The UI Design of the Picture Logo of the Terminal Human-Computer Interaction Interface

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Abstract. With the advancement of the information society and the development of China's economy, enterprises to digital, information, intelligent production requirements continue to improve, the application of industrial software gradually popularized in the production of enterprises. However, in the Internet era, the research on man-machine interface design is in full rage, but the man-machine interface design of domestic industrial software has not been paid attention to. The level of industrial software interface is seriously backward, disjointed with The Times, and completely contrary to, high technology, high efficiency and other industrial execution concepts. On the one hand, this phenomenon will affect the working efficiency of the staff in the operation of the software and the user experience, reduce manufacturing enterprises related to attract talent, on the other hand can also lead to the software under the same technical level, domestic industry software products to attract customers' ability is insufficient, in the competition with foreign brand products in bad situation.

Keywords: Terminal, Man-Machine Interaction, Interface, Logo Design

1. Introduction

In order to make the human-computer interaction interface to meet the needs of workers, the design of the interface generally follow the certain principle, but in the case of excluding own physiology, often also can appear because the man-machine interface interaction system is more complex, and some problems such as information overload, the operator cannot respond rapidly and accurately. When the information intake continues to increase, the user's visual cognitive capacity must reach the upper limit. At this time, it is very likely that the problem of information overload will worsen and lead to the reduction of job performance [1]. The ICONS in the human-computer interaction interface elements as an important factor in interaction design, the thesis results also seek for such products, human-computer interaction interface design under the task to provide reference and basis can give reference to interaction
design, so as to improve the user's attention to capture performance and visual perception capacity, and improve the product experience [2].

2. Principles of human-computer interaction interface design

A good user interface should follow human design principles, based on how the user thinks and works, rather than the features and features of the mobile device. If the interface is not attractive and the logic is not reasonable, the great application will not be favored by users, but a beautiful and attractive UI can not only increase the user's love for the application, but also enhance the application's function, and thus increase the user's stickiness to the application.

![Design process of human-computer interaction interface](image)

**Figure 2.** Design process of human-computer interaction interface

2.1. Aesthetic integrity

Aesthetic integrity is not a measure of how good an application's interface looks, but rather a measure of how well an application's interface matches its functionality. For example, for an application, productive tasks are represented with more subtle decorative elements and backgrounds, and for prominent tasks, standard controls and actions are used. Such an application would convey a clear and unified message to the user and let the user understand the purpose of the application [3]. But when an application uses whimsical elements for a productive task, the user is troubled by these conflicting signals.

Similarly, in an application that simulates tasks, such as a game application, users want a nice interface to provide more fun and encourage them to continue playing. Although users don't expect to be able to complete a difficult or productive task in a game, they still expect the interface to be a complete experience [4].

2.2. Consistency
Consistency in the application interface allows users to leverage their own knowledge and skills to complete the application transition. Of course, keeping the interface consistent doesn't mean that you blindly copy other applications. Rather, as a developer, you should be able to design your application using the accepted standards and norms for applications of the same type.

2.3. Direct operation

Users understand their tasks and the results of their actions better when they manipulate objects on the screen rather than individual controls. iOS users prefer direct action because of the multi-touch nature of the device. When looking at an object on the screen, direct gestures give a more intimate feeling and a sense of control, since there is no intervention from the medium, which means more mouse dependence.

For example, users can use two fingers to zoom in or out of the area they want to control. In the game, players can also interact directly with objects, moving them directly. For example, in a game that shows a combination lock, the player can unlock it directly by rotating it [5].

2.4. A metaphor

When virtual objects and actions imitate real life objects and actions, players can quickly master the rules and actions of the application. A simple software metaphor is folders: in real life, people put objects in folders, so in a computer, users can quickly understand what that means, and what it means to put documents and other files in folders [6].

The best metaphor is one that is not bound by real life. For example, users can put a lot of content into folders, including music, documents, videos, etc., but that's obviously not possible in real life.

The iOS operating system provides a lot of metaphors for developers because it supports rich peer images and gestures. The user can physically interact with objects on the screen, and the interactions in many scenarios are very realistic. IOS metaphors include the backward control of music playing, the drag, flick and swipe operations in the game, the manipulation of sliding switches and the selection wheel to make choices [7].

2.5. User control

Note that in the application, you control the behavior of the operation, not the application. While the application can advise the user what to do or warn the user of danger, this is clearly a mistake for the application itself, because it pushes the player further. Successful applications need to strike a balance between constant reminders and critical reminders. When the operational behavior and controls are familiar and predictable, the user will feel more in control of the application. The more straightforward the action is, the easier it is to understand and remember.

Often, players want to have a good chance to cancel an action at the beginning of the game, because they want to be able to confirm the action. At the same time, the player also wants to be able to stop the operation normally.

3. Icon design of human-computer interaction interface
3.1. Research on icon features

With the rise of the smart home concept, the digital interface users interact with is starting to change in two directions:

The miniaturization of the operating interface of the device and the enlargement of the terminal devices such as mobile phones and tablets. But what they all have in common is that they are moving to mobile. A new report from the Pew Research Center supports this trend. The report shows that more than 90 percent of young people access the Internet through mobile devices. The biggest reason for such a large mobile presence is undoubtedly convenience. This puts forward a requirement for the current icon design of terminal interface: the icon of mobile terminal interface must clearly and accurately convey information. According to the research results of icon search and additional tags by Xu Shaowei et al., the more distractions there are, the longer the process of finding the desired object will take, and the greater the cognitive burden of users will be. However, when an - icon is significantly different from the rest of the ICONS, users will have a significant improvement in search efficiency [8].

In addition to the topological properties of the ICONS mentioned above, in addition to "connectivity" and "the presence or absence of holes", the ICONS composed of basic graphics also have other properties of plane geometric features, which are called morphological features here.

After summarizing the 540 ICONS most commonly used in everyday life, it was found that almost all of them could be categorized into 'arcs', 'horns' and 'squares'. It is also found that the complexity of the icon depends on the number of basic elements in the icon. For example, the icon representing "home page" is composed of three basic elements: triangle, square and rectangle, while the icon representing "play" is composed only of the basic element triangle. Therefore, in the attentional capture experiment of shapes and the visual perceptual capacity experiment of shapes, in addition to the topological properties of the ICONS, the morphological characteristics of the ICONS (arc-shaped, angular, square) and the complexity of the ICONS (basic graphics, combined graphics) are also discussed.

![Diagram of human-computer interaction interface](image)

**Figure 2.** Production of human-computer interaction interface

3.2. Icon size and layout
With the development of interaction design, the human-computer interaction interface is no longer the early command line interface, but gradually developed into the graphic user interface (GUI) and multimedia interface, the future more virtual reality and multi-channel user interface development trend [9]. At present, the graphical user interface is still the mainstream form of man-machine interface. In the graphical user interface, the user uses the finger, the mouse and so on to complete the data exchange and information transfer between man and machine through the operation of graphical elements in the interactive interface. The research on pointing manipulation of graphic elements began in the 1960s. English et al. compared the time it took a mouse, a light pen, and a writing pad to position the cursor on the screen and found that the mouse was the fastest. At the same time, researchers began to use Fitz's law to describe how users manipulate graphic elements on computer screens. The task of manipulating graphical elements in a graphical user interface is often more complex than that described by Fitzgerald's law, which describes the relationship between the time it takes for a pointing device to acquire a target and the distance and size of the target. This is because a graphical user interface is usually a complex visual environment composed of various visual elements. Before manipulating a graphical element, the user must first find it through a visual search. Therefore, the interaction efficiency between users and graphic elements should be measured by the user's search for graphic elements and the click operation [10]. The layout characteristics of graphic elements are important factors that affect the interaction efficiency.

4. Conclusion

With the gradual improvement of digitization, information and intelligentization requirements of industrial manufacturing industry, the human-computer interaction interface of industrial software is widely replacing the physical interaction interface of traditional equipment to become the main operation object for the staff of manufacturing enterprises, and its interactive interface design should be paid more attention to. This paper starts from the theory of human-computer interaction interface design, carries out the research of human-computer interaction interface design, and summarizes the basic design principles and design methods of industrial software human-computer interaction interface icon. Hope to provide reference for related designers.

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