Improved Method of Number Identification Device for Some Kind of Circuit Test

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Abstract: With the continuous improvement and maturity of recognition technology, the application in various fields is also more and more widespread. Based on the manual test in the traditional test, there are many defects. The automatic identification device can directly obtain the number and input it into the system. This method avoids the situation of the original wrong number and the heavy number, improves the correctness of the number and the working efficiency. However, when the numbers are not clear, there are still some cases of mistaken identification. Now, the automatic identification method is improved. Combined with manual signal transmission, the improved method solves the mistaken identification of unclear numbers.

1 INTRODUCTION

Automatic identification technology is through identification technology to automatically obtain the relevant information of the required items, and then provide background processing and complete the corresponding steps of a technology. Automatic identification technology includes bar code reading, RFID, biometrics (face, speech, fingerprint, vein), image recognition and OCR optical character recognition. It has been widely used in medical industry, transportation industry and education industry.

Automatic identification(Mehtre, 1993; Cava, 2016) through image processing(Milan, 2008; Yang, 2011; Matsuyama, 2016) to obtain the number. Through the image acquisition, the camera captured the picture into the background, after image positioning, segmentation of the number, after the binary preprocessing and character segmentation, to be a single number to be identified, and then use the pattern recognition method to identify. After the sample is tested, the desired identification number is finally obtained by means of acquisition and identification.

2 AUTOMATIC IDENTIFICATION OF THE BASIC PROCESS

Depending on the type of sample, first click Start to start the automated test procedure. After the test is completed, the corresponding personnel need to take samples and obtain the corresponding number, fill in the appropriate dialog box.

In response to a series of problems encountered in the existing test of a certain sample (each corresponding sample needs to be key-pressed according to the existing serial number, the input serial number will occupy most of the time, and the long-time input serial number will appear. Work fatigue, and this fatigue work led to the wrong input), the existing sample number of zero to nine combined four-digit, will test the manual input number of this method is improved. The following figure for the original manual identification process, Figure II is the automatic identification process.
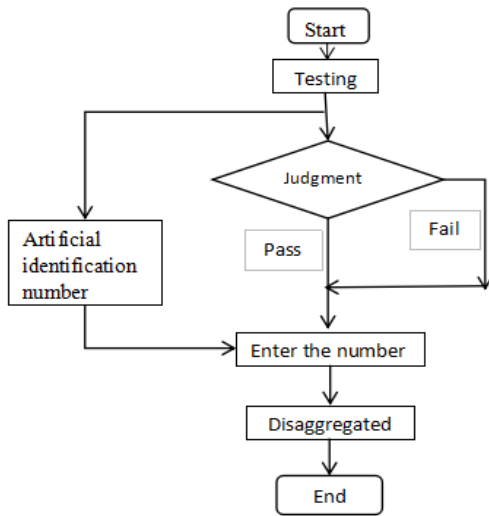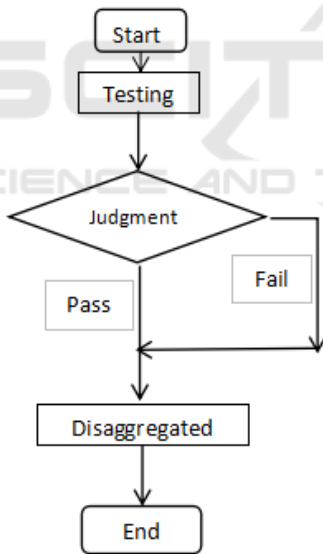
Figure I

Figure II

The original mode, start the test program, the current sample test after the completion of the need to manually read the sample number and sample number input in the corresponding test system interface, the current sample test completed and enter the serial number is completed, the next

sample carry out testing. In the traditional test, this test input number after the work is very cumbersome, which we will join the automatic identification(Shimizu, 2016) number of modules, improve the correctness of the input while improving work efficiency. After adding the automatic identification module, the original test module remains unchanged, only the number of the sample needs to be identified at the same time when the sample to be tested is tested. After obtaining the serial number, it will be displayed whether the sample is qualified or not. The qualified and the unqualified will be automatically placed separately. Improved method to automatically identify the number, automatically enter and calculate, will not be the wrong number, weight number of the situation, it is also more convenient to use.

3 WORKING PRINCIPLE DIAGRAM

In the whole test process is divided into sample performance parameter acquisition, sample number acquisition, data storage. The working principle of the device based on the input device shown in Figure III . At this point the performance parameters and sample information colleagues, click on the start will trigger the two module functions. The new front-end number acquisition module can obtain the sample information, collect the sample number and image processing(Teknomo, 2016) through the camera, convert the image into digital through processing, and the obtained data can be directly displayed in the corresponding box interface in the screen and stored in the corresponding database .
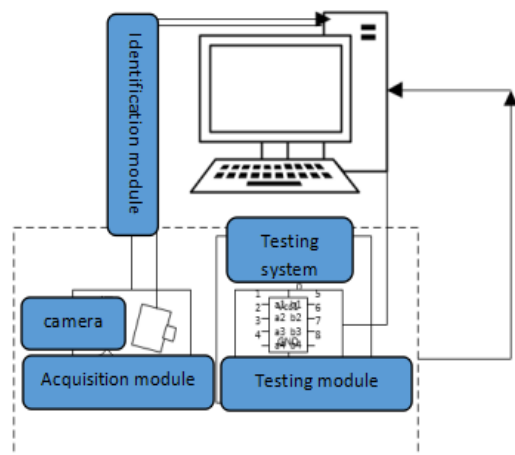
Figure III

4 PRINCIPLE IMPROVEMENT

Automatic identification(Lima, 2013; Yuqian, 2014) device or there is a recognition error, in order to avoid mistaken identification unclear number, improve the original identification method. In the original recognition module, the combination of manual recognition and automatic identification, when encountered fonts are not clear, it will automatically prompt the human identification, Can identify the case, automatic use of automatic identification(Pantic, 2017; Russell, 2016). The specific process as shown in Figure Ⅳ.
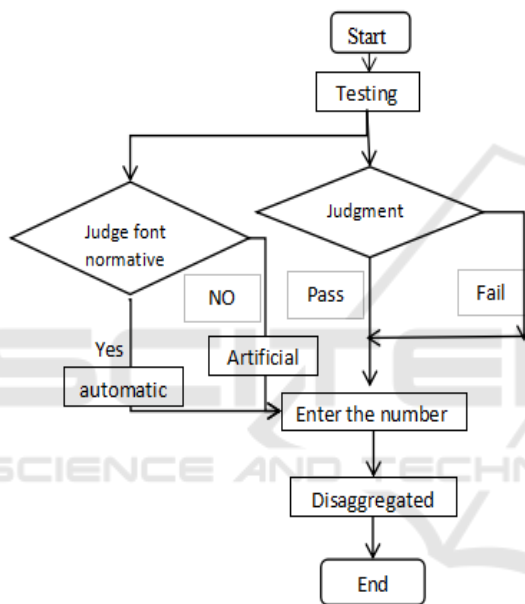

Figure Ⅳ

As can be seen in the figure, after starting the program, the test program will synchronize with the identification module, and when the acquired serial number is not clear, the error is identified. Figure V , the use of automatic identification of the numbers read out 1726479 and 1719151, respectively, if manually access, and soon be able to identify the picture number should be 1726499 and 1719154. After the manual identification number, pop-up dialog box will need to manually fill in the corresponding number; when the captured image number is clear, it will automatically enter the number, no longer need to enter the dialog box out of the number.
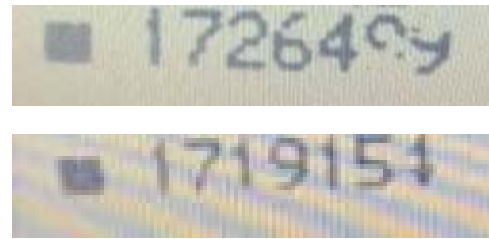

Figure V

5 CONCLUSIONS

Automatic signaling device to improve the efficiency of the original test, greatly reducing the original error number and weight of the situation. If the sample number is not clear, it will lead to recognition error. In the case of ensuring the sample number font specification, the identification number can be consistent with the actual number. Image recognition module still exists in the picture recognition is not correct, the image recognition technology is not yet intelligent for special circumstances, so the need for further research image processing technology, the combination of artificial and intelligent(Timms, 2016; Sombattheera, 2016), to achieve seamless convergence of operations .

REFERENCES

Mehtre B M. Fingerprint image analysis for automatic identification[J]. Machine Vision & Applications, 1993, 6(2-3):124-139.

Cava W L, Danai K, Spector L, et al. Automatic identification of wind turbine models using evolutionary multiobjective optimization[J]. Renewable Energy, 2016, 87:892-902.

Milan S, Roger B, Vaclav H. Image Processing, Analysis and Machine Vision[J]. Journal of Electronic Imaging, 2008, xix(82):685–686.

Yang Y B, Elbuken C, Ren C L, et al. Image processing and classification algorithm for yeast cell morphology in a microfluidic chip[J]. Journal of Biomedical Optics, 2011, 16(6):066008.

Matsuyama T. Image processing device, image processing method, and computer-readable storage medium[J]. Biophysical Journal, 2016, 89(4):2443-57.

Shimizu T. Image processing system, information processing apparatus, image processing apparatus, control method therefor, and computer program[J]. Journal of Oral Rehabilitation, 2016, 8(3):203–208.

Teknomo K. Microscopic Pedestrian Flow Characteristics: Development of an Image Processing Data Collection

and Simulation Model[J]. Tohoku University Japan, 2016.

Lima R H P, El-Bishouty M M, Graf S. A Framework for Automatic Identification and Visualization of Mobile Device Functionalities and Usage[C]// Human-Computer Interaction and Knowledge Discovery. 2013:148-159.

Yuqian M O. Automatic Identification Method of Secondary Device Port in Intelligent Substation[J]. Guangxi Electric Power, 2014.

Pantic M, Zwitserloot R, Grootjans R J. Teaching introductory artificial intelligence using a simple agent framework[J]. IEEE Transactions on Education, 2017, 48(3):382-390.

Russell S, Dewey D, Tegmark M. Research Priorities for Robust and Beneficial Artificial Intelligence[J]. Ai Magazine, 2016.

Timms M J. Letting Artificial Intelligence in Education Out of the Box: Educational Cobots and Smart Classrooms[J]. International Journal of Artificial Intelligence in Education, 2016, 26(2):701-712.

Sombattheera C, Nguyen K L, Wankar R, et al. Multi-disciplinary Trends in Artificial Intelligence[J]. Lecture Notes in Computer Science, 2016, 8271.