Design of Crisis Counseling Risk Assessment System Based on College Students' Mental Health

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Abstract. At present, the field of education began to focus on students' mental health problems. In order to understand and analyze students' mental health status and obtain clear data analysis results, it is necessary to use students' mental health crisis counseling risk assessment system. However, in order to obtain more valuable evaluation results, it is necessary for colleges and universities to optimize the risk evaluation system of students' mental health crisis counseling, and optimize the main control chip and system circuit in terms of hardware. In addition, we should also build a psychological counseling risk calculation model to quantify the value of risk. After completing the design of the student mental health crisis counseling risk assessment system, the system is tested. It can be found that the accuracy and detection time of the system evaluation and registration are very ideal. Therefore, it can also be seen that the optimized student mental health crisis counseling risk assessment system is better than that before optimization.

Keywords: System Design · Risk Assessment · Risk Value Quantification

1 Introduction

At present, students' mental health problems receive attention mainly due to the increasing social pressure, because the mental health problems of students produce more and more malignant events [6], from which we can see the psychological crisis problems lurking in colleges and universities. This also enables both the country and the society to invest more energy in the study of students' mental health problems, trying to find ways to solve the problems, or to prevent the occurrence of malignant events. The risk assessment of mental health crisis counseling can find out the students 'psychological characteristics by observing their behavior [11], and analyze the students' psychological characteristics through data. The brain determines behavior, psychological change will determine the behavioral motivation, and through the evaluation and research of different psychological states, you can find the law of student behavior, and then give corresponding guidance to students, so that students can achieve physical and mental health.

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2 Design of the Risk Assessment System for Students' Mental Health Crisis Counseling

2.1 Selection of the Master Control Chip

The core of the student mental health crisis counseling risk assessment system is the main control chip, which can control the whole mental health crisis counseling risk assessment system, and can also convert the collected simulated signals, and digitally filter and transmit the simulated signals. Because the MCU has the advantages of low power and small volume, the signal can be collected and filtered digitally through the high-frequency processing speed of the USART communication interface. The MCU has multiple converters that can convert the analog signal with a resolution greater than 16 bits into data signals through a high clock frequency, and reduce the probability of transmission problems and strengthen the stability of performance [5] (Table 1).

On the basis of considering the functional requirements of the system, it is necessary to combine the characteristics of MCU chip and use the MCU of CortexTM-M3 chip as the main control of the system chip. The chip architecture is shown in Fig. 1.

Connecting the chip's peripheral circuit to the 48 pins of the chip can optimize the entire system while reducing the programming difficulty.

2.2 Minimum System Operating Circuit Design

As the processing core of the digital circuit, the MCU can effectively issue the hardware instructions. The MCU minimum system is mainly composed of power supply circuit, program circuit, reset circuit and crystal vibration circuit [13]. The crystal vibration circuit provides an external clock source for the MCU circuit, while the program circuit introduces the program into the MCU interface, which can ensure the stability of the chip operation [10], as shown in Fig. 2.

Table 1. Internal composition table of the MCU

Serial number	Parameter name	Parameter model
1	CPU	AMR 64 bit cortex™-M3
2	Storage	128 KB flash program memory
3	Clock	4–16 MHz crystal oscillator
4	Uasrt interface	4 interfaces
5	A\D conversion	12 bit analog converter
6	Timer	Dual independent watchdog timer
7	DMA	8-channel DMA controller

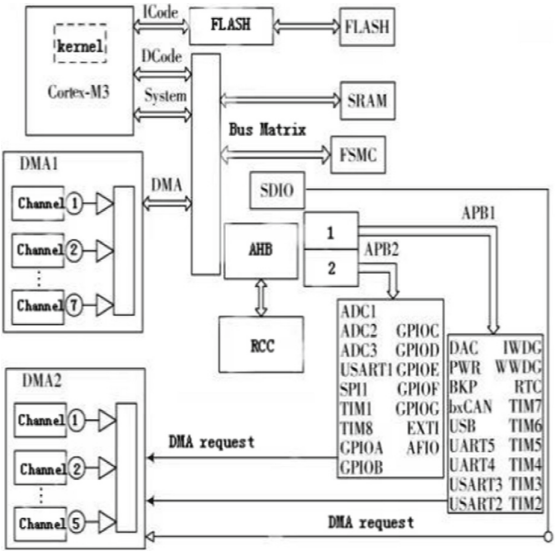

Fig. 1. Specific architecture of the master control chip

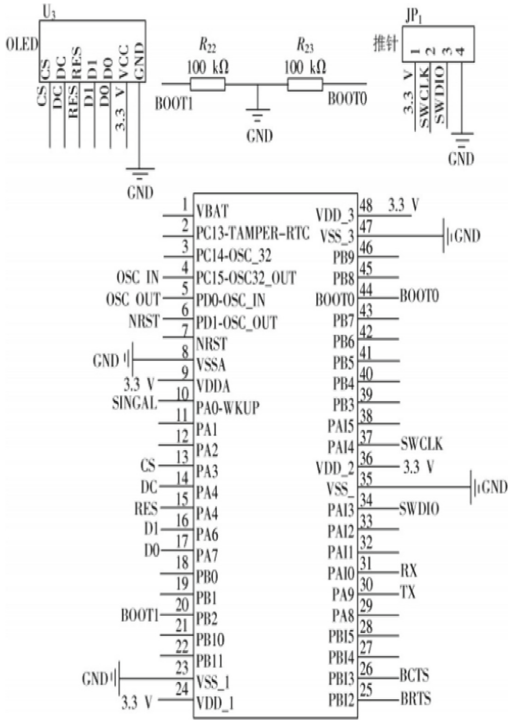

Fig. 2. Schematic diagram of the minimum system and the circuit

Combining the original system equipment with the system hardware can complete the development of the risk assessment system to guarantee students' mental health crisis counselling [8].

3 System Test and Analysis

3.1 System Test Scheme

System testing can be implemented by inputting the data of student mental health crisis counseling into the student mental health crisis counseling risk assessment system [8]. As shown here (Y-axis is the calculation accuracy of risk value%, X is Test times/S) (Fig. 3).

In the above system test, the risk value calculation results and the evaluation level, and the system evaluation processing time were taken as the test comparison indicators, and the effective system test analysis results were obtained [9].

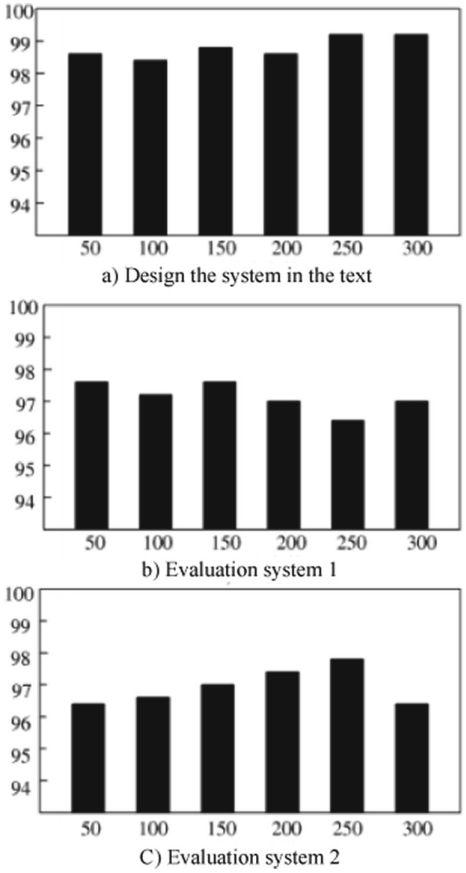

Fig. 3. Comparison of the risk value calculation results

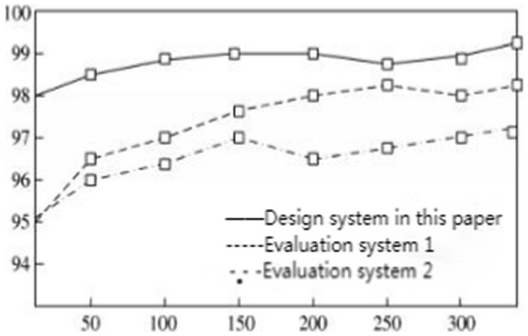

Fig. 4. Evaluation of the level query accuracy test results

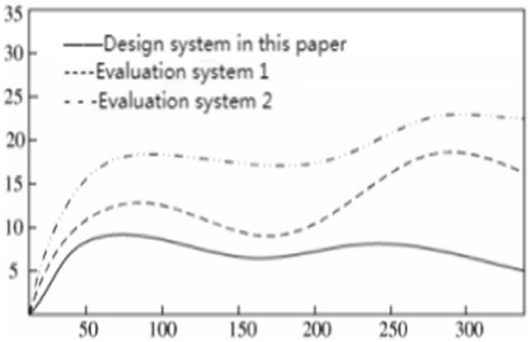

Fig. 5. System evaluation of processing time test results

3.2 System Test Analysis

In the above test results, it can be seen that the data results of the student mental health crisis counseling risk assessment system designed in the paper are more reliable and stable. In multiple calculations, the data results remain at a very high level of accuracy and not much difference, so the stability of the system calculation can also be seen. The use of the two student mental health crisis counseling risk assessment systems are more volatile [4], which means that the data results of the risk assessment system are not accurate and reliable enough [12].

According to the Fig. 4, the risk assessment system designed in the paper has strong computing power and can ensure ultra-high accuracy and stability. Insufficient computer power affects the accuracy of the results, so the other two risk assessment systems are not reliable enough.

It can be seen from Fig. 5 that according to the comprehensive comparative analysis of the risk assessment system, the assessment and processing time of the design system is relatively short, so the risk assessment efficiency is higher [7]. Considering multiple calculations, the student psychological health crisis counseling risk system involved in the paper is more practical [1].

4 Conclusion

At present, many students suffer from psychological problems, and these problems have brought a certain threat to the society. Therefore, in order to avoid the serious impact of the students 'psychological problems on the society, it is necessary to find out the students' psychological problems in time, and to prevent the psychological crisis. The purpose of designing the student mental health crisis counseling risk assessment system is about this.

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