts and how to inculcate the right and wrong thinking have become the problems that need to be studied along with the progress of AI technology research. At the same time, this kind of thinking about human nature has always been met. Along with the continuation of artificial intelligence, in the design of children@intelligent monitoring products, artificial intelligence can give full play to its advantages of convenience and intelligence, change the traditional mode in monitoring and safety education, and establish a good personal relationship.

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