

Ai-Dental Software Manual

1. Summary

Ai-Dental is the software component of i-Sensor H1/H2 and i-Scan, which is produced by Guilin Woodpecker Medical Instrument Co., Ltd. It runs separately on the Windows system and performs functions such as receiving image data from i-Sensor H1/H2 and i-Scan, as well as image processing.

System function overview

The Ai-Dental software consists of several modules, each performing a specific function to enable the case examination process and provide valid diagnostic image data.

Login module: Administrator registration, user login, automatic login, password remembering, etc.

Patient module: Register/modify/delete/view patient, image preview and image acquisition, etc.

Viewer module: Image preview and image processing, etc.

Report module: Add/delete/save/open report, etc.

Setting module: Basic system setting, clinic management, default processing algorithm setting, device management, staff management.

2. Working conditions

- Minimum computer configuration requirements:

CPU: Quad-core 3.0GHz processor

Memory: 8GB

Hard disk: 500GB

Graphics card: NVIDIA GT710

Display resolution: 1920 * 1080 and above

- Software environment:

Windows7, Windows8, Windows10

- Network conditions:

LAN is available, with client and server in the same LAN.

3. Software function

3.1 Software installation

3.1.1 The software installation package is stored in the U disk of the equipment box. Double-click the installation program, as shown in Figure 1:

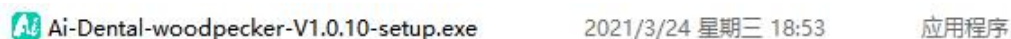


Figure 1

3.1.2 Select “Setup Language”, as shown in Figure 2:

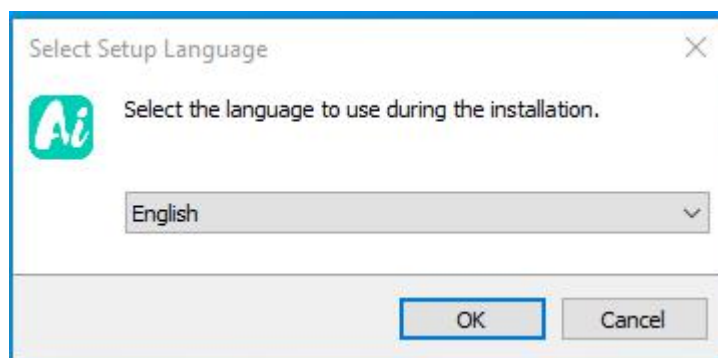


Figure 2

3.1.3 After the installation program is started, click the “Browse” button to select the installation path. After the path is selected, click the “Next” button, as shown in Figure 3:

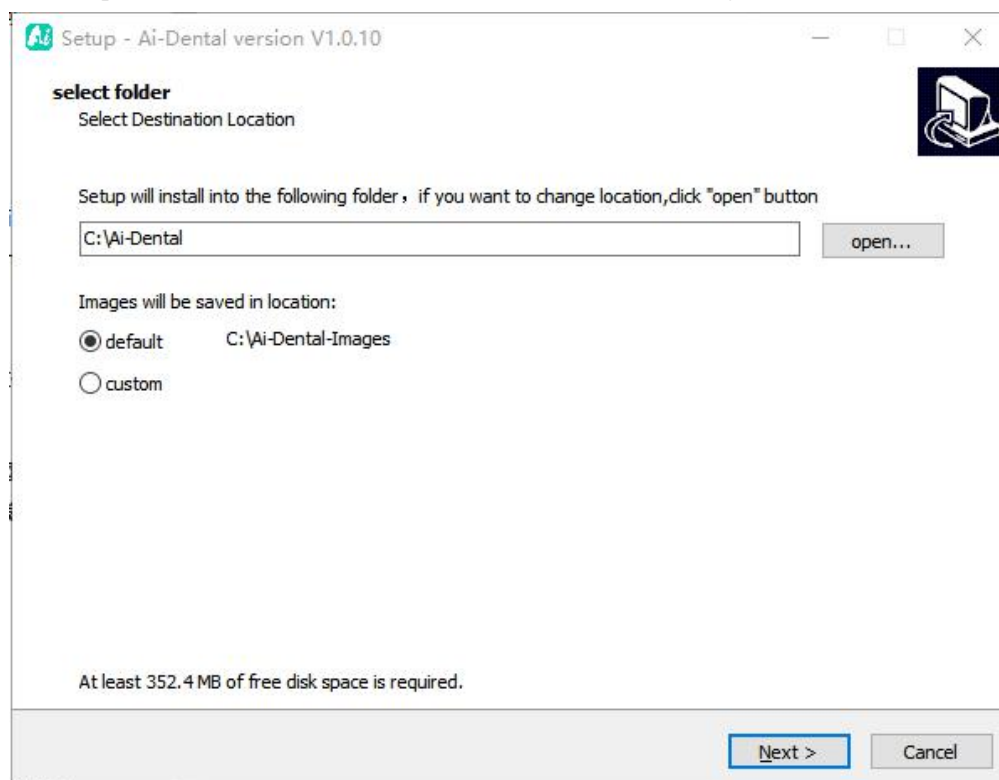


Figure 3

3.1.4 Read the software license agreement, agree to this agreement and click “I accept the agreement”, click Next to continue installation, disagree with this agreement and click “I do not accept the agreement” to exit the installation program, as shown in Figure 4.

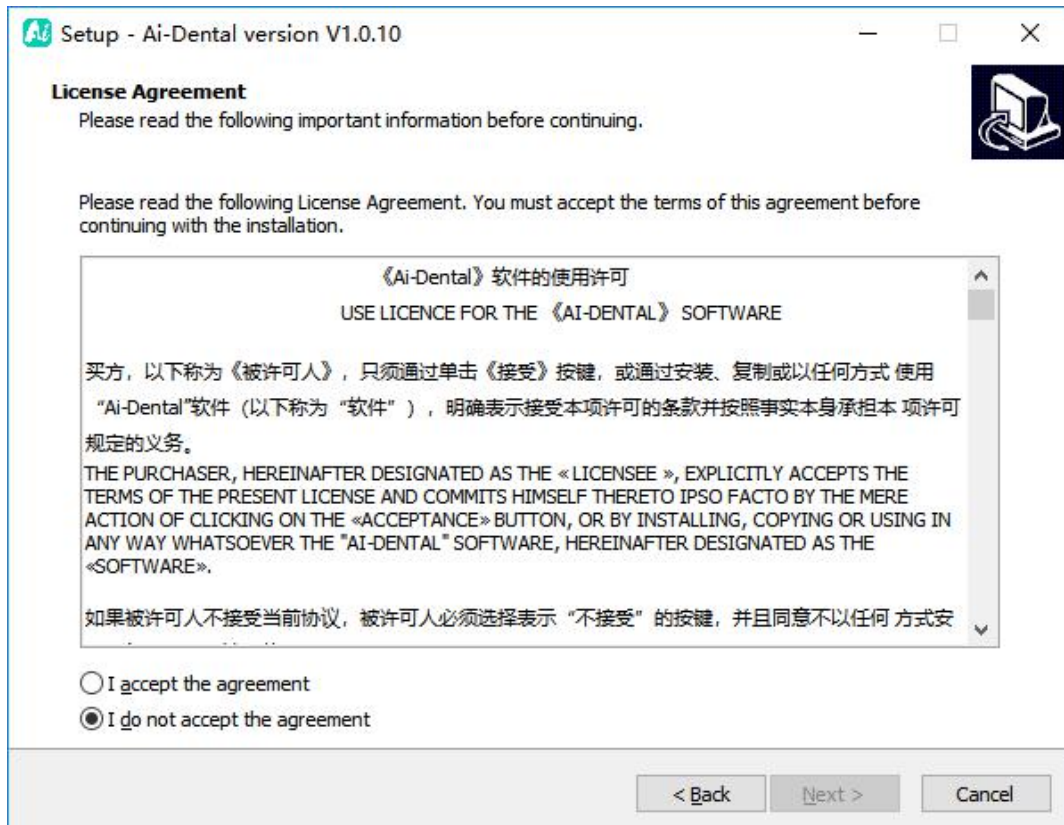


Figure 4

3.1.5 Select components. The user selects the corresponding component as needed, and then click the “Next” button, as shown in Figure 5:

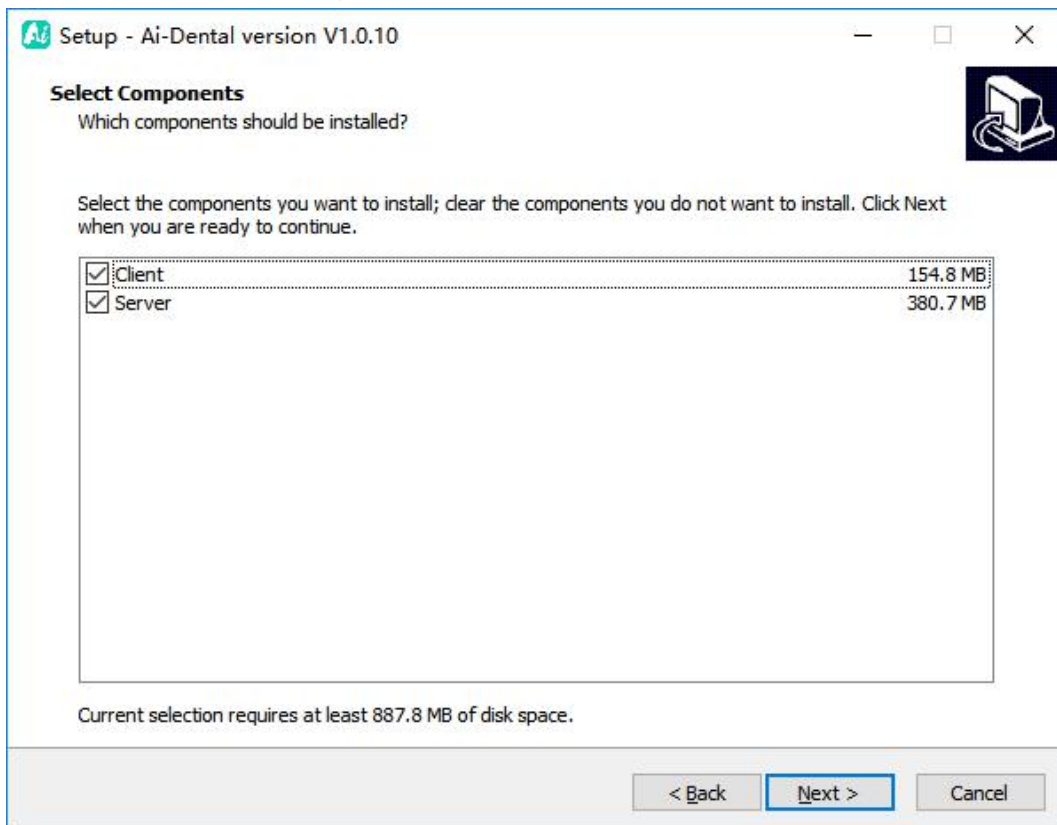


Figure 5

3.1.6 Set whether to create a desktop shortcut and server auto start, click the “Next” button after completion, as shown in Figure 6:

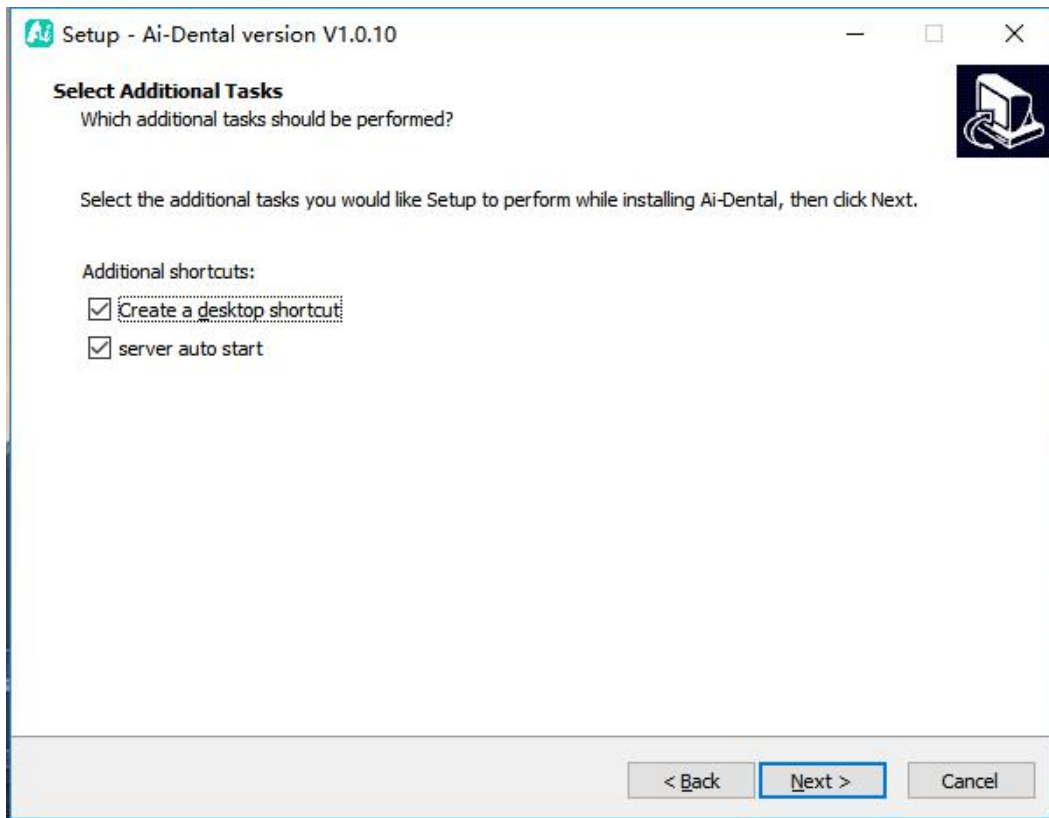


Figure 6

3.1.7 Click the “Install” button to start the installation, as shown in Figure 7:

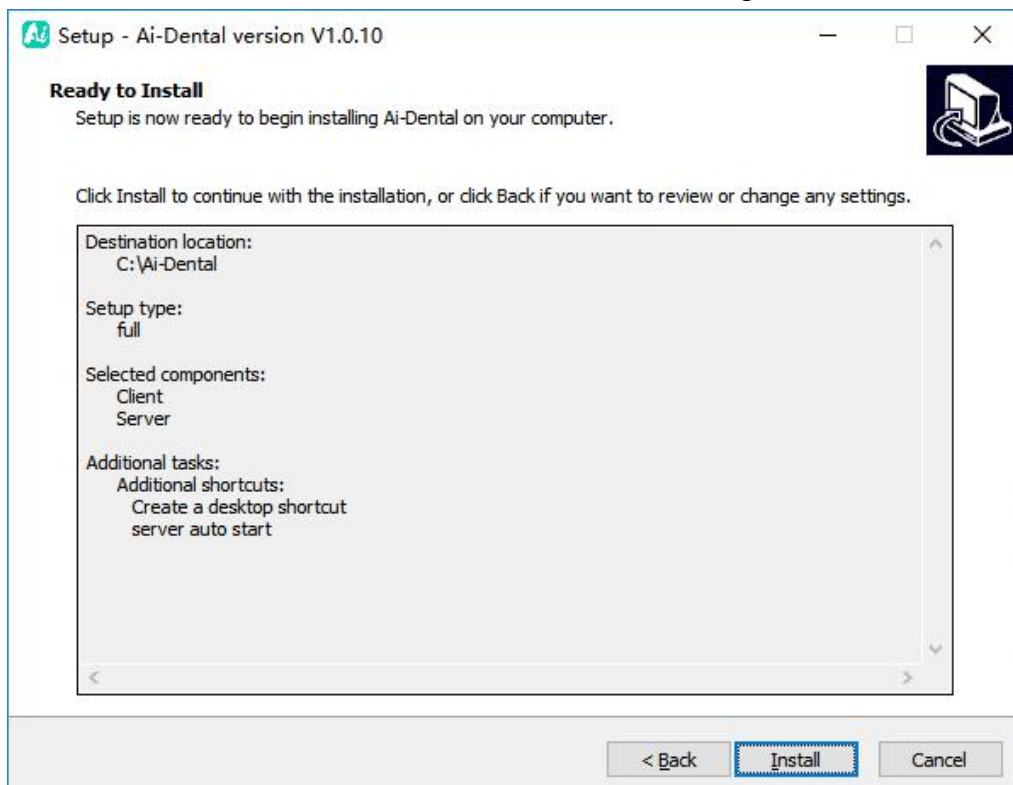


Figure 7

3.1.8 After the “Install” button is clicked, the program starts to install. The user just waits for the installation to complete, as shown in Figure 8:

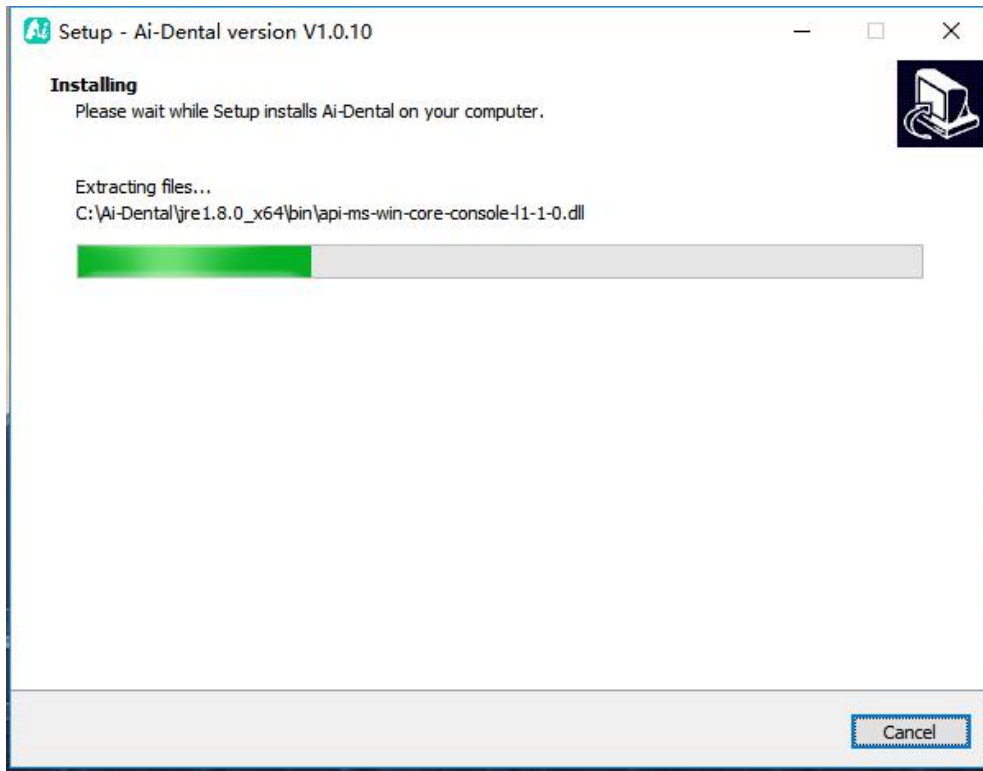


Figure 8

3.1.9 After the software is installed, click the “Finish” button, as shown in Figure 9:

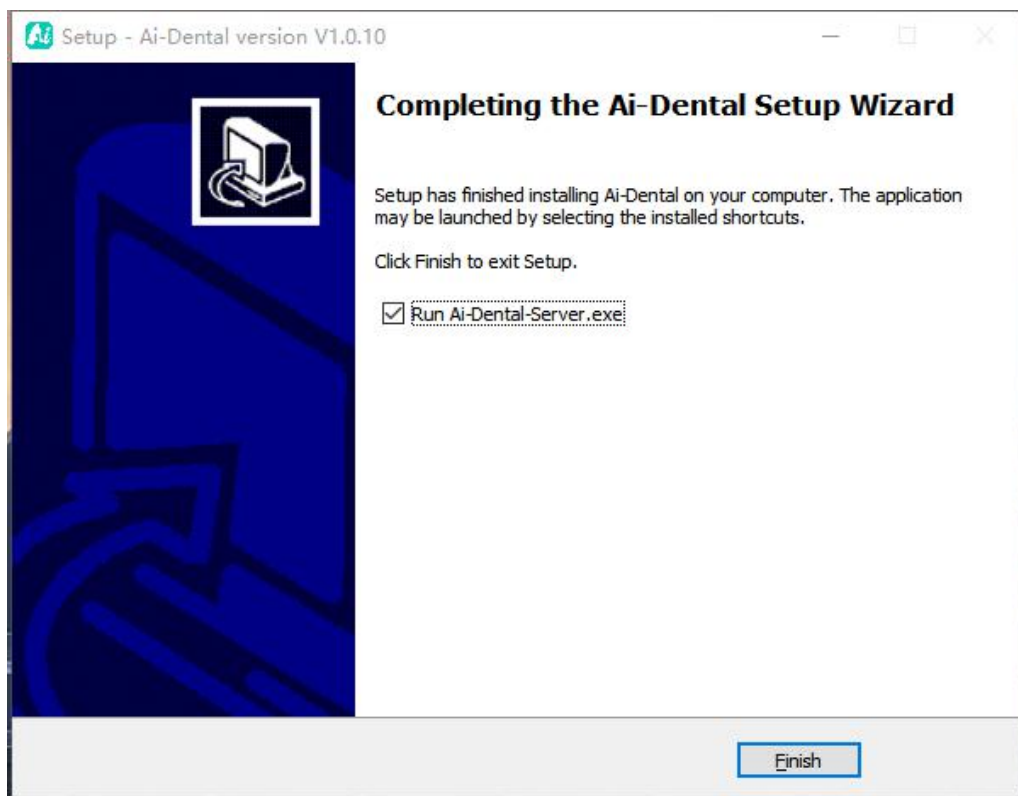


Figure 9

3.2 Login module

Double-click “Ai-Dental-Server” to start the server. After the server is started successfully (as shown in Figure 10), double-click “Ai-Dental-Client” to start the software and enter the software login interface (as shown in Figure 11). Enter the user name and password, and click the “Login” button to log in to the main interface, as shown in Figure 12.

The first time you use the software, you don’t have a user name and password, as shown in Figure 13. Click “Sign up for free” to register the administrator, as shown in Figure 14. Enter user name, password, confirm password, and other information to register successfully. Enter the user name and password in the login interface to log in to the main interface of the software. The administrator account has user management functions such as New User, Delete User, Modify User and Search User. Ordinary users do not have user management functions. For details, please refer to “3.6.6 Staff Management”.

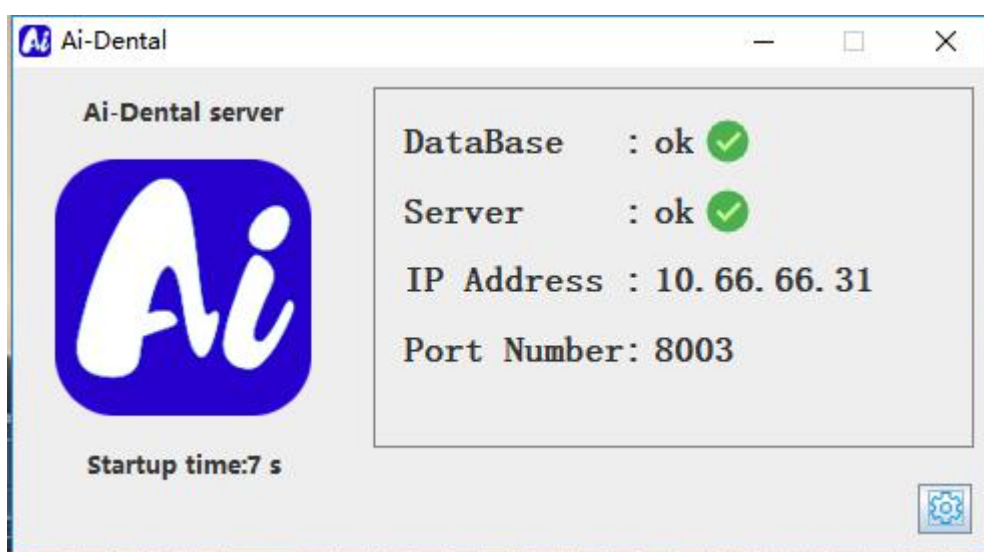


Figure 10

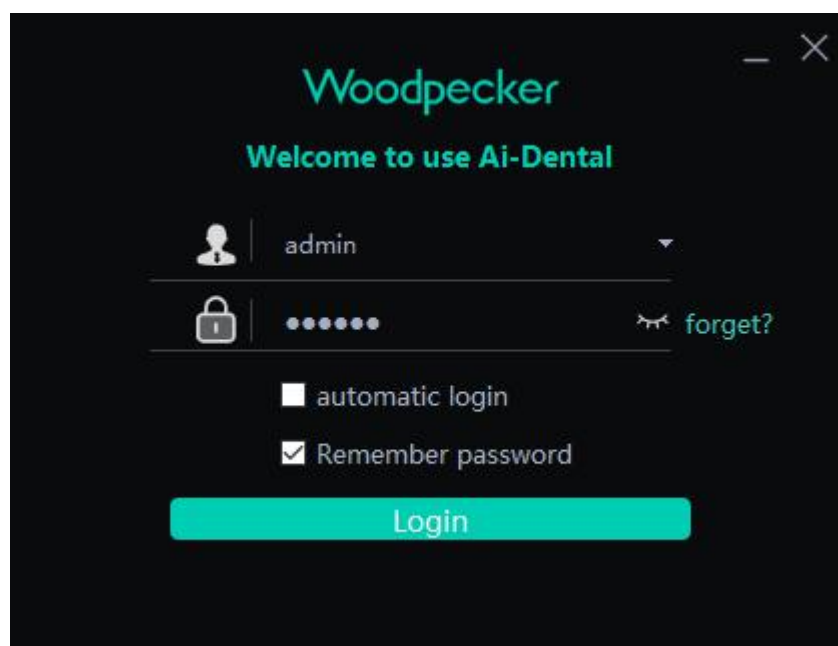


Figure 11

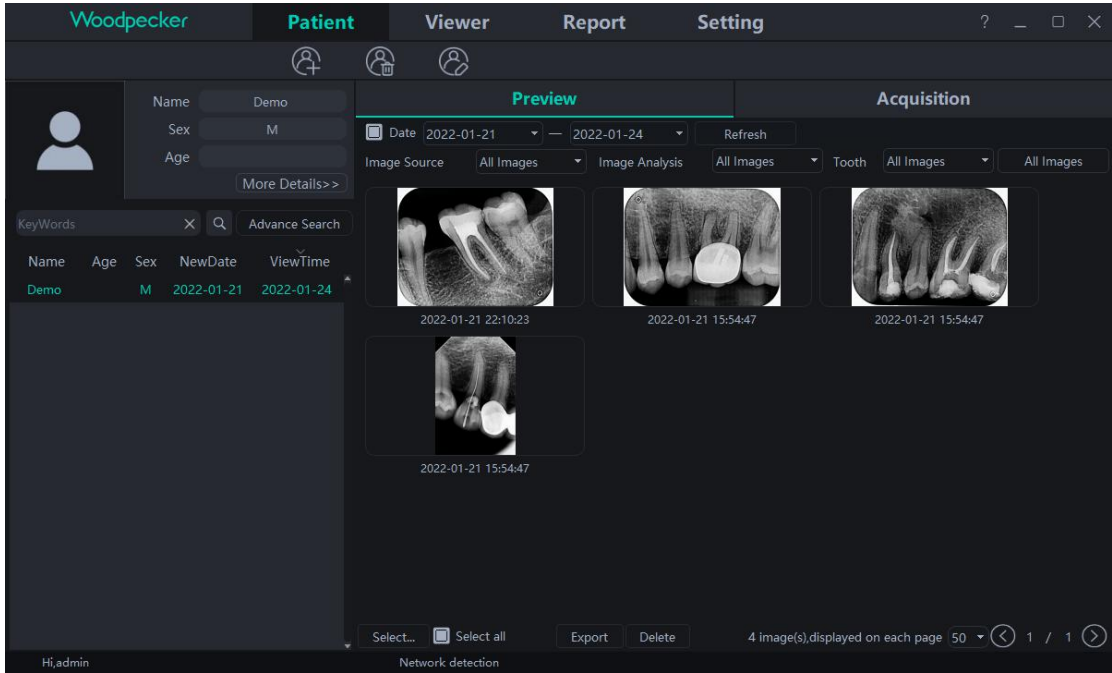


Figure 12

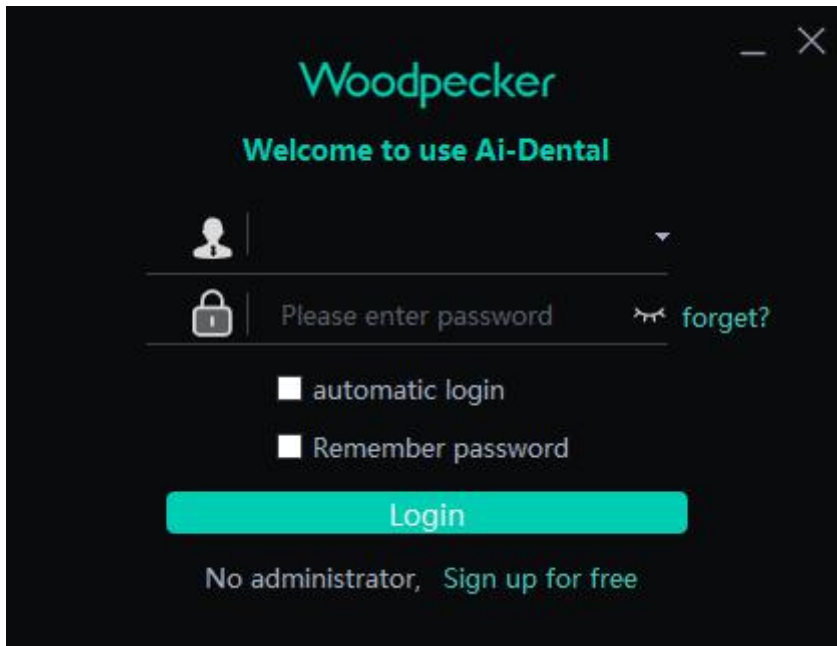


Figure 13

Registered Administrator

Username*

Login Password*

Confirm Password*

Staff ID

Gender* Male Female

phone

Position*

Department

Add Cancel

Figure 14

3.3 Patient module

Click the “Patient” button to enter the patient module.

3.3.1 Add, delete, modify and query patients

The patient toolbar is as shown in Figure 15. Click the “Add Patient” button to enter the information, click “OK” and a patient can be added, as shown in Figure 16. If you need to modify the patient information, click the “Modify Patient” button to modify the patient information. Click “Modify” and the modification can be successful, as shown in Figure 17. If you need to delete a patient, click the “Delete Patient” button and click “OK” after 3 seconds, as shown in Figure 18.

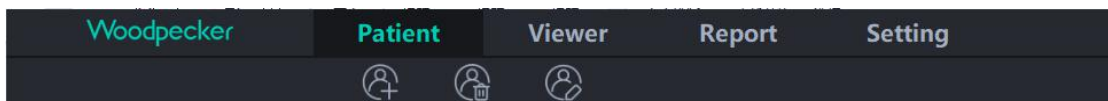


Figure 15

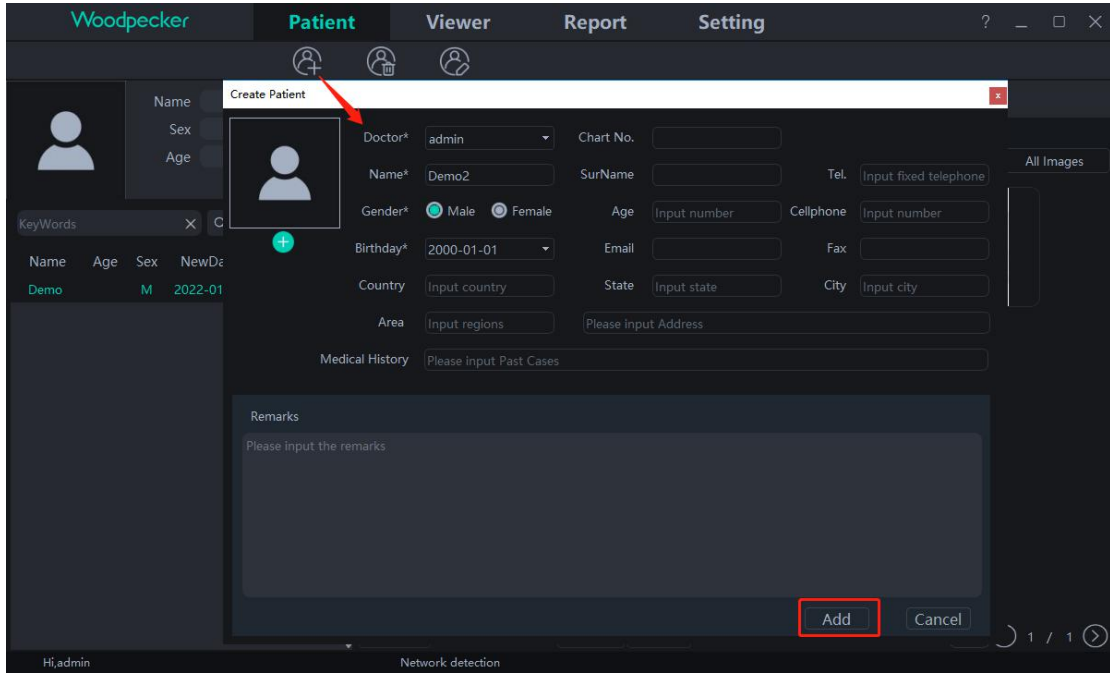


Figure 16

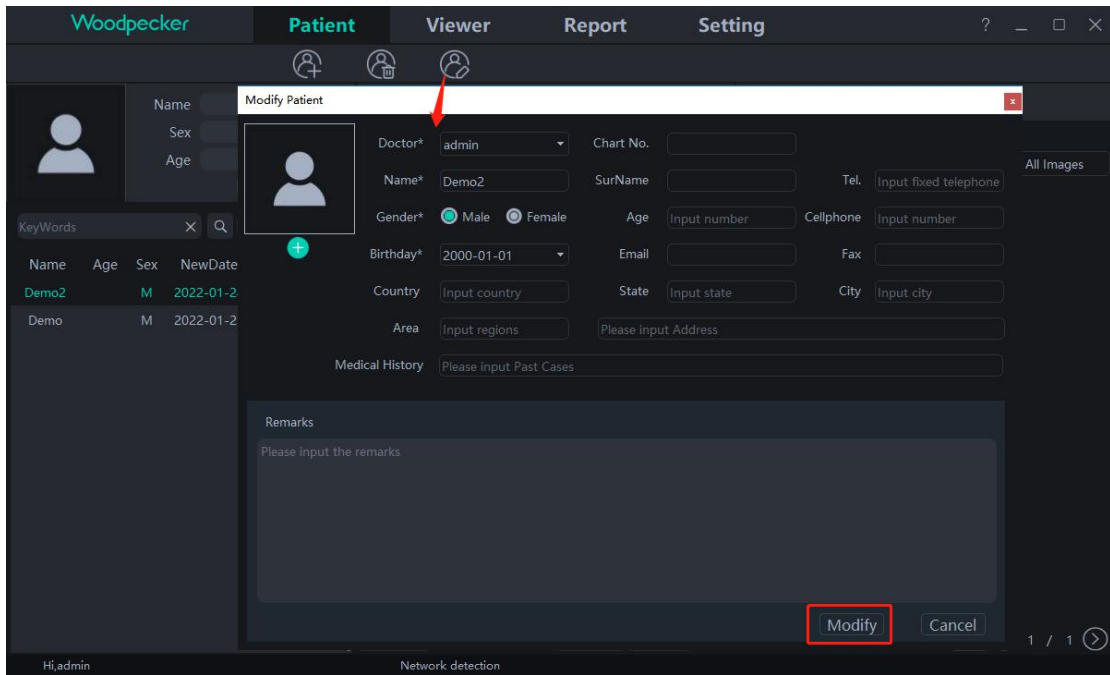


Figure 17

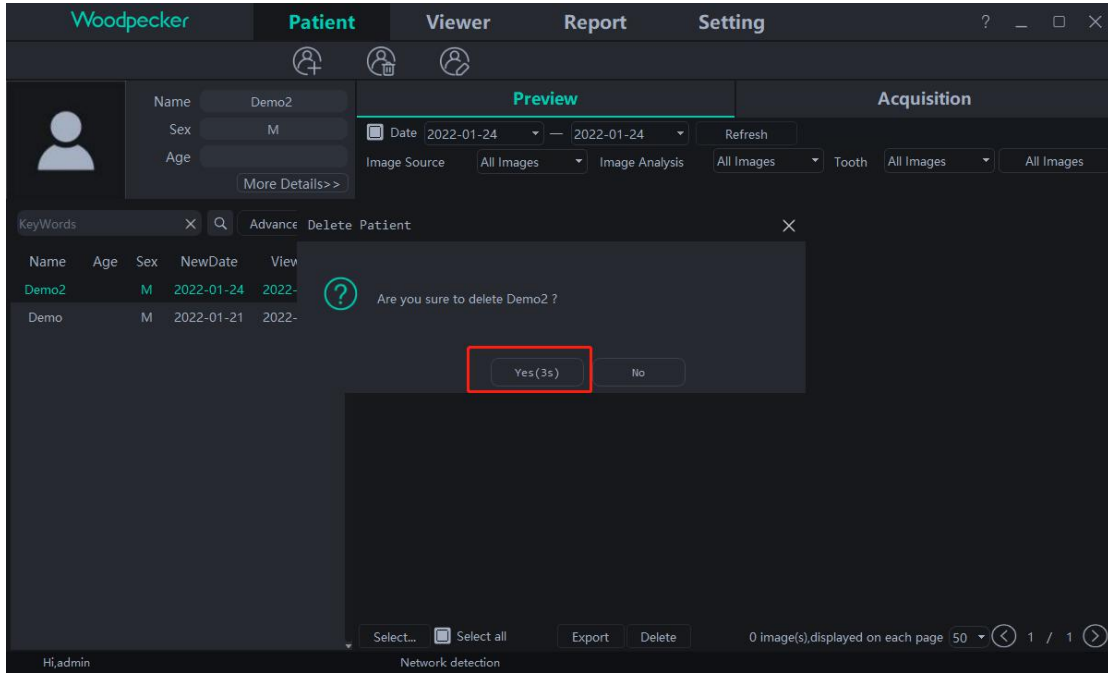


Figure 18

Select the patient in the patient list, as shown in Figure 19. The patient information is displayed on the patient information interface. Click “More Details” to view detailed patient information. Enter patient information in the search bar. Click “Advance Search”, enter or select information such as New Date, Age, Sex, and Doctor, and click the search button to query the specified patient. If you only want to view the patients created by the current user, select “Current User” in the Doctor option, as shown in Figure 20.

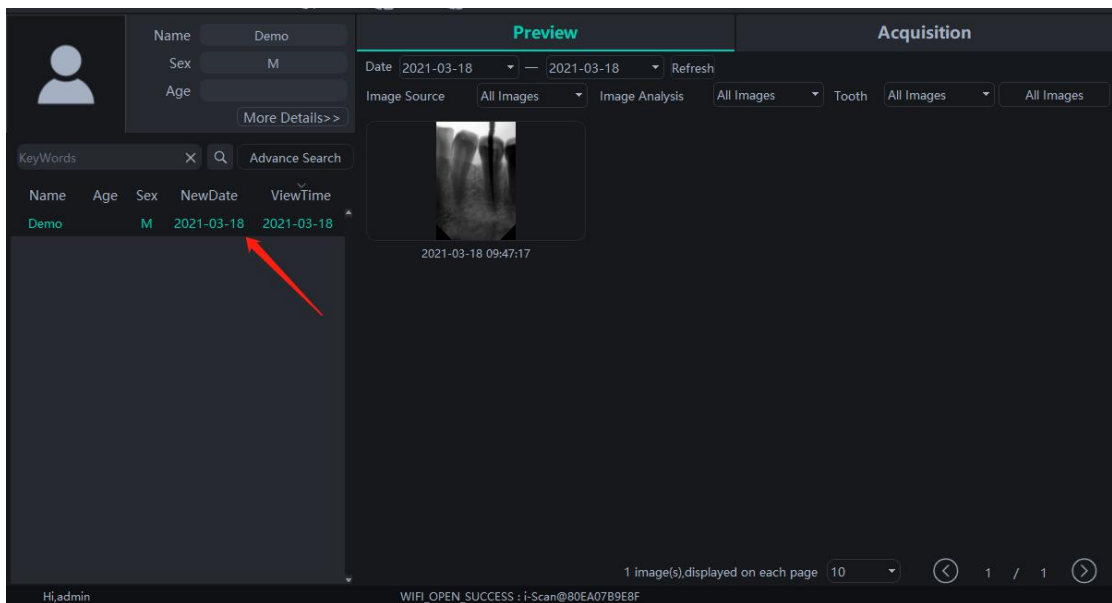


Figure 19

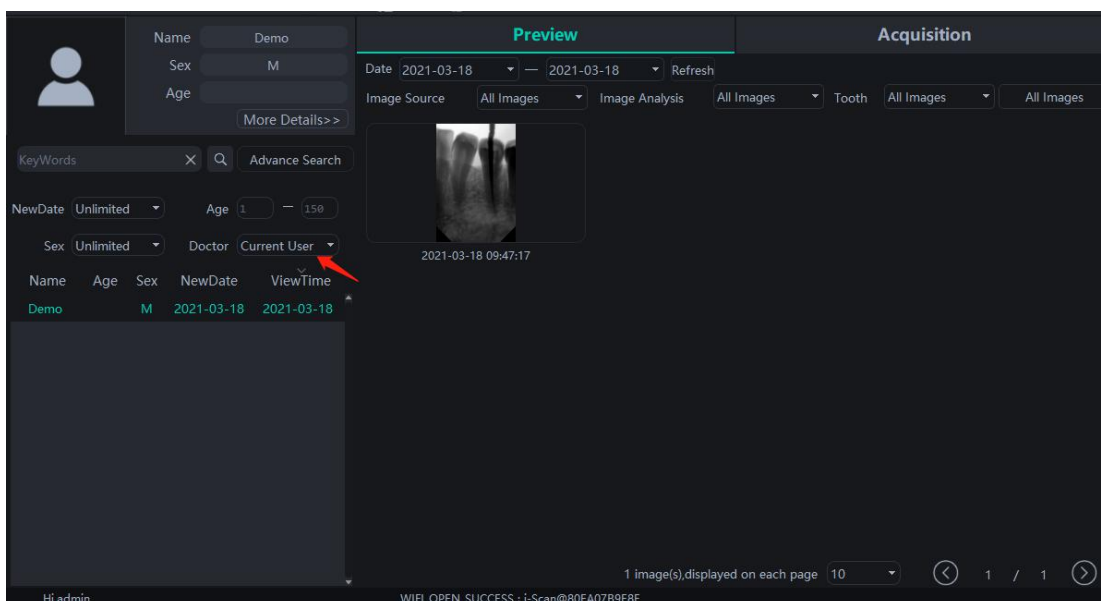


Figure 20

3.3.2 Image acquisition

Click the “Acquisition” button to enter the image acquisition interface.

Take the i-Scan acquisition as an example. After entering the software interface, the Wi-Fi name will be displayed in the software status bar. Click the “Acquisition” button, connect the i-Scan device to Wi-Fi, and select the “i-Scan” device type. When the device is connected, the IP address will be displayed under the device type. Click “Open”, the device will enter the acquisition state, and start to acquire images. As is shown in Figure 21:

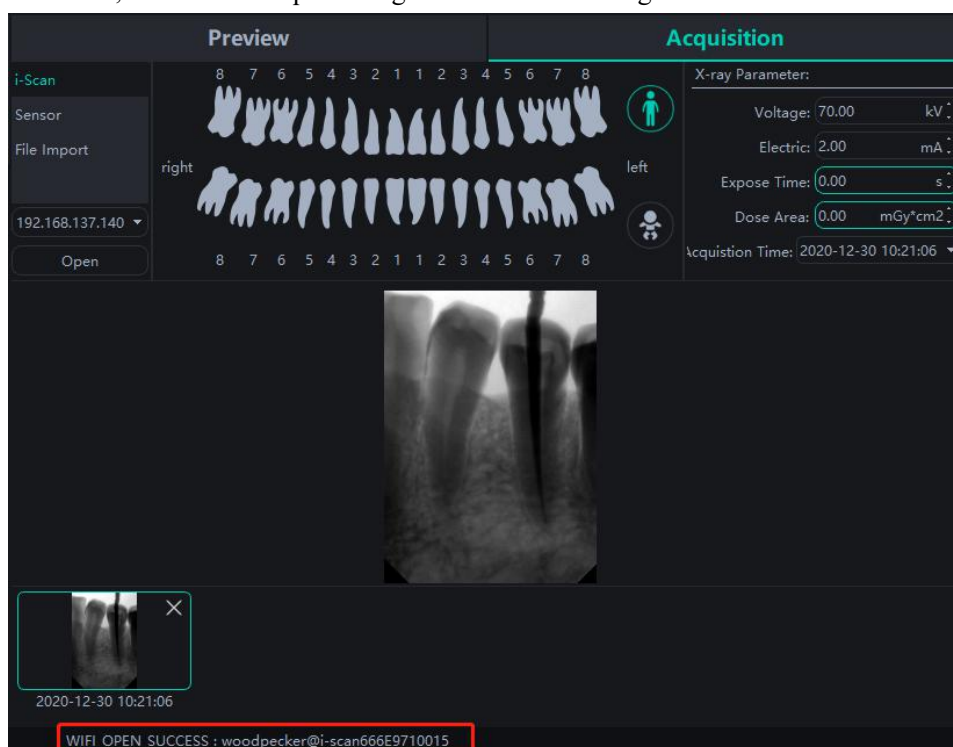


Figure 21

Take the sensor as an example. After entering the software, click the “Acquisition” button, connect the sensor device to the computer USB interface, and select the “Sensor” device type.

Click “Open”, the device will enter the acquisition state, and start to acquire images. At this time, the sensor serial number is displayed in the software status bar, as shown in Figure 22. When the sensor is used for the first time, the user will be prompted “Whether to download the calibration file through the network”. Click “Yes” to start the download; click “No”, the user will be prompted “Whether to manually import the calibration file”. Click “Yes” to select the calibration file to import. Generally, the image acquired by the sensor will be better after the calibration file is selected, as shown in Figures 23, 24.

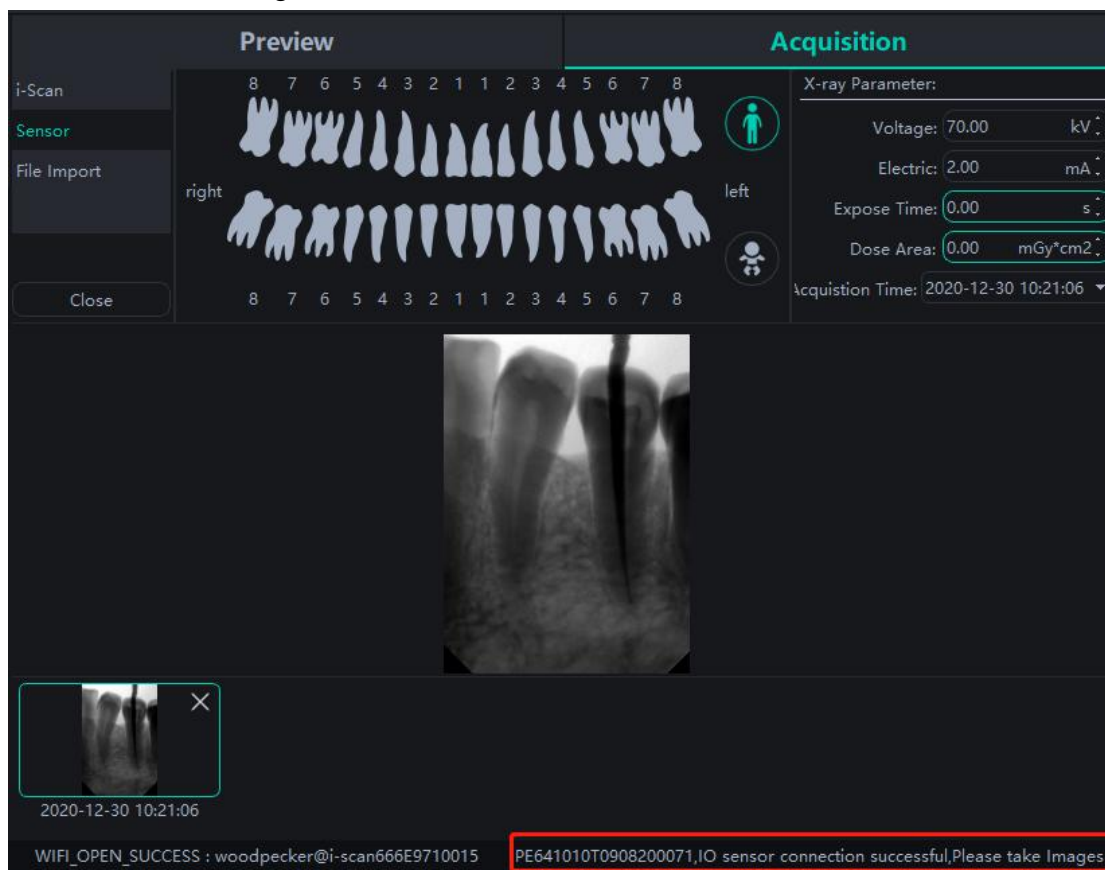


Figure 22

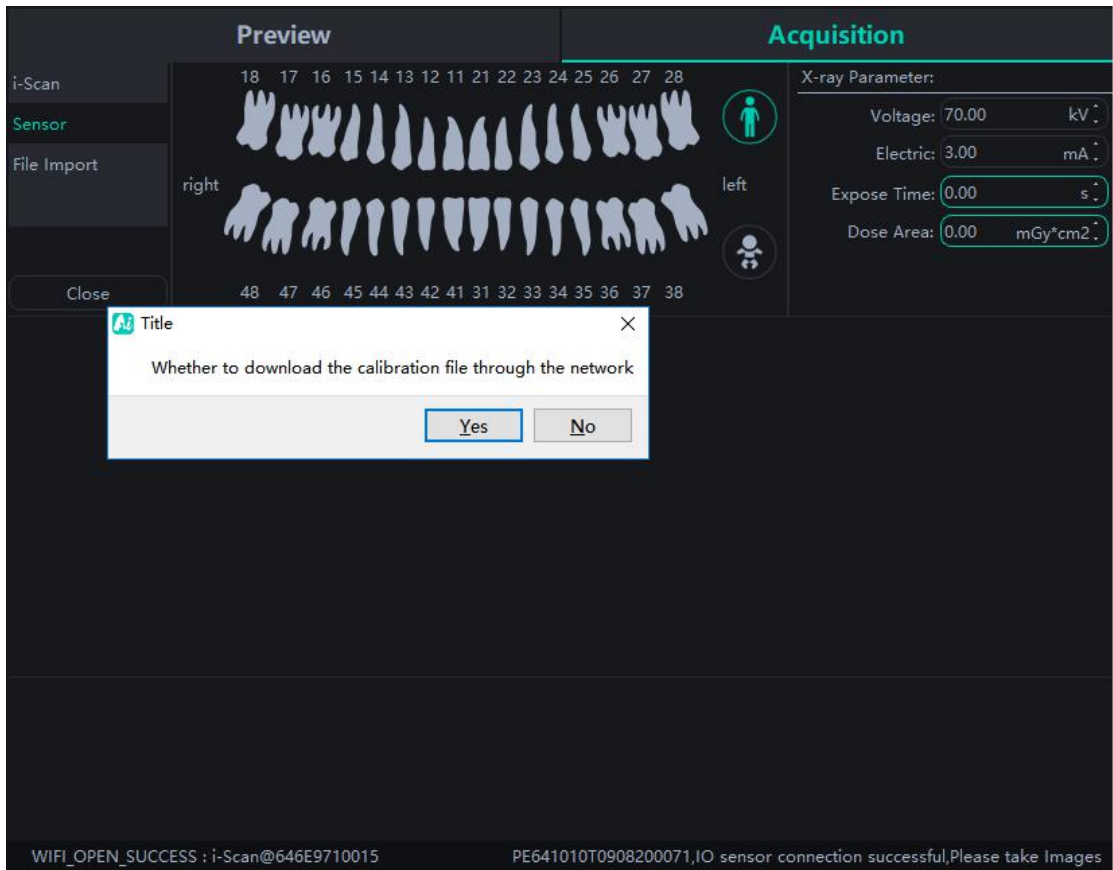


Figure 23

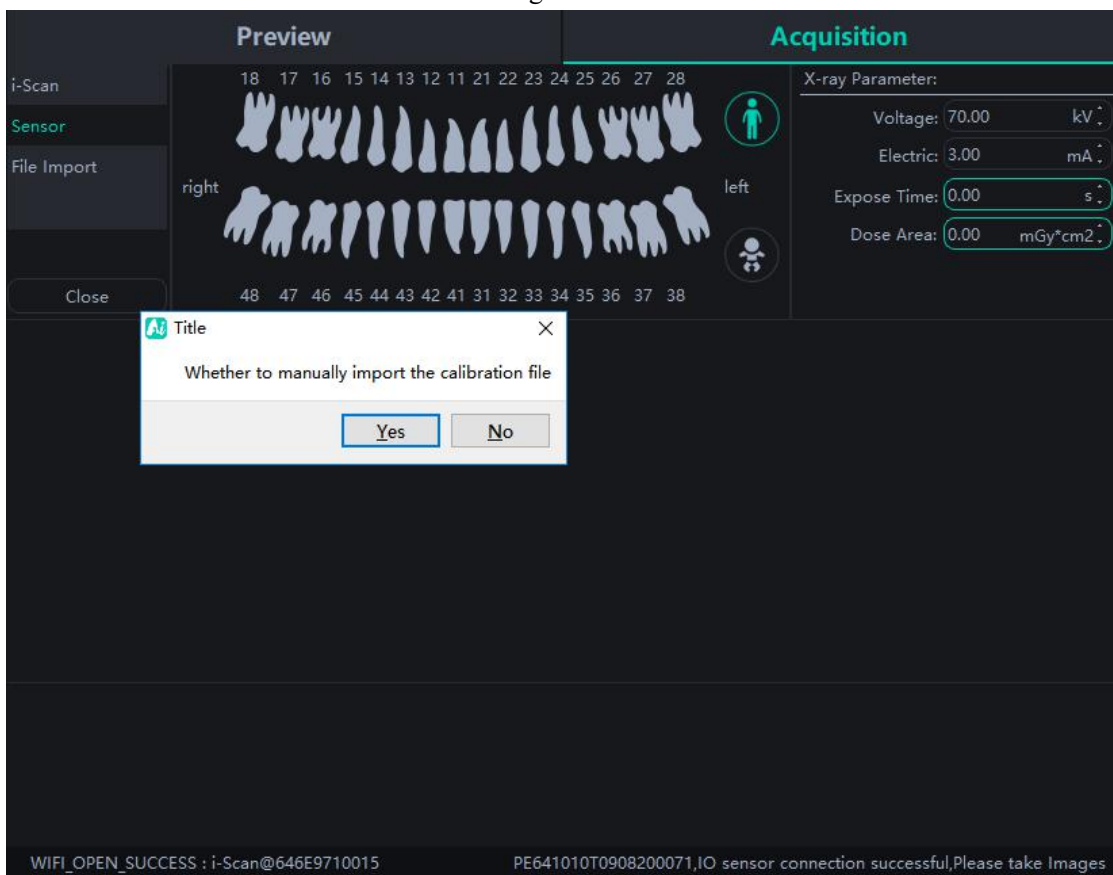


Figure 24

Take file import as an example. After entering the software, click the “Acquisition” button. Select the “File Import” device type and click “Import” to enter the image selection interface. The software supports the import of images in PNG, JPG, JPEG, BMP, DCM and other formats, as shown in Figure 25. After selecting the image, click “OK” to enter the “Import image” interface, as shown in Figure 26. You can select the target patient and shooting time for each image, and click “OK” to save the image to the specified patient.

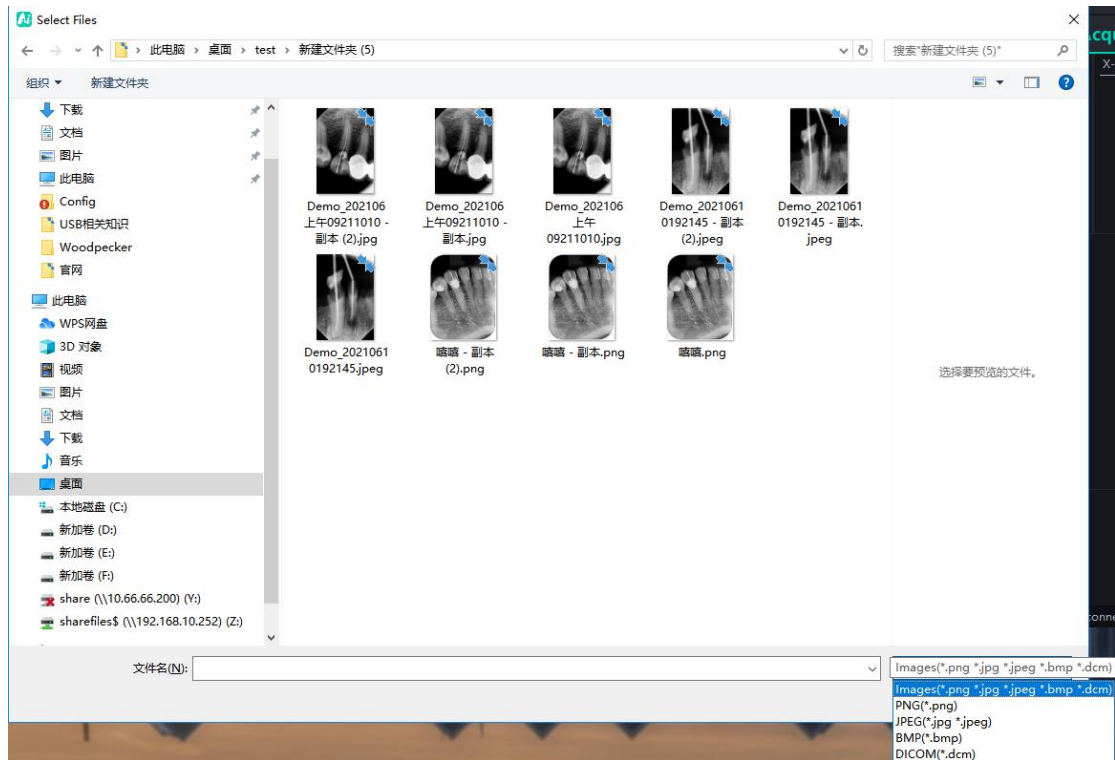


Figure 25

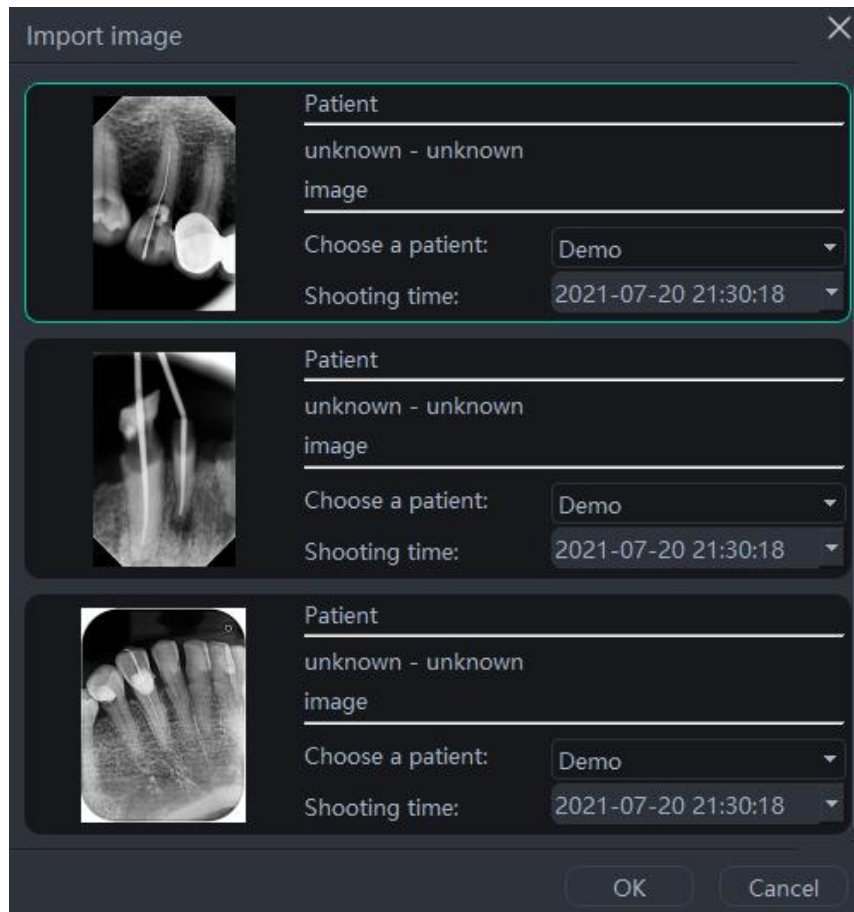


Figure 26

Take "Free Scan" as an example. After entering the software, click the "Acquisition" button. Connect the Free Scan device to the USB port of the computer, and select the "Free Scan" device type. After the device is connected, the device serial number will be displayed below the device type. Click "Open", the device will enter the acquisition state, and start to acquire images. As is shown in Figures 27 and 28.

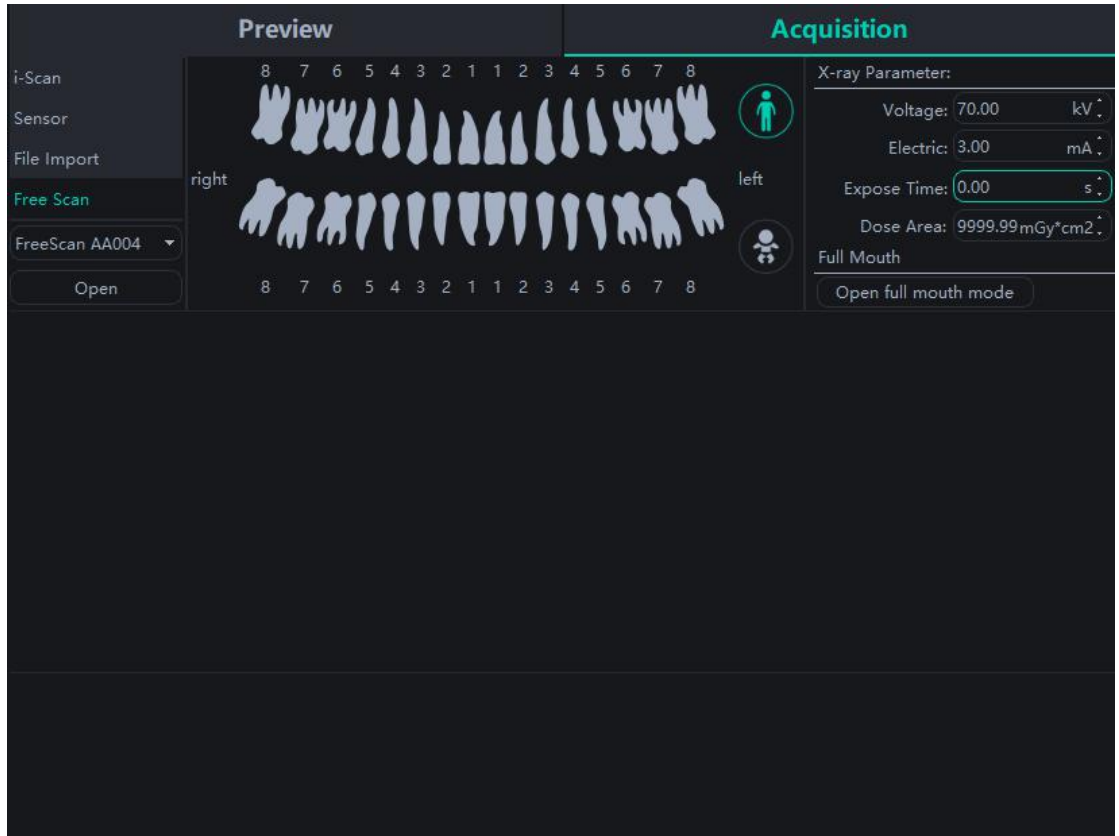


Figure 27

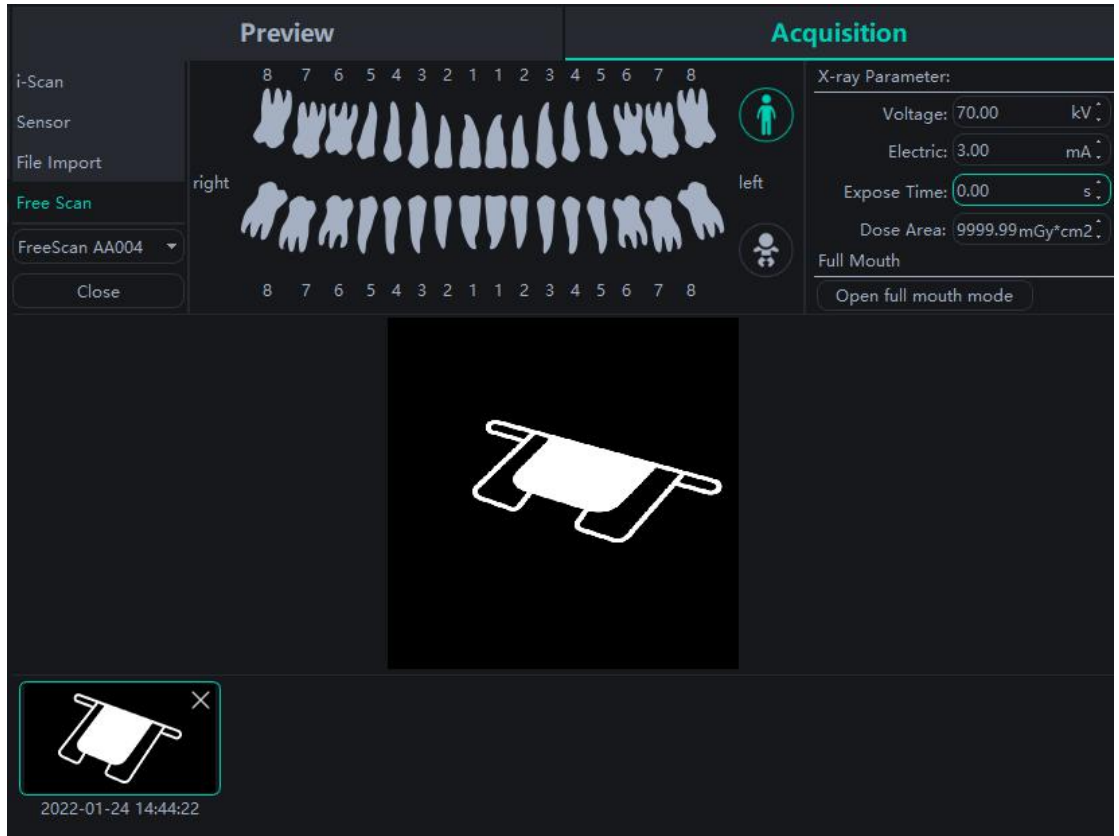


Figure 28

When the software is used for the first time, the user will be prompted to set the relevant parameters of the clinic's X-ray source. X-ray sources are divided into power frequency, medium frequency and high frequency. Select AC for power frequency and DC for medium and high frequency. The voltage and current are set according to the X-ray source parameters, as shown in Figure 29:

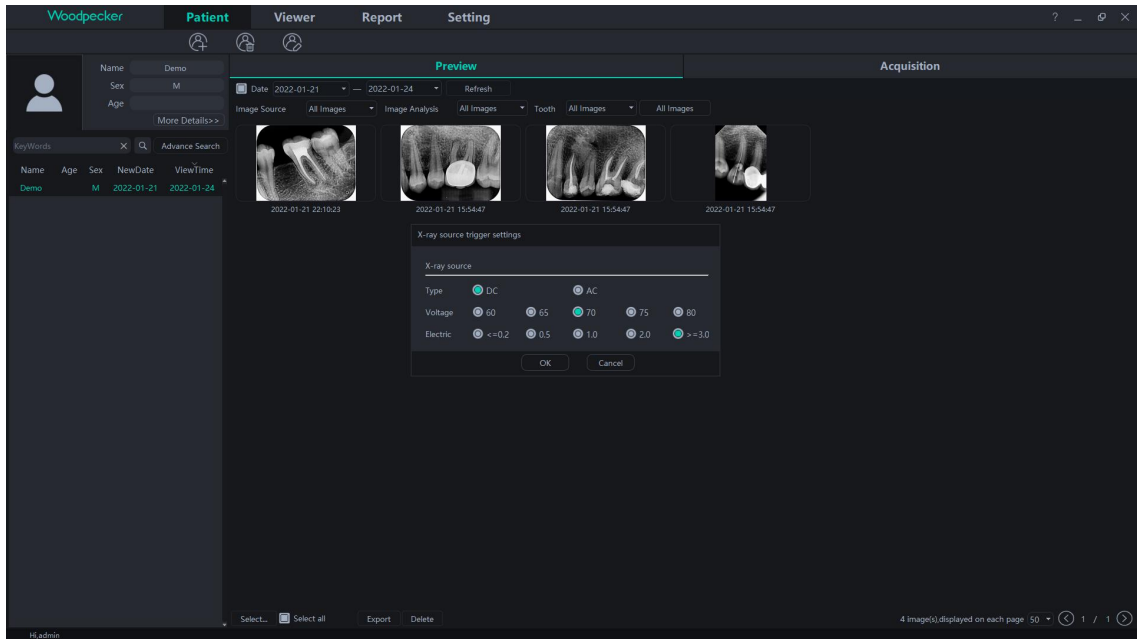


Figure 29

During the acquisition, problems such as network instability may be encountered, resulting in the failure of image saving. In this case, there is an image saving failure mark in the lower right corner of the image. Right-click the image and it can be exported to local and saved again, as shown in Figure 30 and Figure 31.

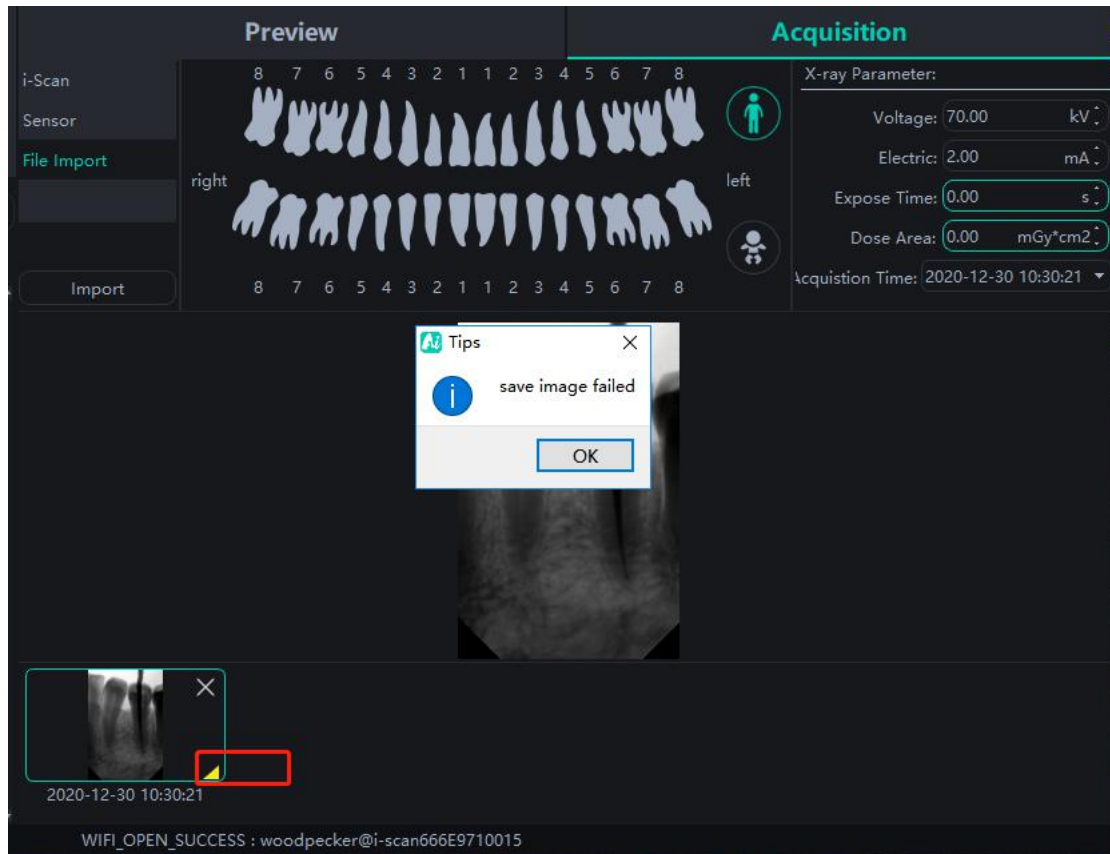


Figure 30

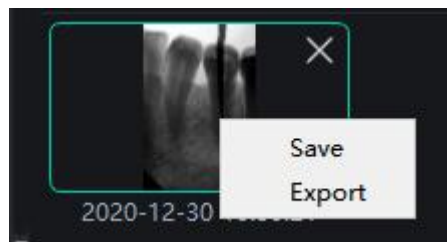


Figure 31

3.3.3 Image preview

Click the “Preview” button to view acquired images. Select an image, right-click and select “Export” to export the image to the local. Select “Information” to view the information of the image. Select “Delete” to delete the image after the user confirms to delete. Double-click the image to enter the viewer interface. If you want to delete or export multiple images, you can click “Select...” to select the images you want and then export or delete them. As is shown in Figure 32,33:

The image preview interface has filter image functions such as Date, Image Source, Image Analysis, Tooth Profile, All images, etc. Click the “Refresh” button, and the software will synchronize the latest image data of the patient and display it in the image list.

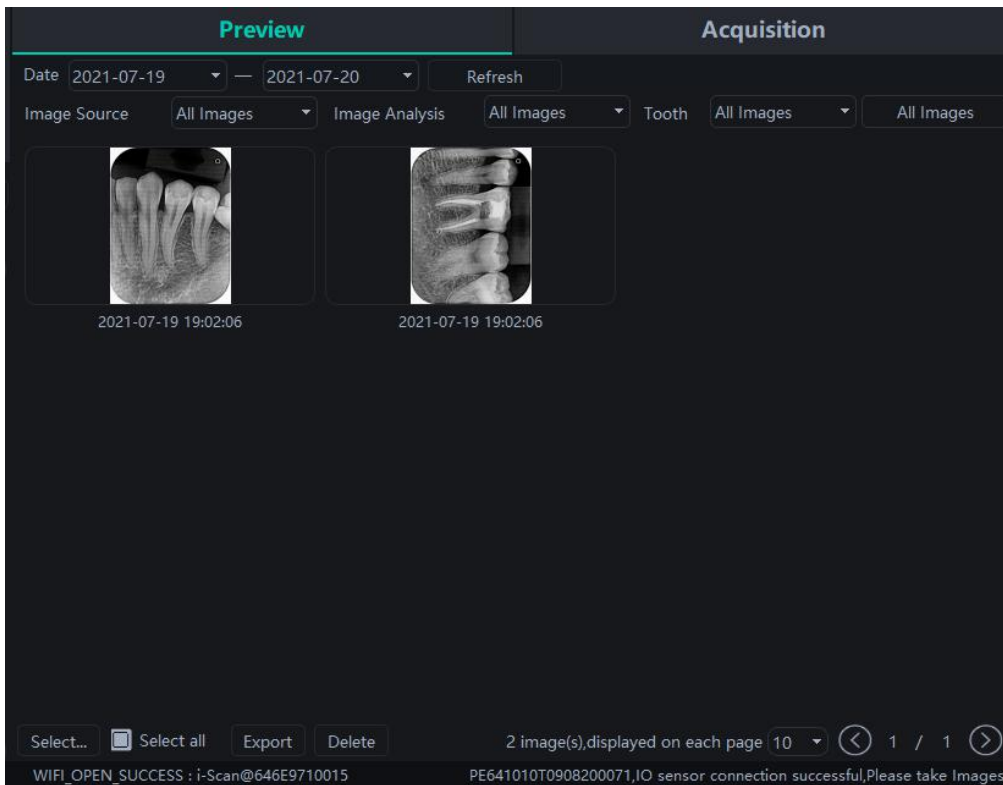


Figure 32

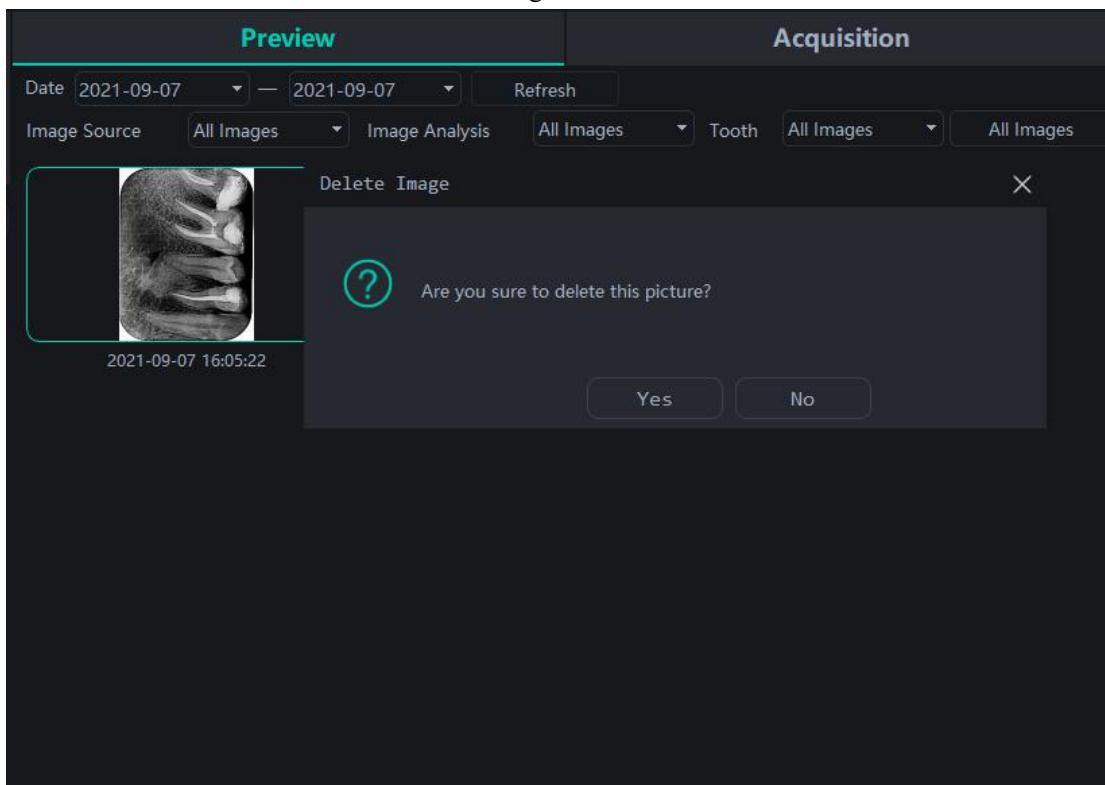


Figure 33

3.4 Viewer module

Click the “Viewer” button to enter the viewer module.

Click the image on the left to select an image to be processed. There are image processing tools on the right side of the viewer interface, such as Display, Image Correction, Measuring, View,

Enhance, Sharpening, Histogram, Annotation, etc. Select the image processing tool and adjust the image quality to a satisfactory level. In the Enhance, click the “HD” button and the image will be enhanced. Click the “HD” button again to cancel the enhancement.

Use image processing tools to adjust image quality. Click the “Add Temporary State” button to save the image quality at this time. Select the temporary state in the drop-down box to reproduce the image.

There are delete, export, and image information functions above the processed image. These functions are similar to the corresponding functions of the patient module. When multiple images are selected for processing, click the “Clear” button to close them all.

Move the mouse wheel up and down to zoom in and out of the image. Hold down the right button and move the mouse up to increase contrast, move down to decrease contrast, move left to decrease brightness, and move right to increase brightness.

Select an image, and click the linear measurement icon (or angle measurement icon) in the Measuring. Click the left mouse button to form the starting point and move the mouse. Click the left mouse button again to form the end point and right-click the end point to end the measurement. The measurement line will be displayed on the image, and meanwhile the corresponding annotation of the measurement line will be displayed in the Annotation, as shown in Figure 34:

For images acquired by File Import, TWAIN, etc., the measured value may be inaccurate, and can be calibrated through the calibration function. Select the measurement line, enter the actual length of the measurement line in the Measuring, and click the “Modify” button to perform calibration.

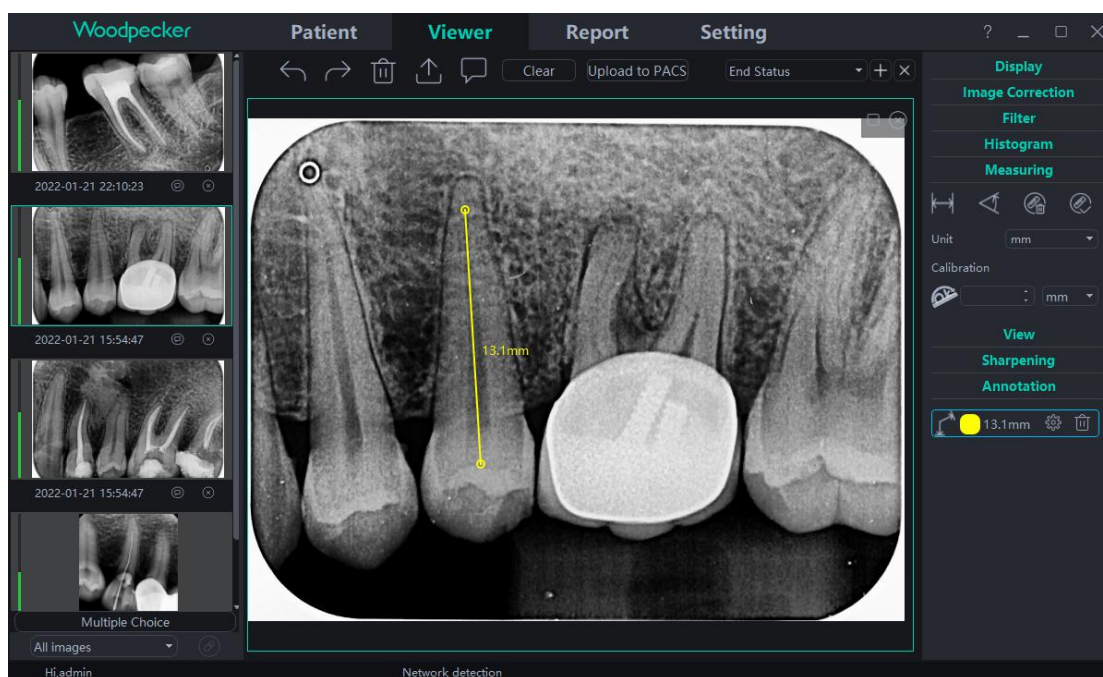


Figure 34

The dose of the image taken by our imaging plate scanner (i-Scan) and digital intraoral X-ray imaging system (sensor) will be displayed on the left color column in the preview image on the left side of the viewer module. Low and red column indicates that the dose is too low; orange and relatively low column indicates that the dose is relatively low; green column indicates that the dose is appropriate; orange and relatively high column indicates that the dose is relatively high;

red column indicates that the dose is too high, as shown in Figure 35:

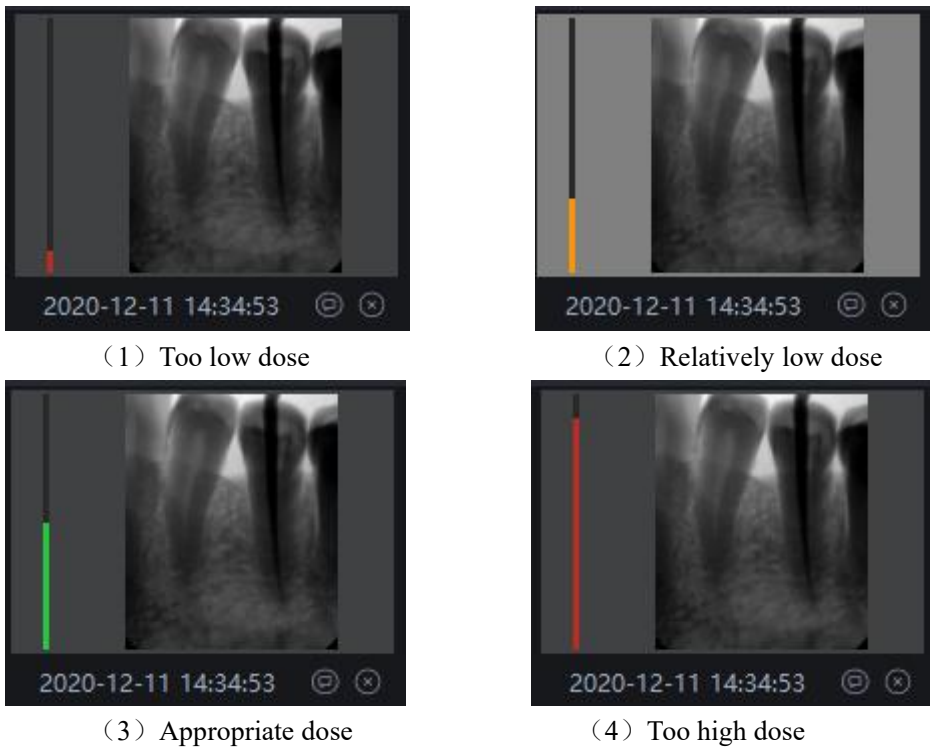

























Figure 35

Image processing function list

	Adapt to window
	Zooming to 100%
	Forward rotation 90°
	Reverse rotation 90°
	Left and right reverse
	Up and down reverse
	Brightness
	Contrast
	Gamma
	Pseudo-color
	Reverse

	Intra-oral Caries
	Intra-oral High Definition
	Intra-oral Fine
	Straight line measurement
	Angle measurement
	Delete measurement
	Scale
	Calibration line
	Flash lamp
	Magnifying lens
	Relief
	Contour enhancement

3.5 Report module

Click the “Report” button to enter the report module. Click the “New Report” button to create a new report template. Drag an image from the left to the image box, and enter the diagnosis result in the text box, etc. If you need more pages, click “Add Page”, and a page will be added to the report. After writing the report, click the “Save to Server” button to save the report to the server. When you want to view the report, click “Open Report”, select the report you want, and click “Open” to view. Click the “Export to PDF” button to export the report to the local. As is shown in Figure 36:

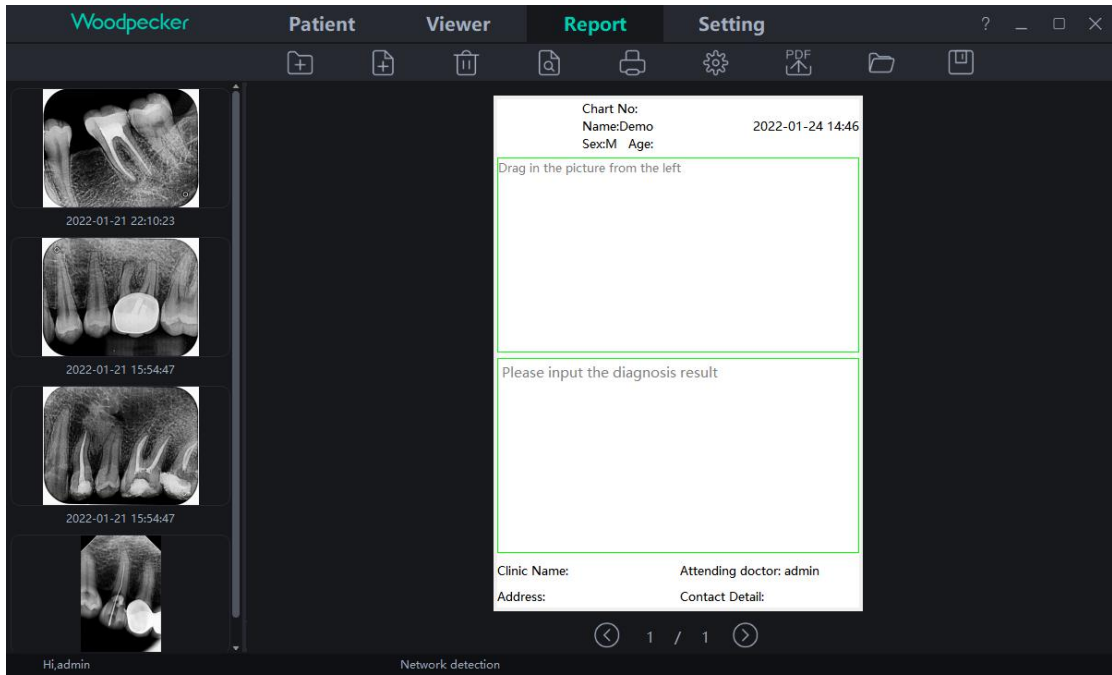


Figure 36

3.6 Setting module

Click the “Setting” button to enter the setting module.

3.6.1 Basic setting

Click the “Basic Setting” button to enter the basic setting page. Click the “Sign Out” button to return to the login interface. Click the language drop-down box to select the software language. Click the tooth profile drop-down box and select the tooth profile number. As is shown in Figure 37:

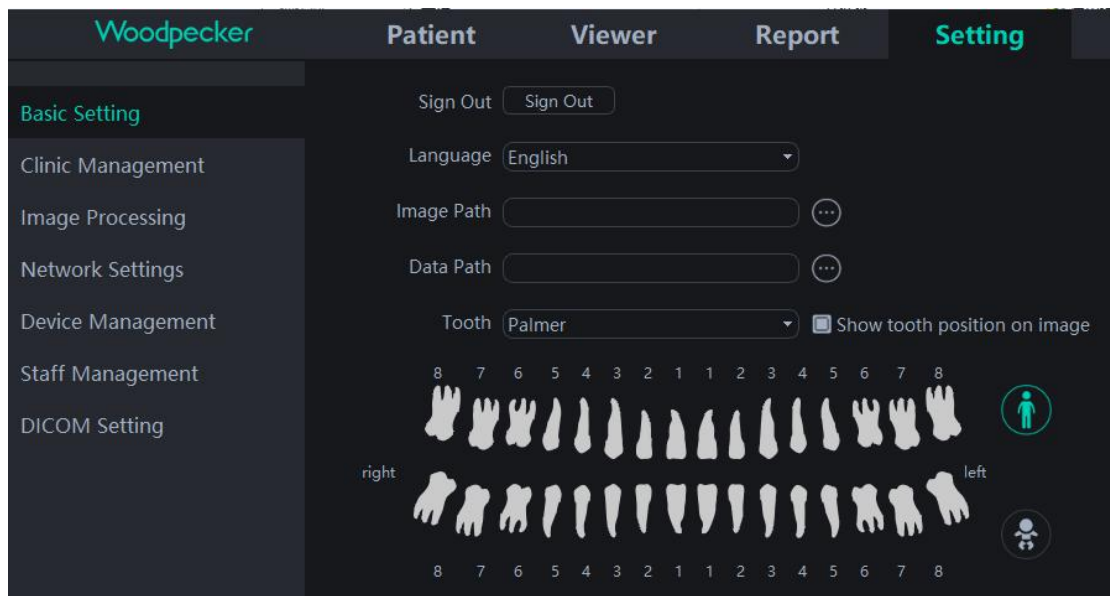


Figure 37

3.6.2 Clinic management

Click the “Clinic Management” to enter the clinic management interface and enter the clinic information, as shown in Figure 38:

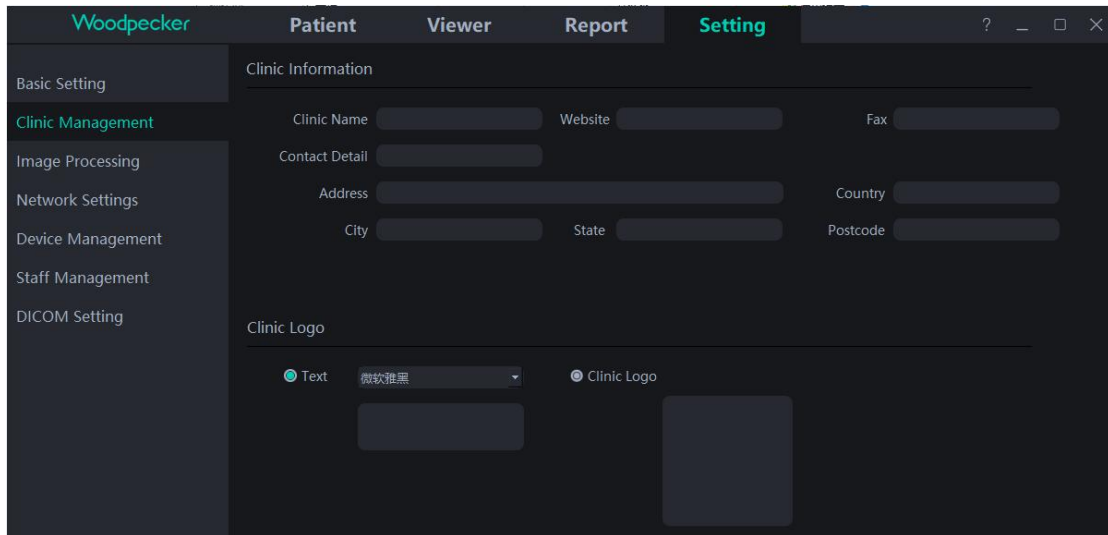


Figure 38

3.6.3 Image processing

Click the “Image Processing” button to enter the image processing interface. Select the HD checkbox, select “HD”, and the acquired image will be initialized and HD processed automatically. Select “Fine” and the acquired image will automatically undergo initialization and fine processing.

Click the “Setting” button to set the initial color of the measurement line of the diagnostic module. As is shown in Figure 39:

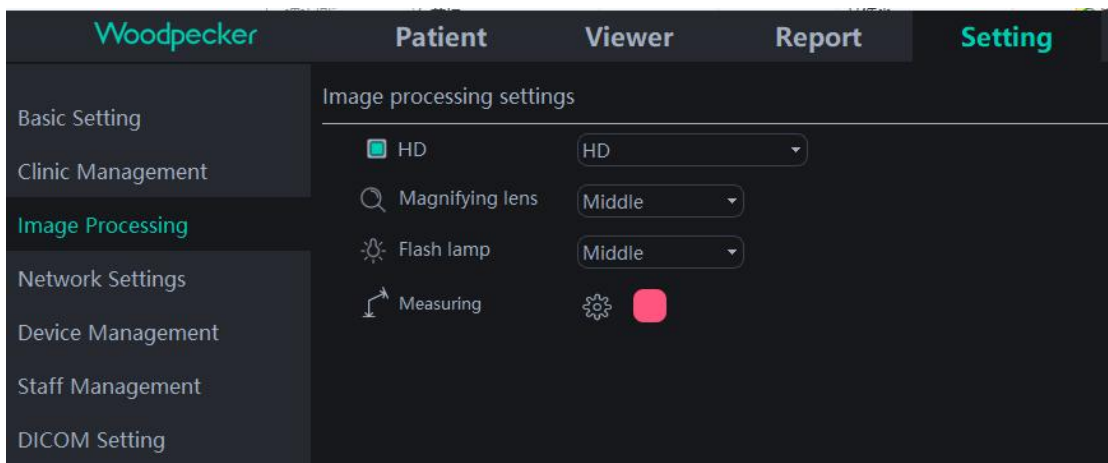


Figure 39

3.6.4 Network setting

Click the “Network Setting” button to enter the Network setting interface. Enter the IP address and port number. Click “Connection Test” to view the test result. Click “Modify” to switch the connected server, and the software need restarting at this time. As is shown in Figure 40:

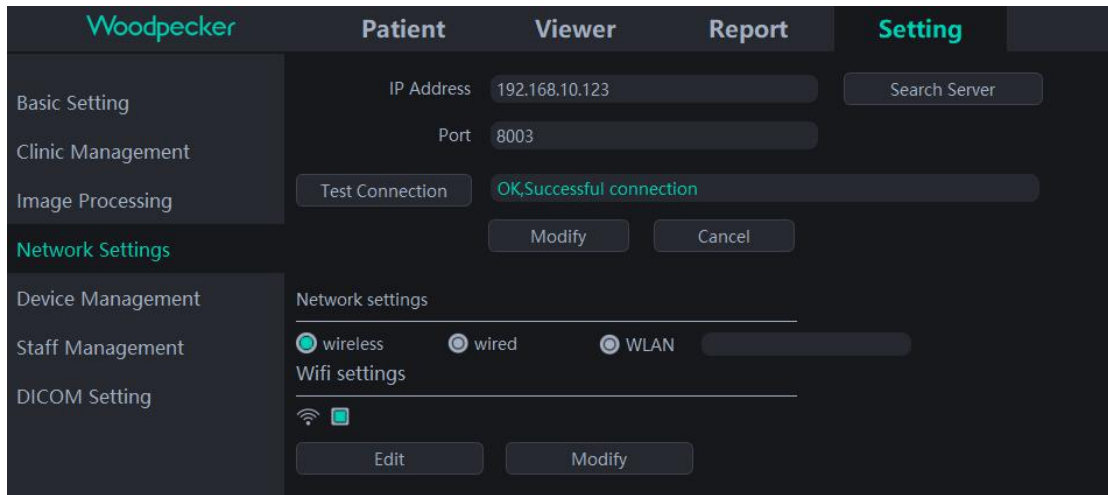


Figure 40

3.6.5 Device management

Click the “Device Management” button to enter the device management interface, as shown in Figure 41:

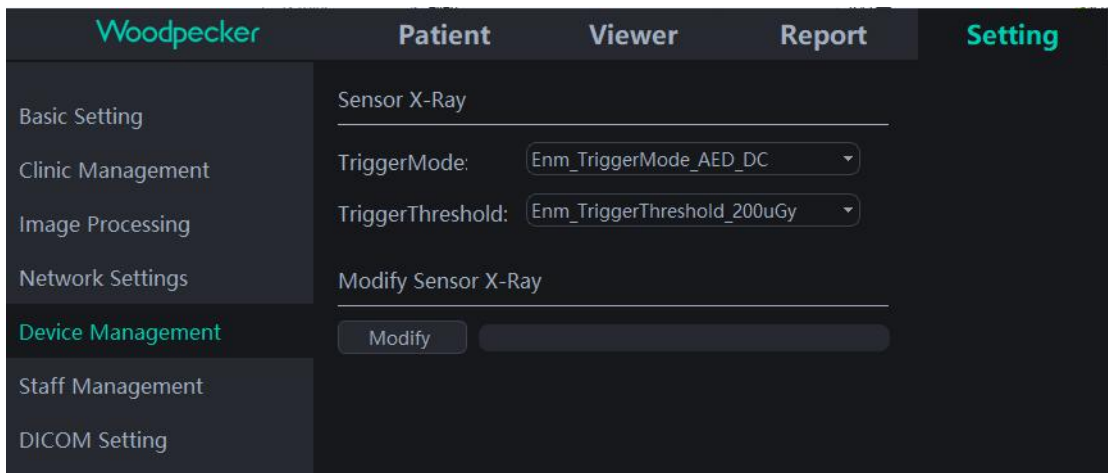


Figure 41

Before using this function, you need to determine whether the sensor is successfully connected and whether “IO sensor connection successful, Please take images” is displayed in the lower right corner. If it does not appear, please go to the acquisition interface in the patient interface to connect the sensor. As is shown in Figure 42:

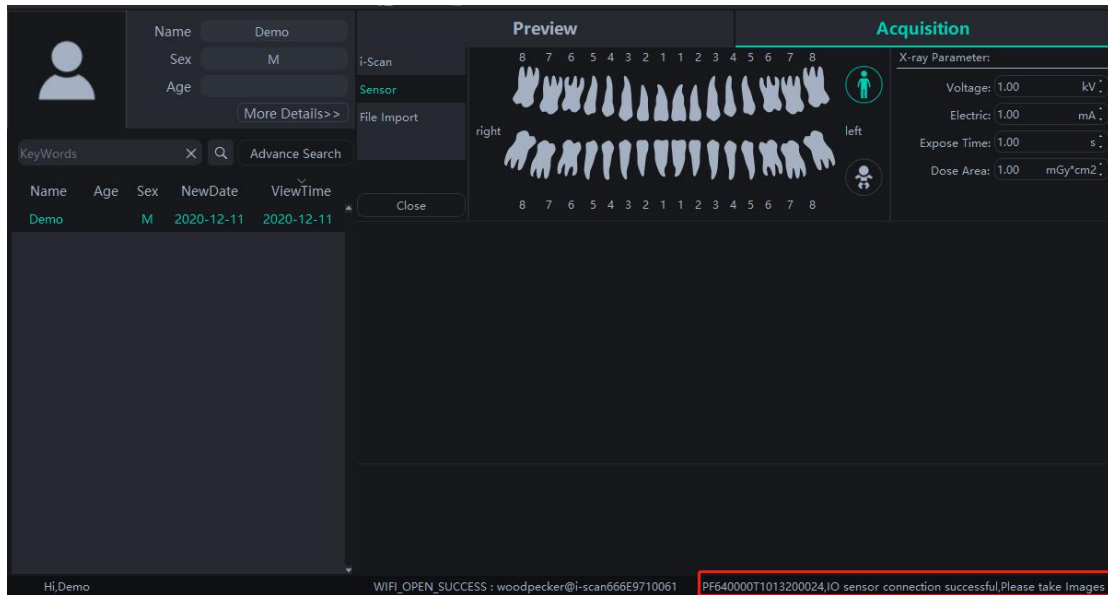


Figure 42

After the connection is successful, return to the device management interface in the setting interface to set the sensor parameters. Before setting new parameters, first determine whether the X-ray trigger mode is AC or DC. If it is DC mode, set “TriggerMode” to “Enm_TriggerMode_AED_DC”, and “TriggerThreshold” to “Enm_TriggerThreshold_50uGy”; if it is AC mode, set “TriggerMode” to “Enm_TriggerMode_AED_AC”, and “TriggerThreshold” to “Enm_TriggerThreshold_50uGy”. Then click “Modify” and “Ok, Setup succeeded” will be displayed after the modification is successful. As is shown in Figure 43:

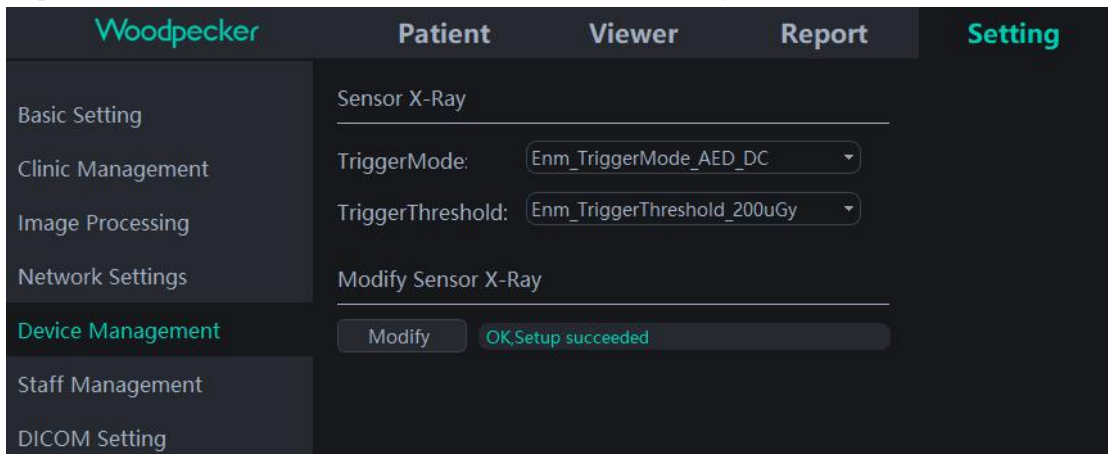


Figure 43

If there is no picture during the shooting process, the exposure time can be appropriately adjusted to re-expose. If the picture still cannot be produced, set “TriggerThreshold” to “Enm_TriggerThreshold_100uGy” or “Enm_TriggerThreshold_200uGy” for re-exposure. If the picture still cannot be produced, please contact the relevant personnel.

Note: If incorrect parameter settings are made or the sensor is not connected, “Sorry, Setup failed” will appear and the previous parameters will be displayed, as shown in Figure 44:

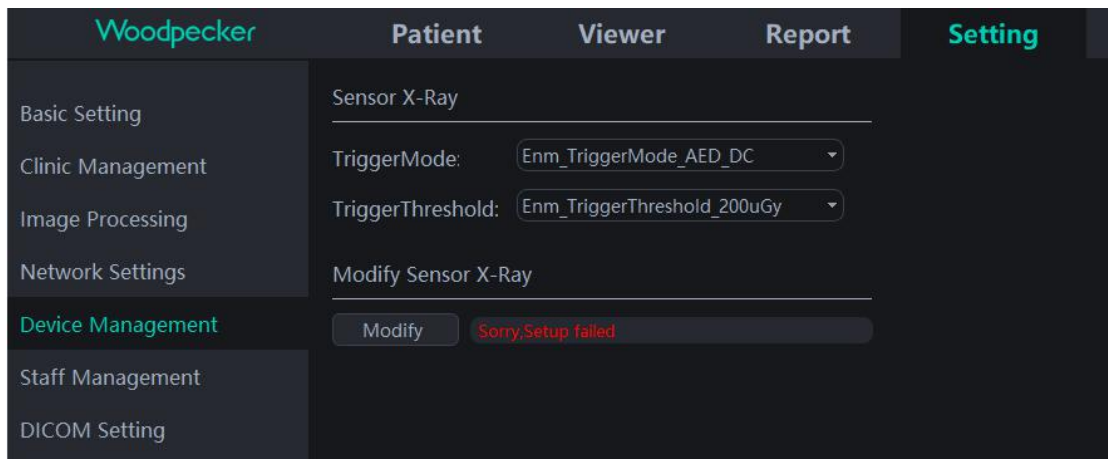


Figure 44

3.6.6 Staff Management

Only when the administrator account is logged in to the software, there will be a “Staff Management” button in the setting module. Click the “Staff Management” button to enter the staff management interface, as shown in Figure 45.

The staff management interface has the functions of New User, Delete User, Modify User and Search User. Click the New User and enter the User Name, Login Password, Confirm Password and other information, as shown in Figure 46. Enter the user name in the search bar to query the specified user. Double click the staff information bar to query the details of the user.

When the administrator forgets the login password, open the server interface. Click the “Setting” button -> click “Password” -> check “Show password”, you can view the administrator password, as shown in Figure 47. If an ordinary user forgets the login password, double-click the staff information bar, and the staff information interface will pop up. Press and hold the password viewing button, the login password input box will display the staff’s password, as shown in Figure 48. The problem of forgetting the password can also be solved by changing the staff’s password.

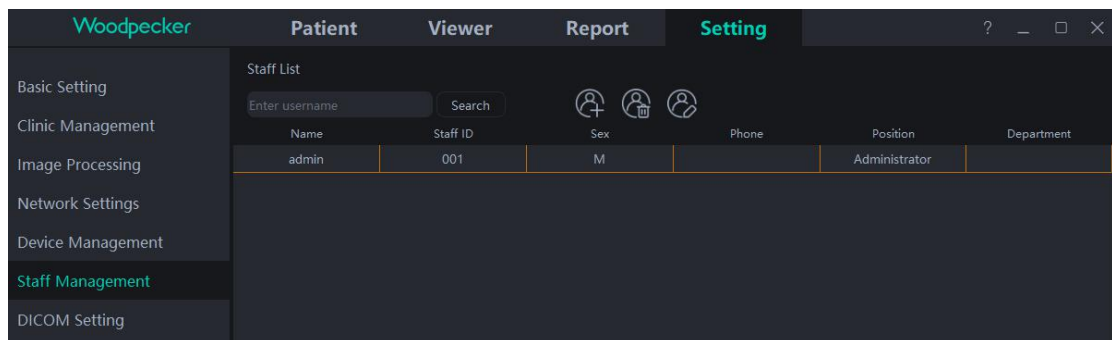


Figure 45

Registered Staff

Username*

Login Password*

Confirm Password*

Staff ID

Gender* Male Female

phone

Position*

Department

Add Cancel

Figure 46

Setting

Connection Storage Language Update Backup Password

Admin password Show password

1 2 3 4

Ai-Dental

Ai-Dental server

QR Code

Startup time: 8 s

DataBase : ok ✓
 Server : ok ✓
 IP Address : 192. 168. 10. 123
 Port Number: 8003

1

Figure 47

The image shows a 'Modify Staff' dialog box with the following fields and values:

- Username*: admin
- Login Password*: 123456 (highlighted with a red box and a red arrow pointing to the eye icon)
- Confirm Password*: ••••••
- Staff ID: 001
- Gender*: Male Female
- phone: Please enter phone
- Position*: Doctor
- Department: Please enter department

Buttons at the bottom: Modify, Cancel

Figure 48

3.6.7 DICOM setting

3.6.7.1 Set the PACS system parameters

(1) Storage Host — setting the IP, PORT, and AETitle (the three are provided by the PACS system manufacturer) of the PACS system image storage server

(2) WORKLIST — setting the IP, PORT, and AETitle (the three are provided by the PACS system manufacturer) of the PACS system worklist server

(3) Local Host — setting the IP, PORT, and AETitle of Ai-Dental software. IP is the computer's IP address, PORT is "1234", and AETitle is "WOODPECKERPACS". "IP", "PORT", and "AETitle" can be modified according to the actual situation.

(4) Upload

Upload Location: If you don't need to connect to PACS system, choose "Ai-Dental"; if you need to connect to "PACS system", choose "PACS" or "All". If you choose "PACS", the images will only be transferred to PACS system; if you choose "All", the images will be transferred to PACS system as well as saved on Ai-Dental system.

Upload Method: If you need to connect to PACS system, there are two ways to upload images: uploading a single image and uploading all images together.

After setting, click "Connection Test" to test whether the connection between the configured PACS system and Ai-Dental system is normal, and then click "Modify". As is shown in Figure 49.

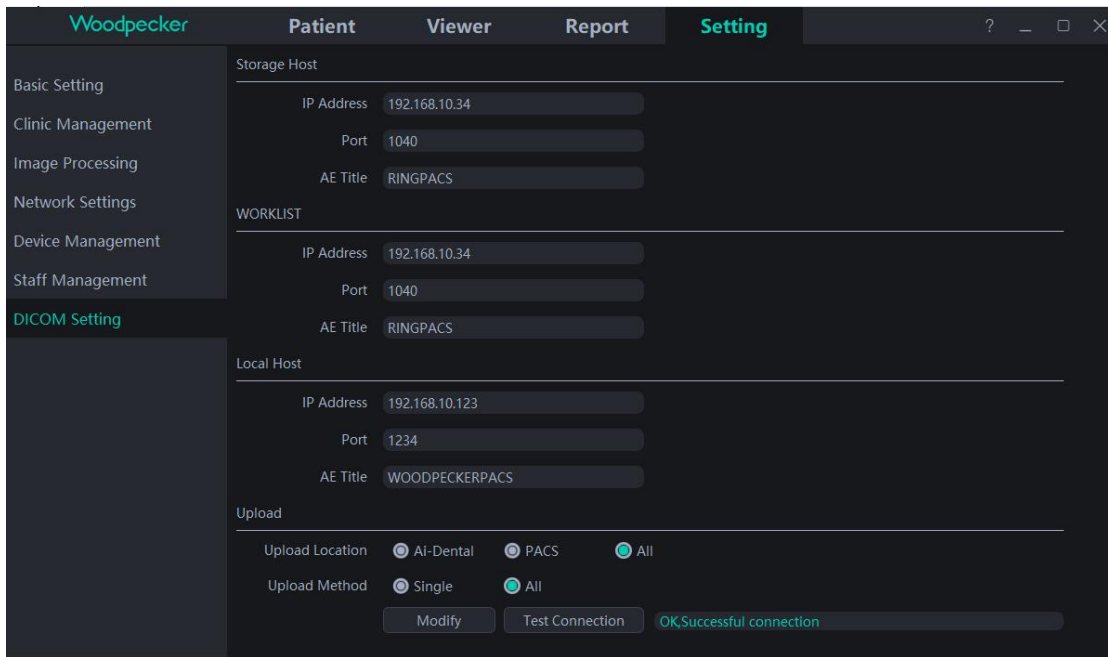


Figure 49

3.6.7.2 Connection to PACS system

Log in to the software, go to the main interface, and click “Acquisition”, as shown in Figure 50.

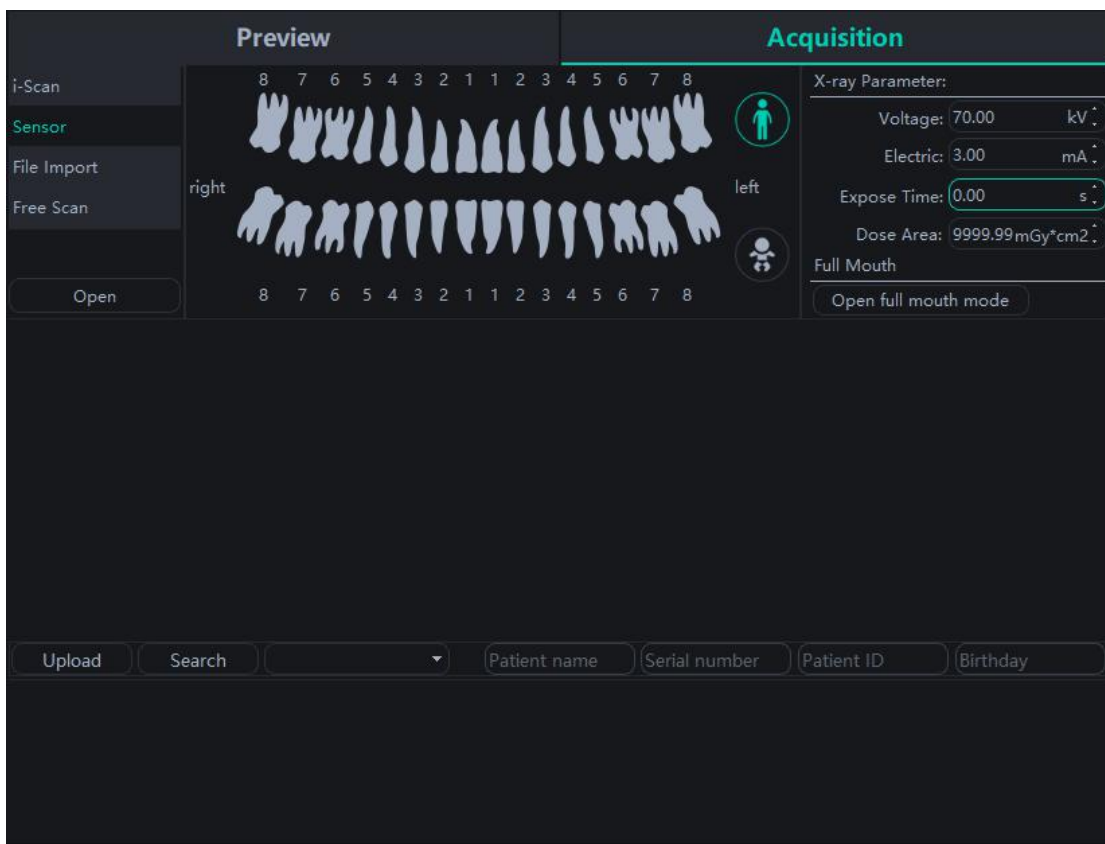


Figure 50

Click “Search” to get the patient list of the PACS system. Find out the specified patient to display the patient-related information. Perform image acquisition, click “Upload” button to

upload the images to the PACS system. As is shown in Figures 51 and 52.

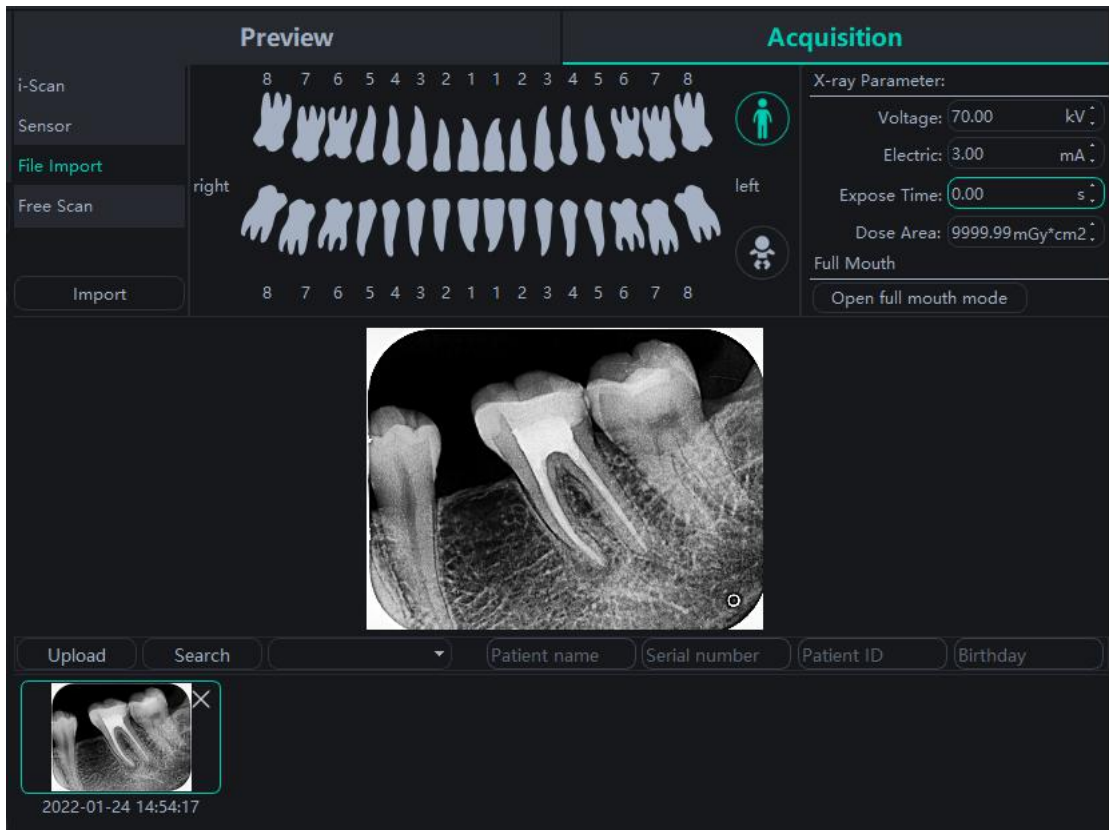


Figure 51

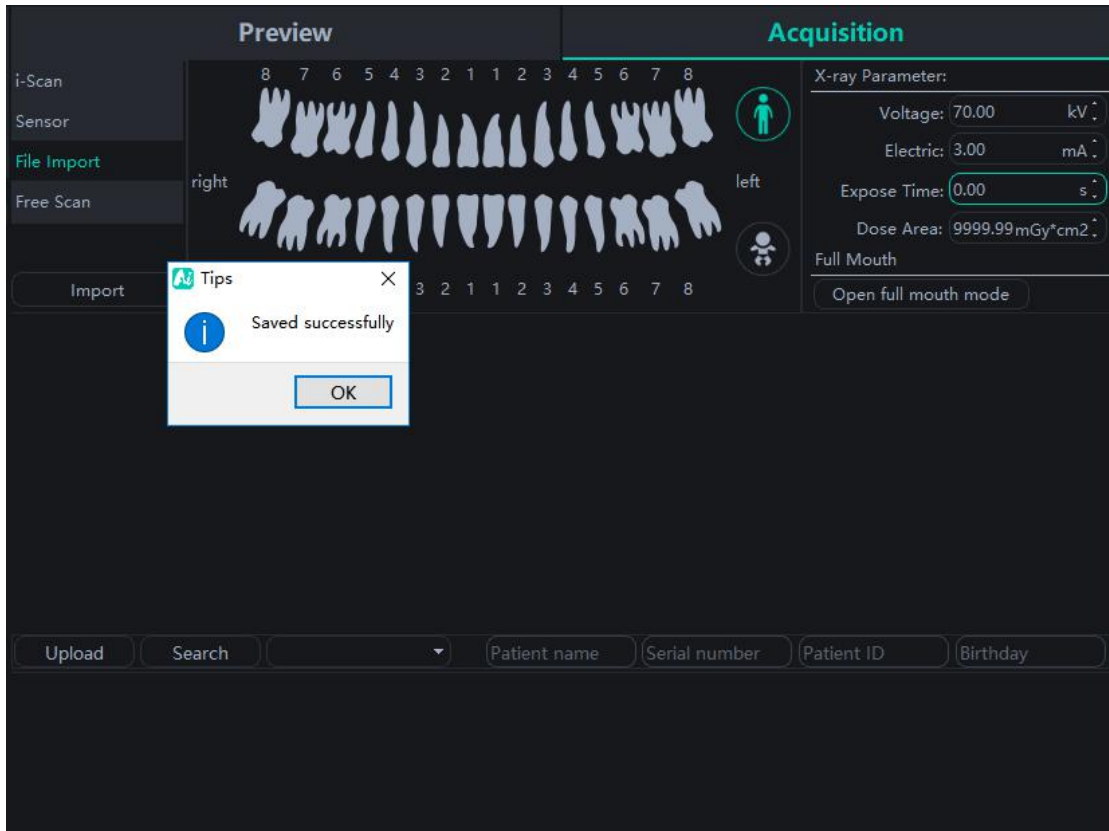


Figure 52

3.7 Help document

Log in to the main interface of the software and click “?” on the upper right corner. There are online help documents such as Ai-Dental manual, App Manual, i-Scan Manual, FAQ, etc. In addition, “About Ai-Dental” can be clicked to check the software version. As is shown in Figure 53:

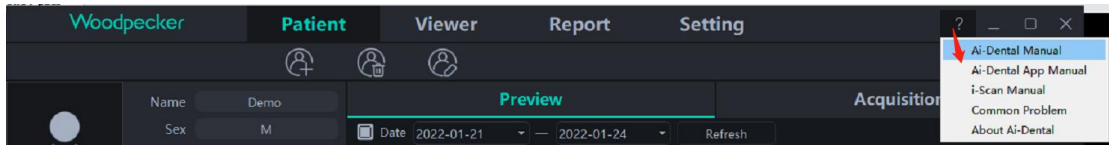


Figure 53

3.8 Software upgrade

The software has an automatic upgrade function. If the Ai-Dental server is installed on the computer and the software can be upgraded, there will be a pop-up window indicating whether to upgrade. Click “Yes”, as shown in Figure 54. After the upgrade is completed, click “Finish”, as shown in Figure 55. After started, all clients connected to the server will receive the upgrade countdown 10s. The software will automatically close after 10s, and start to upgrade. Click “No”, the software will not be upgraded temporarily.

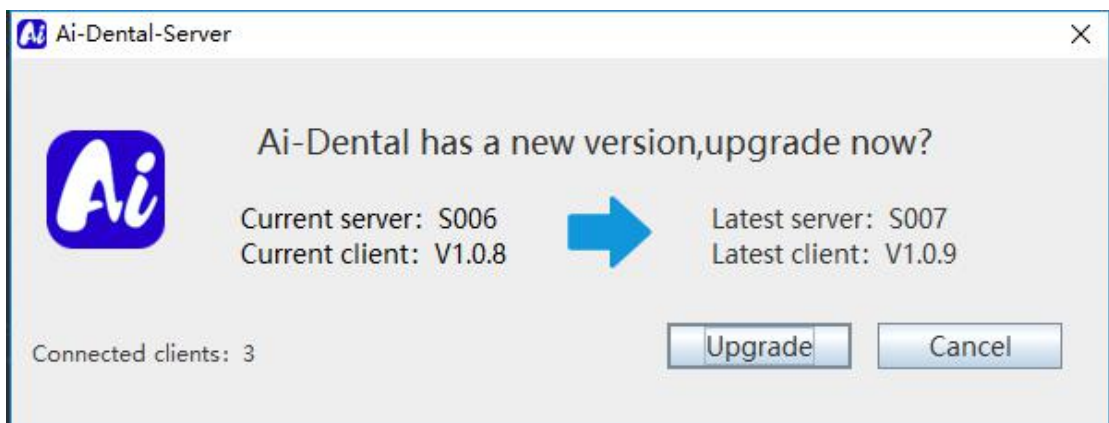


Figure 54

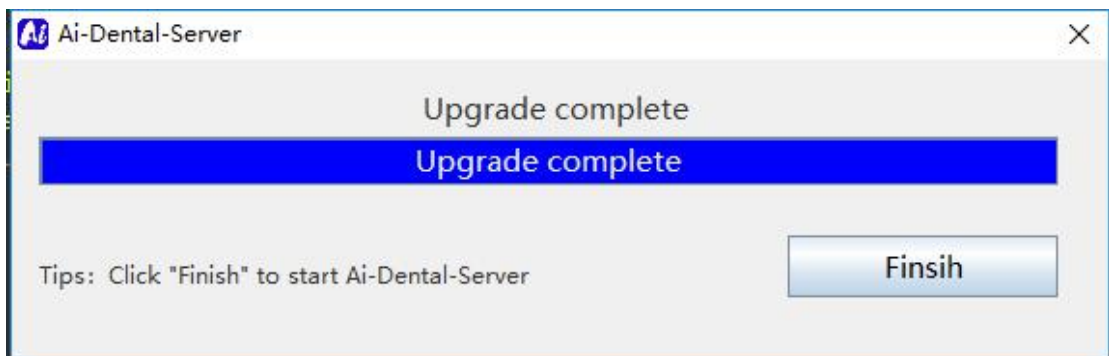


Figure 55

3.9 Exception handling

(1) In case of unclear image, please adjust the exposure time first. If repeated adjustment of the exposure time is invalid, you can go to the software “Setting” -> “Device Management” to set the sensor parameters. Please refer to 3.6.5 for specific setting methods.

(2) During the use of the software, when the server is unavailable due to some reasons, the software will enter the server disconnect interface, as shown in Figure 56. At this time, the user can check whether the network is normal or restart the server.

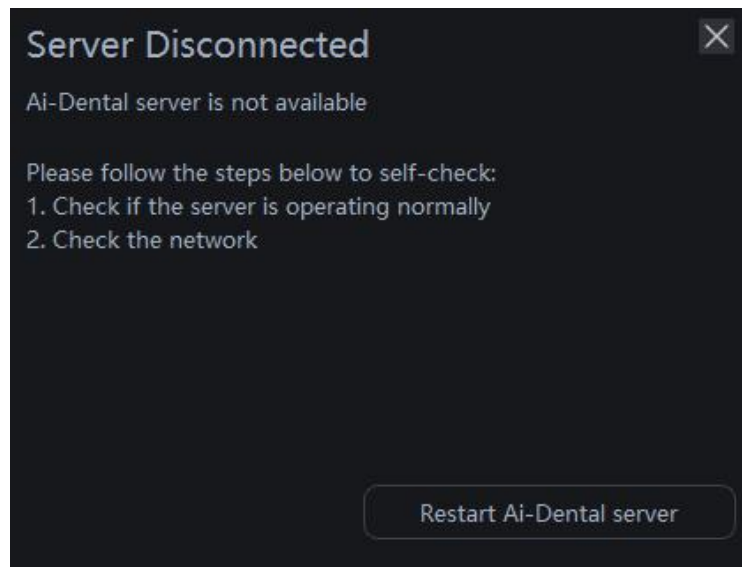


Figure 56

4. Training and maintenance

After the user purchases this product, the dealer will come to train the operator. If there are still questions, you can contact the dealer. In addition, users are not allowed to change the intended use of the product or software.

When there is a problem with the device or software, contact the dealer, who will contact Woodpecker and we will then arrange professional staff for maintenance.

5. Others

Please operate the device and software in good light so as not to interfere with viewing image details.

The distance between i-Scan and Ai-Dental should be within 10 meters.