Practice of Usability Testing of Online Online Education Platforms in the Internet Age

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Abstract. In order to meet the needs of the development of the times, computer technology is developing rapidly, the times are making rapid progress, so the material life of the people is rapidly improving. However, because of the rapid development of science and technology, China's original set of traditional-based education model can not meet the requirements of the times. Therefore, the current education model should be online and offline collaborative development. But our educational model and effectiveness of online platforms are still unknown. Therefore, the purpose of this paper is to study and test the availability of online education platform in the Internet age. In order to obtain reliable test results, we first test the usability of the platform by reviewing the method of building the relevant platform, and then by reviewing the algorithm of the test and using the algorithm to build the test program, and observe the required data results. The experimental results show that the fork algorithm can be used to better help to get the available data.

Keywords: Internet, Online Network, Educational Platform, Test Practice

1. Introduction
In the modern life of science and technology, many people enjoy the welfare of science and technology brought by the development and reform of modern science and technology, and are satisfied with the material life [1]. Because of the rapid development of science and technology, we can buy the goods we need through online shopping, and solve the problem of eating through the takeout platform, which are the benefits brought by the development of modern science and technology [2]. However, on the contrary, the traditional education model established after years of development has become somewhat divorced from the times under the impact of science and technology [3]. Therefore, China's education reform has been carried out slowly, from the beginning of the teacher's blackboard teaching knowledge to later through the teacher's advance production of PPT, using the projector to show the teaching, and then to the current online education platform teaching, which are the development process of Education Reform [4].

Although the use of online education platform for teaching is a beautiful reverie, even in the network, students can realize that they can learn what they need at home without leaving home. However, some shortcomings were found in the experiment. For example, the teaching quality of online courses is uneven, which is related to the teacher's attentiveness and the practicability of PPT
production. On the other hand, it is due to the requirements of online teaching for the network. Because the online course is real-time teaching, it will be delayed, and the students have the freedom under the unsupervised state [5]. Therefore, after a large-scale online class event in 2020, we found that on the first day of online class, a large number of education platforms collapsed. Although the errors are fixed one by one and the number of servers is increased, the overall learning situation is not as good as the offline teaching mode [6]. So, we need to test the usability of online platform in order to learn better. Because the teaching of online course will eventually change due to the interference of some factors. Therefore, colleges and universities will launch online education network platform based on their own education methods. Although in the major education platforms, colleges and universities upload their own online courses, such as MOOC, which includes the excellent courses owned by most universities in China. However, due to the different needs of each school for the curriculum, and the functions of each education platform cannot fully meet the needs and standards of teachers for teaching, so in some cases, the teaching quality is not good, which need to be changed [7]. Therefore, colleges and universities have launched their own education platform.

However, the construction of education platform is a very complex thing, it needs a large number of servers to ensure the storage of carrying resources and fast network speed to ensure the normal operation of real-time teaching, and good program construction ability to ensure the normal operation of the platform [8]. For colleges and universities that have never built an education platform, these are the problems that need to be solved. Moreover, the education platform of colleges and universities is generally stored in the VPN of major colleges and universities, which is not a table network of the Internet, but a dark network [9]. Therefore, this kind of education platform has the characteristics of high concealment and security. This can help colleges and universities to better establish their own education system and teaching methods, and add functions according to the needs of teachers at any time. Once the education platform is established, we need to test their effectiveness to observe their good operation to ensure the normal use of online education platform [10].

2. Genetic Algorithms

The design of the SMC controller

Set the angle control target to be sd and define the system error e sd  

\[ s = \dot{e} + e \quad (c > 0) \]

\[ \dot{s} = \dot{e} + c\dot{e} = \dot{\theta} - \theta + c(\dot{\theta} - \theta) = c(\dot{\theta} - \theta) + f - gu - d(t) + \theta \quad (1) \]

The total control law of the design is

\[ u = u_{eq} + u_n = \frac{1}{\theta}[c(\dot{\theta} - \theta) + f + \dot{\theta} + \eta \text{sgn}(\theta) + ks] \quad (2) \]

\[ u_{eq} = \frac{1}{\theta}[c(\dot{\theta} - \theta) + f + \dot{\theta}] \quad (3) \]

\[ u_n = \frac{1}{\theta}[\eta \text{sgn}(\theta) + ks] \quad (4) \]

Build the Lyapunov function:

\[ V = \frac{1}{2}s^2 \quad (5) \]

\[ \dot{V} = ss = s[-\eta \text{sgn}(\theta) - ks - d(t)] = -ks^2 - \eta\|s\| - sd(t) \quad (6) \]

When the k-0 is taken from \( \eta \geq C \), the system \( \leq 0 \), and the system can achieve gradual stability. \( \dot{V} \)

3. Experiment

3.1 Selection of Experimental Data
In order to better produce the data results of the experiment, we use the experiment to explore the composition of the data. How to get the experimental data we need is an important question. Therefore, the data structure of this paper is obtained through many experiments, the purpose is to prevent too few samples from causing the experimental data to deviate, resulting in errors in the experimental results.

3.2 The Experimental Process
The experimental process is divided into three steps. The first step is to observe how they work by building an online education platform, and then implant the algorithm test programs we build into them. The second step is to observe the details of the background processing data through the program, and then analyze their error rate and accuracy to get the data results we need. The third step is to use statistics and chart them, and then observe the availability of online education platforms, complete the experiment.

4. Evaluation Results

4.1 Experimental Results

| Table 1. | Comparison of data in the case of the test and the experiment |
|----------|---------------------------------------------------------------|
|          | Calculating correct rate/\% | Classification correct rate/\% | Statistical correctness/\% | Comprehensive evaluation/score |
| Test     | 98.93                      | 99.21                         | 99.78                      | 99.25                       |
| Experiment | 99.12                      | 99.16                         | 98.98                      | 99.10                       |

As shown in the figure 1 and Table 1 above, we can see from the experiment that the comprehensive evaluation score in the experiment is lower than the comprehensive evaluation score in the test, but the difference is not great. The comprehensive evaluation in the experiment was 99.10 and the comprehensive evaluation in the test was 99.25. The main difference among them is the statistical correctness rate. The statistical correctness rate in the test is much higher than the statistical correctness rate in the experiment, so we analyze the data to explore the error situation.
Figure 1. The test compares to the data in the experimental case

Figure 2. The percentage of cases in which statistical errors occur

By analyzing Figure 2, we find that there are four main errors in statistical errors: data classification errors, statistical classification errors, system identification errors, and procedural errors.
Among them, the proportion of system identification errors and procedural errors was 32.6% and 35.3%, respectively, accounting for more than 2/3 of the total. Explain that these two errors are the main ones that occur in the experiment, so we should focus on improving them in the future to reduce the experimental errors.

4.2 Internet
The Internet is a new industrial model driven by the Internet as the main body and the entrepreneurial action of knowledge form. The Internet is actually a traditional industry of the Internet. Because of the advent of the information age and the development of science and technology, the traditional industry can use the Internet platform and information data, so that the Internet and traditional industries to integrate, take advantage of the advantages of both sides, mutual benefit and win-win situation. The Internet is a development trajectory of Internet thinking, the Internet represents a new economic form, which relies on Internet technology and integration with traditional industries, mainly to simplify the production system, rebuild business models, carry forward traditional industries and complete economic transformation, and create new development opportunities. The concept of the domestic Internet was first put forward by the 5th Mobile Internet Expo in 12 years, and Premier Li Keqiang attended the first World Internet Conference in 14 years with "mass entrepreneurship, innovation for all" as the theme of the government work report. With the development of the times, the Internet involves more and more industries, more and more influence.

The Internet has six main characteristics, the first of which is cross-border integration. It represents the reform of an industry, representing the reform and opening up of traditional industries. The second point is innovation-driven. Because the original mode of production is no longer enough to support the modern nhs economy, innovation is needed to give the original industry new vitality, so that it glows. The third point is to reshape the structure. Since the information revolution, we have entered globalization, the original social structure has been broken, we need to reshape the economic structure through the Internet, take the lead in the future, and then reshape the social structure. The fourth point is to respect human nature. Whenever, people should be people-oriented, because talent is the fundamental force of competition. The fifth point is to open up the ecology. We are here to remove the traditional barriers to innovation and to unite all industries into a large, holistic structure. The sixth point is to connect everything. This is also the ultimate goal of the Internet.

In the age of the Internet, all walks of life hope to get a piece of the pie in this new era. And in order to have market share, then the original industry needs to make its own name so that people know the industry and the brand, so we need exposure. Unlike the original traditional enterprises, the original traditional enterprises have heritage and word-of-mouth, and the new Internet industry does not need, but through the influence of the Internet, their exposure to get attention so as to occupy market share. In this era of entrepreneurship for all, every day there are many large and small enterprises born, but each year from which to stand out from only a few enterprises. Other companies have survived after early start-up freezes and later financing mergers. All that's left is the industry's top power.

And Internet medical is also one of the focus of people's attention. Because medical care is one thing that people have been worried about since ancient times. So, Internet Medical introduced a new mode of medical care, and make drugs affordable and transparent. And the realization of online registration, queuing, buy medicine and other measures to save unnecessary time waste in the middle, in order to make it convenient for the public to see a doctor, but also through online expert consultation to help develop surgical programs, increase the success rate.

There are other industries, such as tourism, people's livelihood, education and other aspects. All in all, the Internet has penetrated into every industry.

4.3 Availability Detection
Usability detection technology mainly involves the composition of key devices, system design, hardware parts and software parts. We don't think about the hardware part at this point, we just think
about the software part, which is to build the system through algorithms. The hardware composition of AOI requires image sensors, lens light sources, acquisition and pre-processing cards, computers, etc. These parts become an important part of the automated availability detection system. In many years ago, testing is generally through the human eye in the bright light of artificial testing, so that the body is not good, will affect health, and due to human error, will cause major defects, because the human eye is difficult to identify the internal defects caused by various problems. In recent years, with the development of the times, technology has steadily improved, high-speed image data processing and software development has become the core technology of AIO. Because usability detection is done through image detection, the image information of the device is constantly being detected to obtain the information being measured. The amount of data is particularly large, so it needs to be analyzed by high-speed image data processing and excellent network transmission speed in order to get good data. It also requires a large number of storage systems, because the data is huge, the image data is too large, easy to cause the load.

Usability testing is a new technology that has emerged in recent years, so many manufacturers have installed it to test products, but this is not enough. Because of the variety of usability testing technology, it is related to the products produced by various manufacturers, for example, some manufacturers are production components, and some manufacturers are the production of welding instruments. And components are also divided into a variety of, such as diodes, integrated circuit boards, lenses and other various instruments. And their detection methods are different. For example, diodes, it needs to be ultra-high temperature detection, the high temperature needs to be detected more than three thousand degrees, because tungsten filament melting point is more than three thousand degrees. But lenses and integrated circuit boards are no longer needed, and lenses and integrated circuit boards only need to detect 60 degrees of heat, because they do not need to work at high temperatures.

So, we need to look carefully when we use it to prevent it from being used incorrectly, with the wrong consequences. Therefore, before using, we need to understand the parameters of the instrument, and then the required instrument to choose. In order to prevent the wrong parameters and cause current overload and other electrical facilities safety problems, resulting in injury.

5. Conclusion
In summary, we can learn from the experiment that the test program built with this algorithm can test the availability of the educational platform. The detection of the platform is mainly to analyze its data load, real-time maximum load and minimum load, as well as real-time information data processing volume. The experiment is then completed by observing the data. Experimental results show that the data platform because of more servers and dedicated network transmission, so its online data storage can be tested, but we found that the online education platform occasionally appear some small problems, there are one or two small errors, these need to be changed and corrected. We believe that with the slow improvement, online education platform will be more and more perfect, in the future we can through online and offline dual education to meet our educational needs.

Resources
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