

A Noble Identification System for Tumors and Implementation

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Abstract: - In this paper, we present a noble identification system for tumor and implement the proposed method in identifying the tumors X-ray data. First, based on the micro-control equipment, we design an identification system that owns the comparison function. The identification system owns the following attractive features: i. the identification system has high accuracy in comparison ability. If there is a slight deviation of a tumor, the identification system points out the coordinate of the tumor. This function of the identification system reduces the working time of the doctors and decreases the misjudging cases. ii. After the judgment of the X-ray data, the suspected tumors position was shown on the display board. We can also transform the patients' tumor data through the network. This special feature helps in group-doctors inter-meeting.

Key-Words: Micro-control equipment, Identification system, Network transmission, Tumors

1 Introduction

The busy life makes people neglect their own health. But now they are gradually conscious of being healthy. To maintain physical health has also become one of the most important issues. And to conduct physical examinations regularly is the best way for them to study the status of themselves. X-ray is just the essential part in physical examinations. It could be used to check whether there is any abnormal case in every part of the body. In origin, physicians diagnose X-rays directly with naked eye that they

discriminate between 2 X-rays. But some subtle changes are unnoticeable, which have to be carefully observed. In some general hospitals, a doctor has to examine 100-bit of patients in the morning. After implement the National Health Insurance, the surge in the number of out-patient has come out. If the physicians keep using the same way, the result will be decreased efficiency or even the misjudging cases. X-rays and issued by the message, only physicians can read, the family could not understand, and past medical treatment, patient referral to other hospitals, with their own to the original X-rays go north-south,

very inconvenient and delaying treatment. So in the paper, we designed the system to reduce the burden on physicians. The paper is organized in the following manner. Section 2 presents the system architecture. Testing operation procedure is given in Section 3. Section 4 provides the Simulation. We make a brief Conclusion in Section 5.

2 System Architecture

2.1 Scanners

2.1.1 Image scanning mode

16 color computer image, but the black-and-white X-ray colors, we will be closer to the computer in 16 colors of the X-ray color black, dark grey, grey, white four-color to color with a 16 to set the key link Technology [1] [2] [3] to the original performance of the X-ray shadow.

2.1.2 Part scanner

We design the system scan [4], the use of Y-axis stepper motor control, to strip the optical scanning machines, so X-axis plane of the scanner.

2.1.3 Scanner driver

Control command will be applied in the CONFIG.SYS file written DEVICE = C:\DISKSCAN\MINI400I.SY. DEVICE= C:\DISKSCAN\SJIIX.SYS

This correspondent necessary to boot load, without the load, the scanner will not start, as the scanner will not take action, that is, whether there is a view driver's load.

2.1.4 Scanning part

The system uses HP SCANJET II cx as the scanning device. The usage of optical scanners is to scan the color histogram 256, on 425*667 resolutions scanning, and every point with 1 byte capacity storage, an X-ray film should be 283K capacity to store.

2.2 Display part

8255: PPI short, the internal block diagram can be divided into three major parts, namely the CPU interface part A, part B group control, and I / O part.

2.2.1 Part of CPU interface

With 8-bit data buffer and the convergence of read / write control logic and data convergence for a buffer of energy (Enable) duplex control of the buffer gates, 8255A CPU and provide internal bus of information access path.

2.2.2 A, B control of the group

8255A internal divided into two groups, that is, Group A and Group B, the part of the control group could write the word control group (Control Word) to determine the I/O ports and the mode of operation of the direction of data transmission.

2.2.3 I/O part

Three sets of 8-bit I/O ports, A port (PA), B ports (PB), C ports (PC), where A port of Groups A and B ports belonging to Group B, C port the first half (PC7 ~ PC0) are Group B, and C port can be individually also as a complete 8-bit I / O ports.

2.3 Transmission

We use a modem for data transmission [5], data-that is, digital and analog computer world of the telephone network media. Ordinary telephone lines only transmission of audio signals, the computer can not be transmitted by the use of digital signals. Data for the work that is sent from the client computer to receive digital information will be converted to analog audio signals transmitted through the telephone line, the receiving end of the data received since the telephone line to analog audio signals, will be the conversion of digital signal , then pass computer, so can transfer and exchange information to achieve the purpose.

2.4 The scanning comparison part□

So by the scanners first two X-ray all the graphics files and then file for each data point code by comparison, the error will be larger than the location of three bands, to be marked special mark (on the system we designed, 256 bands on the computer for color layers, the test after that experience, typewriters or printed, the histogram will be more than 256 bands, and color level is less than 3 bands may have been in part caused by the scanning errors, it be ignored).

Repeatedly scan times, the most discriminator a special mark-intensive part (which may be the location of lesions), fuzzy theory, every punctuation to the straight distance between select the geometric center, then as a center, and the most remote of punctuation for the radius, Circle, and this circle that is representative of the representative of the scope of diseases.

2.5 Boarding part

8255A with the use of a computer interface hardware circuit, when the program to determine location of lesions, the computer will be a signal transmission 8255A (lesions in the body organs of the relative position), and will thus 8255A signal and then output to their relative organ name of the show should be light. However, as the output signal of the 8255A is a small voltage, not enough to show that light moves, therefore, by using opt coupler (4N25) as a switch, when 8255A drive to a voltage opt coupler, will move opt coupler so that the 12V power on, and then enable the transistor (2AS1015).

2.6 The modem enactment part

Computer information system sent a signal to the first buffer, and then sent to the remote modem, if the buffer is going at full load, data-informed computer systems that transmit data suspended until the buffer, while stock information faster, data-only notify the computer system will send out information. Usually for process control data can be divided into software and hardware in two ways.

(1) Hardware flow control that is the use of RS232 RTS and CTS signals for control.

(2) Process control software is sent XON 'or' XOFF 'control code to deal with them. And the use of the system software flow control, we will be described in the above section.

3 Testing operation procedure

The operation of the system to facilitate friendly and the principle of avoiding all the complicated procedures of the operation, even if the computer is never been involved in, you can easily control the system [6-8]. Operation flow chart shown in Fig. 1:

Step 1: various peripheral devices (such as modems, scanners...) for the power plugs connect, and open the power supply.

Step 2: Type the file into the system's operating mode.

Step 3: According to the functional requirements into different windows, and options can be.

3.1 A procedure of the proposed X-ray scanning

Proc.1 Entering menu select 'file operations'.

Proc.2 From the list of patients choose using the system of patients (if the new patients, please menu 'new file', type information).

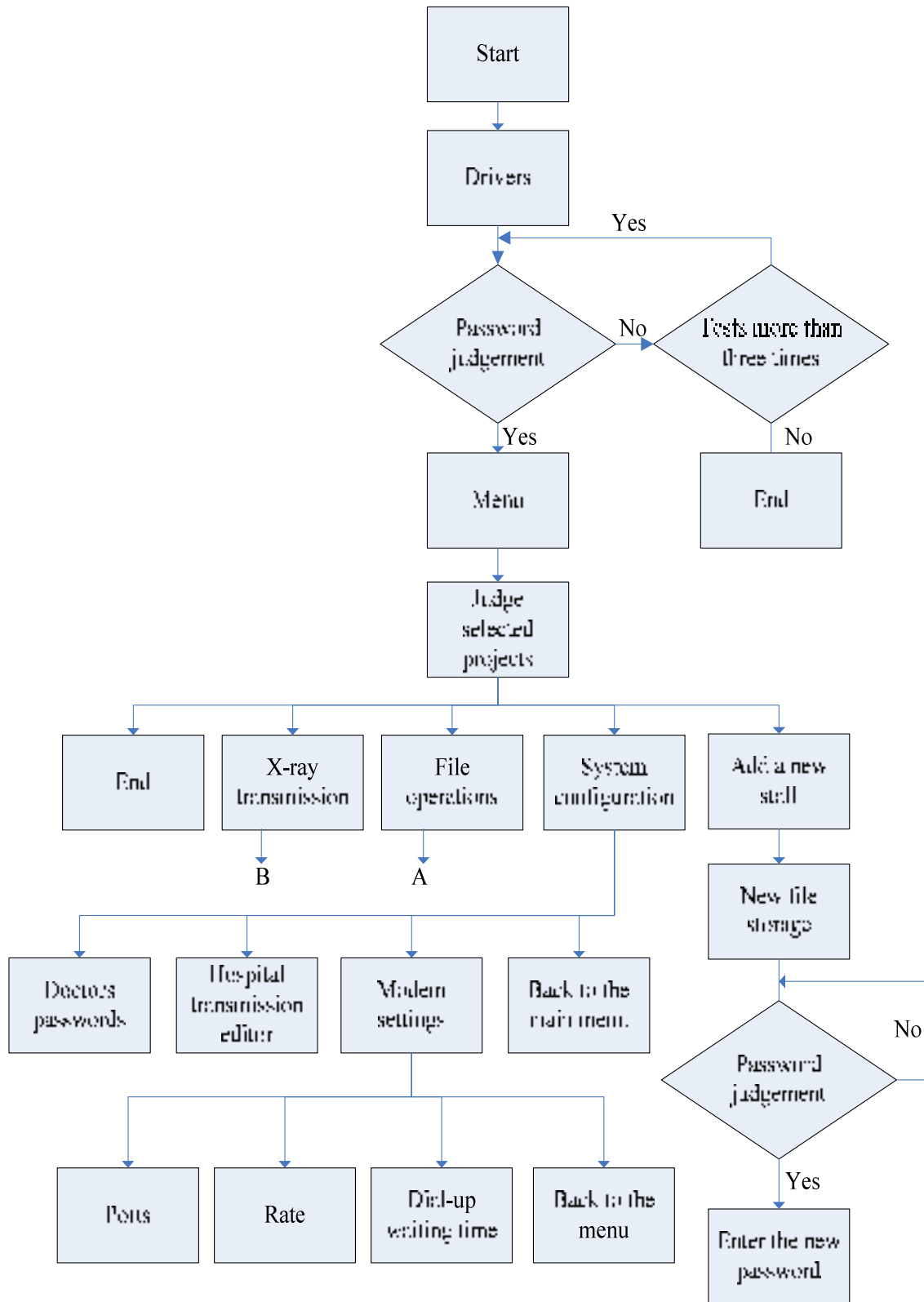
Proc.3 The selection of patients will be automatically entered to the operating menu.

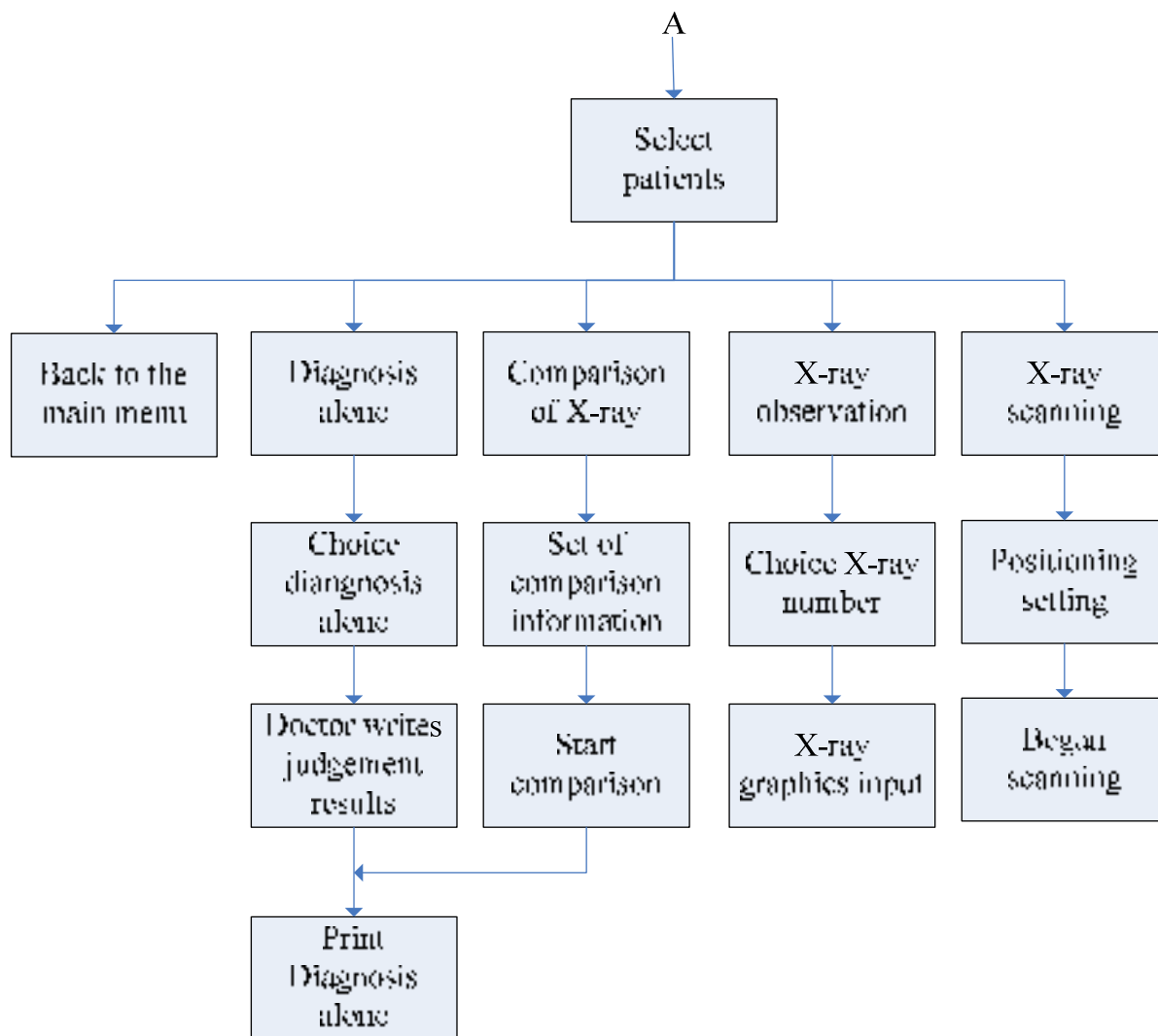
Proc.4 Select the 'X-ray scan' in the 'Start scanning'.

Positioning points can be set in accordance with the different habits of physicians and settings, its purpose is to make X-ray scan, a more accurate positioning.

Proc.5 Operating returns to the page on the menu, select the 'X-ray comparison'.

Proc.6 Selected base map reference and comparison chart code, you can choose 'more', began operations. Photograph shows usually normal date from the earlier examination.





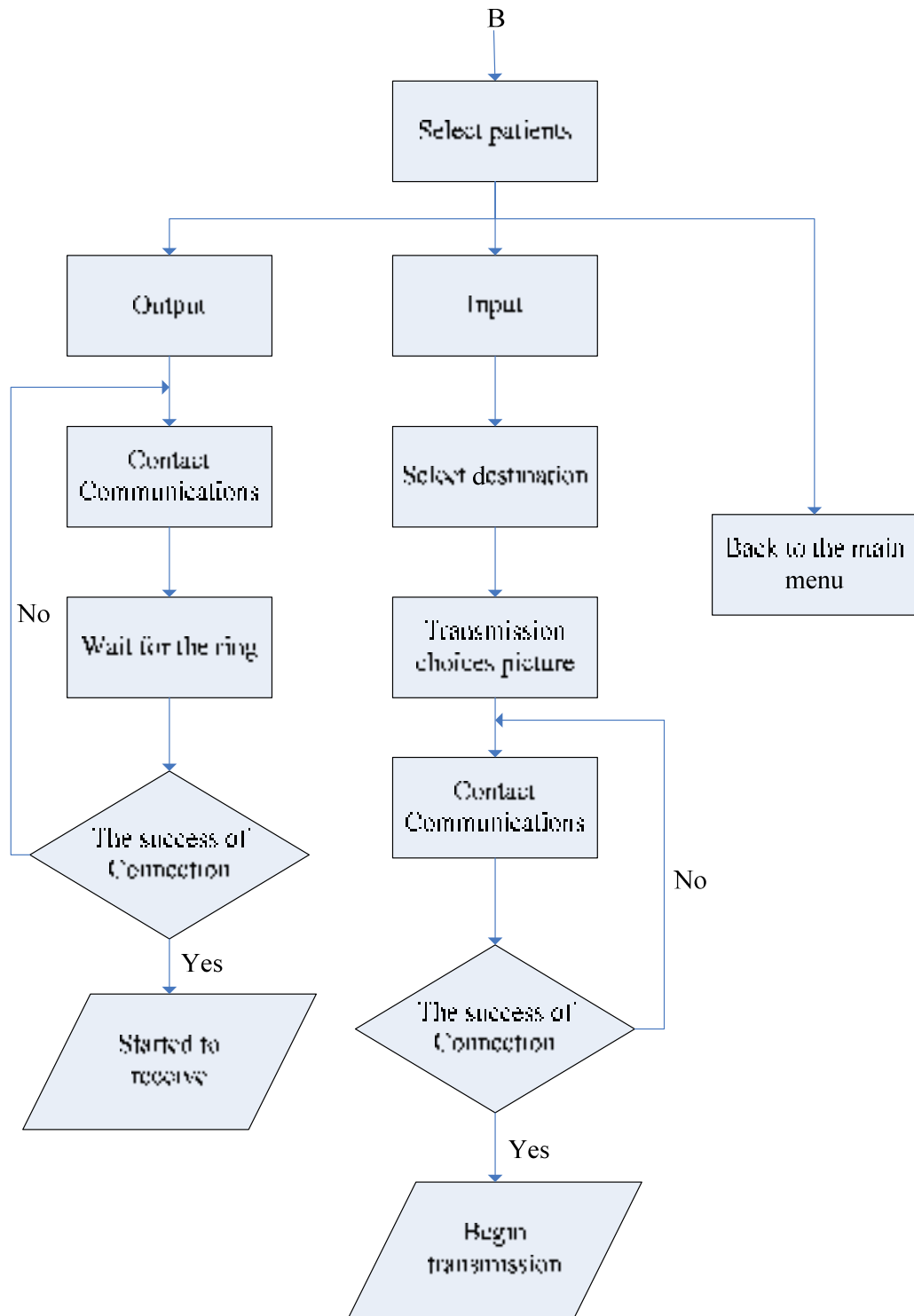


Fig. 1 The completely flow chart of the proposed “A noble Identification System for Tumors”

<p>Medical & slide tumor pathological change that a kind of network of connecting transmits</p> <p>Assistant does not do systematically</p>		<input type="checkbox"/> Normal <input type="checkbox"/> Abnormal				
Test	01 Frontal bone	02 A skull	03 Parietal bone	04 Above frontal bone	05 Zygomatic	06 Nasal bone
	07 Below frontal bone	08 External	09 Cerebrum	10 Cerebellum	11 Cerebellum	12 Nose cartilage
Reference	13 Acorn's apple	14 Gullet	15 Lymph	16 Carotid arteries	17 Right lung	18 Left lung
	19 Trachea	20 Left bronchia	21 Right bronchia	22 Gullet	23 Heart	24 Diaphragm
Body	25 Liver	26 Gallbladder	27 Bone	28 Intestine	29 Spleen	30 Small Intestines
	31 Prostate	32 Jejunum	33 Uterus	34 Transverse colon	35 Ovary	36 Transverse colon
	37 Spleen	38 Right nephron	39 Adrenal gland	40 Left kidney	41 Uterus	42 Bladder

Fig. 2 The figure panel of the proposed “A noble Identification System for Tumors”

Diagnosis of patients with single			
Name	A	No	00001
X-ray map benchmarks	A0001	X-ray Comparison Chart	A0002
Indications Physician	Patient A		
System Diagnosis	Normal		
Remarks	2004/12/1 Diagnosis single code DKNO-931201		

Fig. 3 The diagnosis of patient A

4 Simulation tests

Patients medicals X-ray data is related to the privacy of individual medical records, and therefore, not easily been achieved, we are very grateful to the first hospital in Tamsui provided a simulation environment for us to test the proposed design. The proposed “A noble Identification System for Tumors” after some testing as to the scanning, scans, through analysis, there will be some anomalies in the panel display, as shown in Fig. 2.

We made four tests, A, B, C and D; two years ago they go to the hospital for a health check. After detailed examination of its X-ray data are normal, and A, B, C and D of the X-ray codenamed A0001, B0001, C0001 and D0001.

CASE 1—A health check again, two years after the hospital examination, the doctor doing the same for its X-ray inspection, the computer scanned the results of output, and make a comparison with the normal data and find there is no abnormal situation. In Fig. 3 shows patient A of the X-ray diagnosis and we also can see from Fig. 2, figure panel of the proposed “A

noble Identification System for Tumors” shows the normal signals.

CASE 2—B health checks, a year after, and he feel illness, and then goes to the hospital for an examination; doctors using the proposed design to do the same for its X-ray diagnosis. It (Fig. 4) shows that the coordinate (232,323) with 0.7cm diameter shadow. Furthermore, in Figure 2, figure panel of the proposed “A noble Identification System for Tumors” did not show its normal signal, the coordinates (232,323) corresponding body parts. Left lung’s indicator has been seen the light on. But these will be further determined by the results of physicians in a professional doctor’s judgment.

CASE 3—C health checks again after two years of previous examination, and the doctor using the proposed design to do the same normal hospital examination by its X-ray inspection, the computer scan the results of output. It (Fig. 5) shows that the coordinate (35,413) with 0.5cm diameter shadow. Furthermore, in Fig. 2, figure panel of the proposed “A noble Identification System for Tumors” did not show its normal signal, the coordinates (35,413) corresponding body parts. Pancreas’s indicator has been seen the light on. But these will be further determined by the results of physicians in a professional doctor’s judgment.

CASE 4—D health checks again after two years, and the doctor doing the same normal hospital examination by its X-ray inspection, the computer scan the results of output. It (Fig. 6) shows that the coordinate (141,396) with 0.6cm diameter shadow. Furthermore, in Fig. 2, the figure panel of the proposed “A noble Identification System for Tumors” did not show its normal signal, the coordinates (141,396) corresponding to Body parts. Liver’s indicator has been seen the light on. But these will be further determined by the

results of physicians in a professional doctor's judgment.

Diagnosis of patients with single			
Name	B	No	00002
X-ray map benchmarks	B0001	X-ray Comparison Chart	B0002
Indications Physician	Patient B		
System Diagnosis	Coordinate [232,323], diameter 0.7 cm shadow of suspected tumors, should have a detailed inspection.		
Remarks	2004/12/3 Diagnosis single code□ DKNO-931202		

Fig. 4 The diagnosis of patient B

Diagnosis of patients with single			
Name	C	No	00003
X-ray map benchmarks	C0001	X-ray Comparison Chart	C0002
Indications Physician	Patient C		
System Diagnosis	Coordinate [35,413], diameter 0.5 cm shadow of suspected tumors, should have a detailed inspection.		
Remarks	2004/12/1 Diagnosis single code□ DKNO-931203		

Fig. 5 The diagnosis of patient C

Diagnosis of patients with single			
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Name	D	No	00004
X-ray map benchmarks	D0001	X-ray Comparison Chart	D0002
Indications Physician	Patient D		
System Diagnosis	Coordinate [141,396] diameter 0.6 cm shadow of suspected tumors, should have a detailed inspection.		
Remarks	2004/12/1 Diagnosis single code□ DKNO-931205		

Fig. 6 The diagnosis of patient D

5 Conclusion

We completed the design of the system, through the actual test, system functions in line with expectations. Our system has the following advantages:

- i. the identification system has high accuracy in comparison ability. If there is a slight deviation of a tumor, the identification system points out the coordinate of the tumor. This function of the identification system reduces the working time of the doctors and decreases the misjudging cases.
- ii. After the judgment of the X-ray data, the suspected tumors position was shown on the display board. However, these will be further determined by the results of physicians in a professional doctor's judgment. We also can transform the patients' tumor data through the network. This special feature helps in group-doctors inter-meeting. After numerous simulations the proposed system obtains some successful results.

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