Design of Information Medical Treatment Service Platform

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Abstract. In the design of information medical treatment service platform, which is patient-centered, information technology is used to connect waiting areas, doctors’ offices, payment collection offices, and medical technology departments. The touch screen and buttons are used to control the device, and it has a voice intercom function, which can conveniently realize the communication between various departments of the hospital. The information is transmitted wirelessly, and the receiving end can convert the information into voice information for convenient operation. It can be connected with a PC to establish a human-computer interaction action information service platform.

Keywords: Information Technology, Wireless Transmission, Human-Computer Interaction

I. Complete Scheme
The design uses a chip to connect the main line of the paper. When a medical visitor enters the hospital, he first performs electronic registration and sends the number to each department. After receiving the number, the patient goes to see a doctor[1]. After diagnosis, examination and treatment are performed, and finally the patient pays for medicine. According to the needs of the control system, control processing, data processing and signal processing are carried out. Its CPU core adopts Sunplus 16-bit microprocessor chip, which has strong information processing ability[2].

II. Design of Each System Module
According to the theoretical analysis of the system, the entire system is mainly composed of SPCE061A, voice intercom, image display, data transmission, power management, and external storage. The system can realize functions such as voice intercom[3], text voice output, data printing,
external storage, multi-channel control, etc. The system can be controlled and operated through touch screen and keyboard.

![Diagram of the System Hardware Structure]

**Figure 1.** Diagram of the System Hardware Structure

![Main Program Flowchart]

**Figure 2.** Main Program Flowchart

2.1 *Function of Touch Screen and LCD Display*

(1) It is easy to operate and can take manual records such as registration and medicine collection to shorten the process time\(^4\).

(2) It can directly visualize the recorded data, thus reducing the defects in manual recording. The schematic of the touch screen is as follows:
2.2 Sending/Reception of Data

Communication data is pulse coded. The so-called pulse coding means that each data signal is represented by a pulse\textsuperscript{[5]}. The pulse signals are modulated on a carrier with a duty cycle of 1/3 and a frequency of 38 KHz and then sent out. The modulated signals “1” and “0” are shown in Figure 4. This has two advantages:

(1) It can reduce the effective transmission time and help reduce the average power consumption. This is very important for circuits using rechargeable batteries\textsuperscript{[6]}. 

(2) External interference signals are mostly slowly changing signals, which is good for anti-interference.

2.3 Functions of Voice Intercom Module

(1) Strengthen the connection between various departments and form a local area network throughout the hospital through wireless transmission\textsuperscript{[7]}. 

(2) It is easy to operate and can be connected to the required department by voice.
(3) Not restricted by network or personnel.
(4) It can alleviate the local pressure of the hospital and arrange the doctors to the department where they go.

2.4 Functions of Voice/Text Conversion Module

(1) Through wireless transmission, the drug list is transmitted to the pharmacy in advance, and the text is converted into voice to prompt the required drugs\(^8\).
(2) Medicines can be prepared in advance to reduce the waiting time for medicines.
(3) The use of medicines at the prescribing office can be notified.

![Figure 5. Schematic Diagram of Text-Voice Conversion](image)

![Figure 6. Voice Recognition Circuit’s Structure](image)

III. Function of USB Module Set

It can upgrade the equipment.
It can receive external equipment to add other functions.
The external micro printer can print the plan of the hospital department and guide the doctor correctly.
The USB module wiring diagram is as follows:
Figure 7. Diagram of USB System Circuit

IV. Conclusion
By re-engineering the outpatient process, taking the patient as the center, and on the basis of changing the concept and changing the business strategy, information technology and the theory of operational process reorganization are introduced to re-integrate the existing bottleneck of the process[9]. This can change the service model, shorten the waiting time of patients, and increase the rate of hospital visits per unit of time to obtain better economic and social benefits.

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