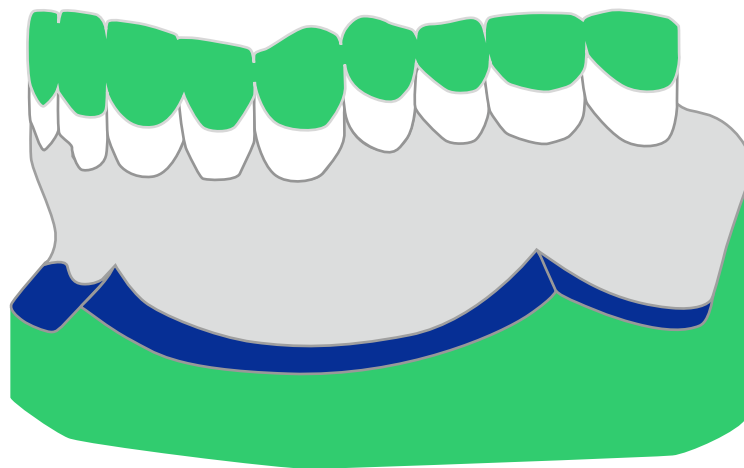


PTIOrthoSim Software Operation Manual

Revision 1 (August 2023)





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1. Software overview



1.1 Basic information

Software name: PTIOOrthoSim

Main function: Software that simulates the trajectory of orthodontic movement according to the user's design, supports sharing and exporting, and improves doctor-patient communication.

1.2 Computer configuration requirements

This product needs to be installed in the windows system, the recommended configuration as following:

CPU	Intel i7-12700H/Inteli7-11800H or above
Graphics Card	RTX2060/3060 or above
RAM	16G or above
HD	512G or above
Display	Resolution of 1920*1080 or above

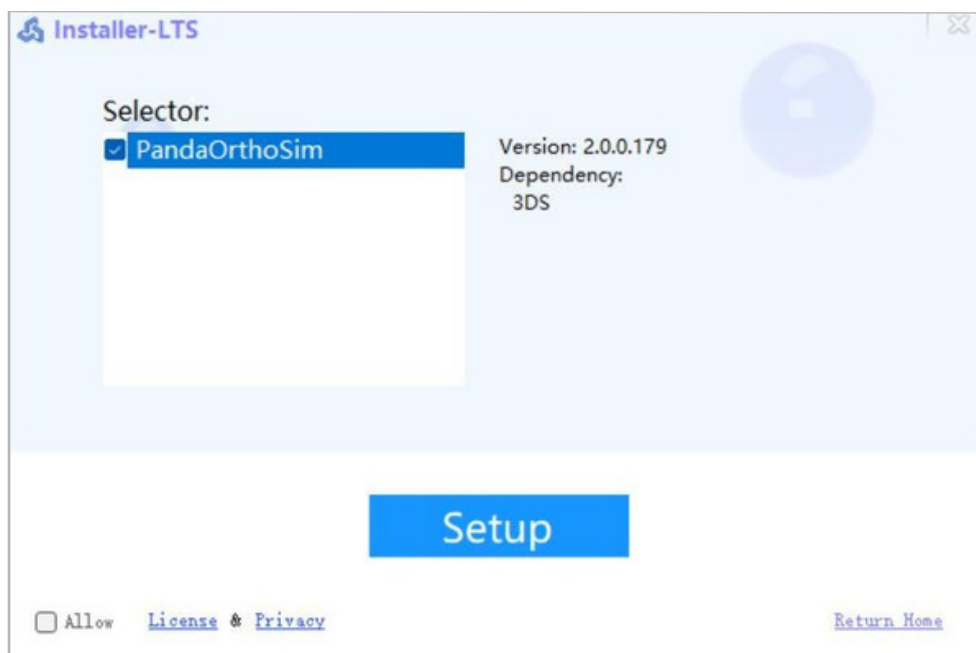
1.3 Installation

1. Open the installation package.



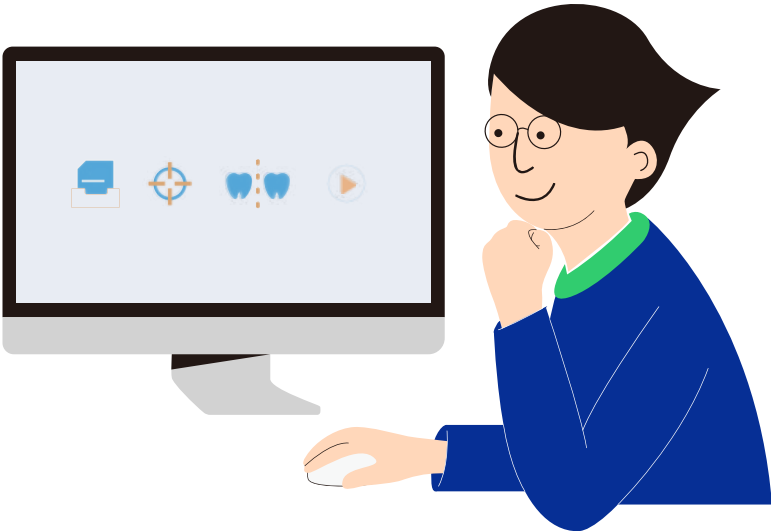
2. Select the consent after carefully reading the license agreement.

3. Check the PTIOrthoSim procedure.

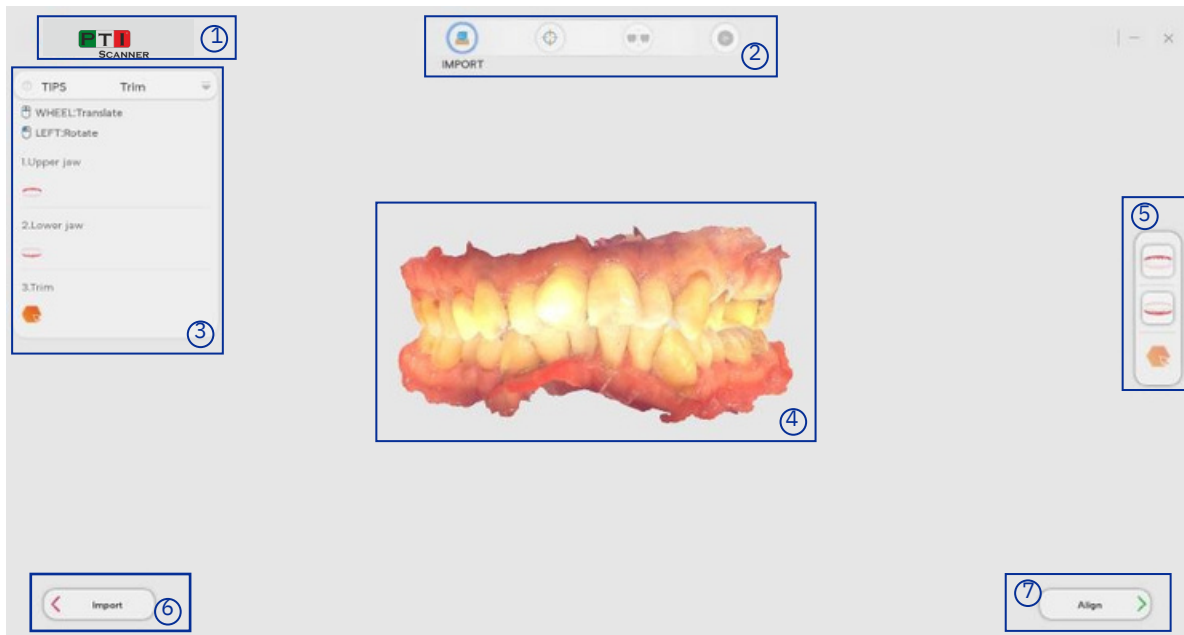


4. Click Setup, and the install is complete.

2. Detailed explanation of the software



The main interface is shown as below.



①Language switch: Click on the upper left corner of "Cloud" to switch to Chinese.

②Main menu: including import, coordinate alignment, splitting, animation modules, after completing the previous module, click the next module button to enter the corresponding operation page.

③Prompt area: Prompts the steps that need to be performed in this function module.

④Display area: Displays the contents of each model.

⑤Button operation area: A button operation area of each module.

⑥Next step: Click the button to proceed to the next module.

⑦Last step: Click the button to proceed to the previous module.

Minimize button: shrink the current software interface to a button on the taskbar.

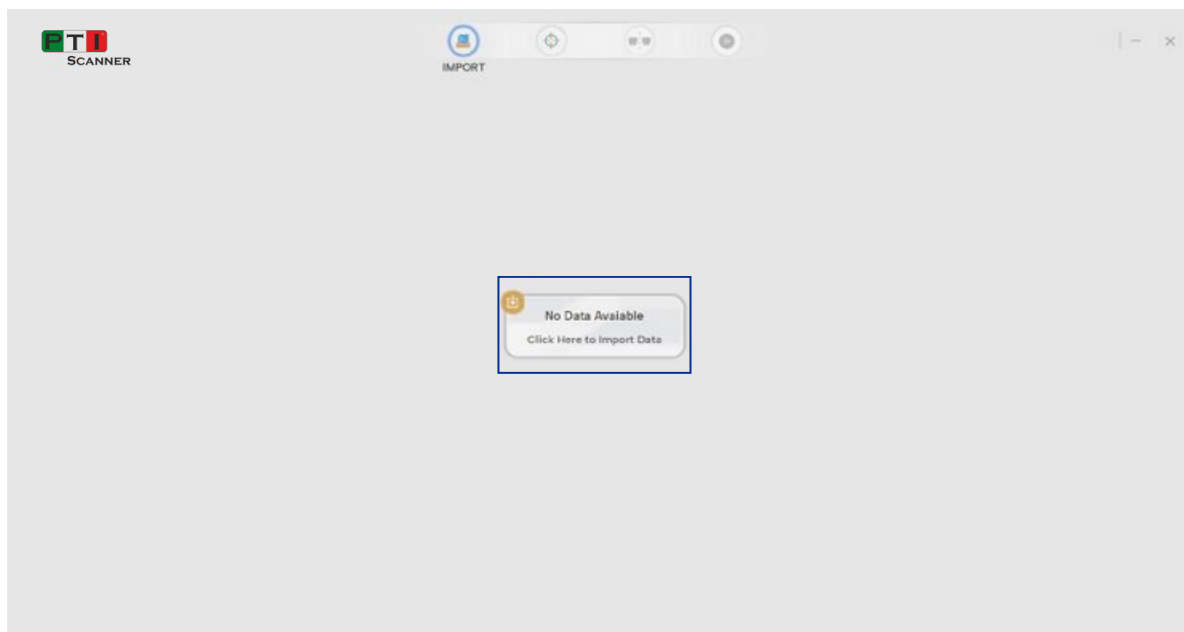
Close button: Click to close the software.

Cue Area Show/Hide button: Click this button to show the cue area, and tap again to hide the cue area.

Rotation : Press and hold the left mouse button to rotate the model.

2.1 Import

This function module realizes the import of cases, and after the successful import of cases, the upper and lower jaw models can be viewed, and the excess gums can be circled and removed. The main interface is introduced as follows:



Load ribbon: Load orthodontic case history.

Load button: Click to load the orthodontic case from the folder.

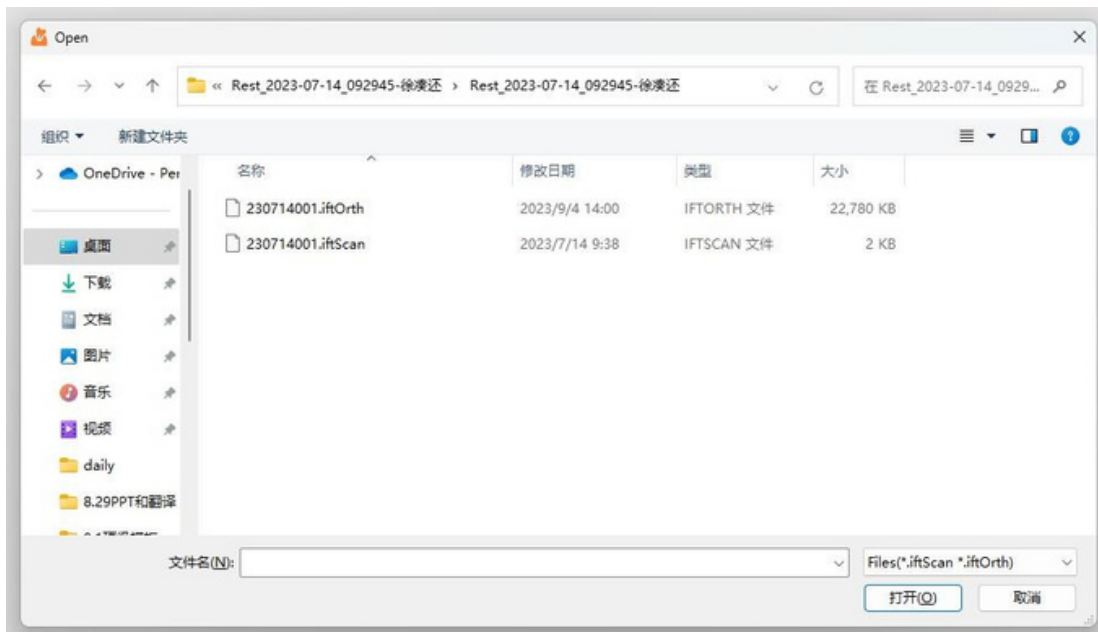
2.1.1 Load

Files can be loaded in two formats, .iftscan format files are initial files without orthodontic operations, and .iftOrth files are files generated after orthodontic operations.

The specific operation procedure is as follows:

1. Load the iftscan file

1) Click Load > Select the folder that contain the case > Open the “iftscan” file.

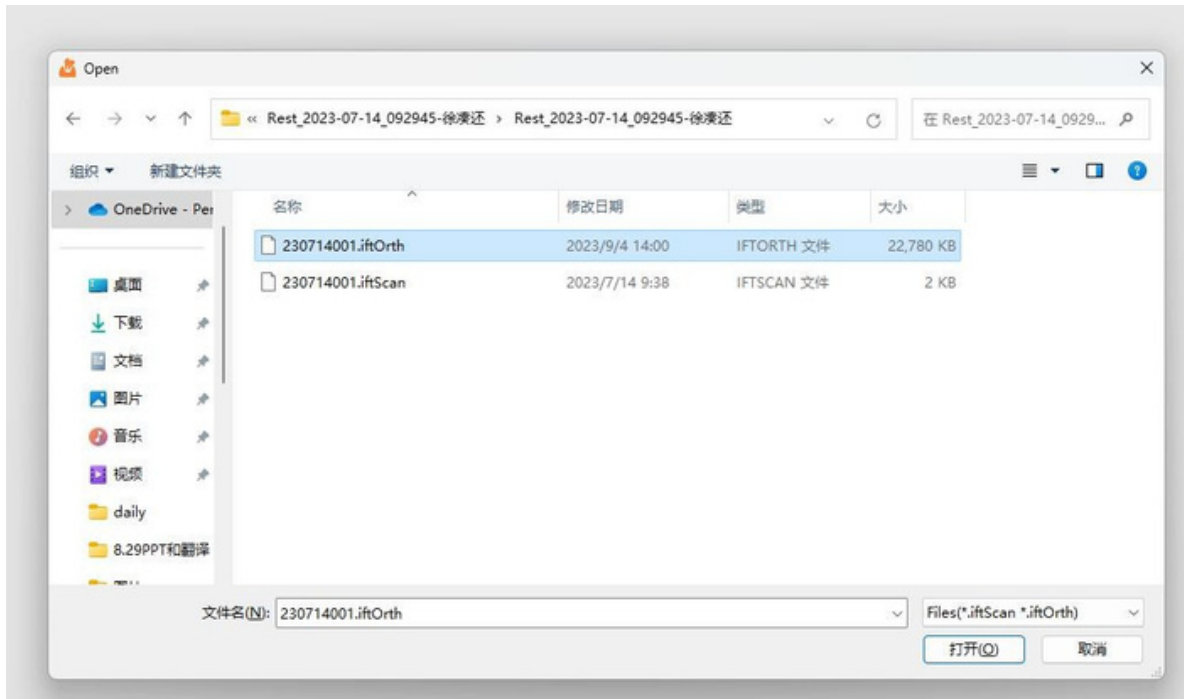


2) load successfully.

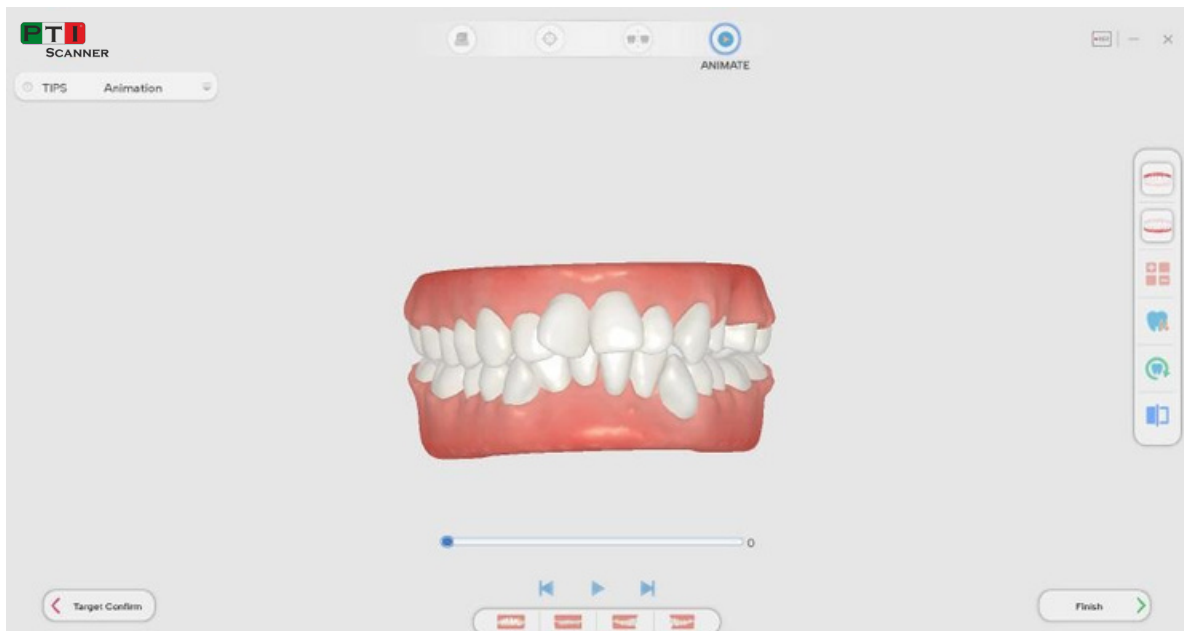


2. Load the ifOrth file

1) Click Load > Select the folder that contain the case > Open the “ifOrth” file.



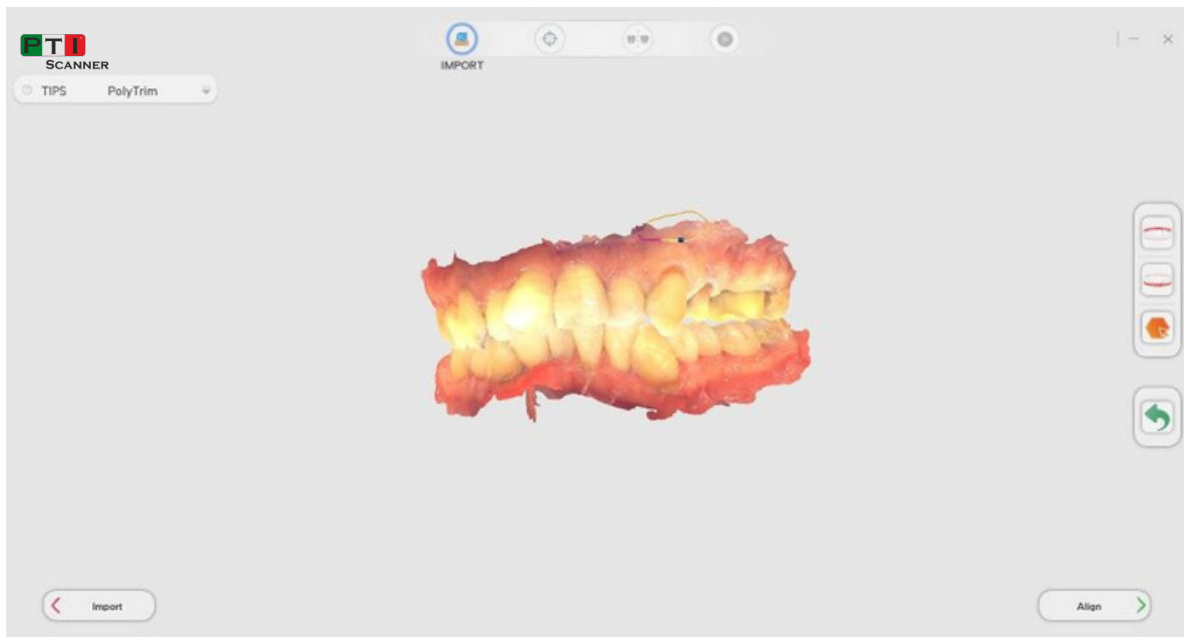
2) Loaded successfully > enter the animation function module .(see 2.5 Animation for the specific operation process of this module.)



2.1.2 Model trimming

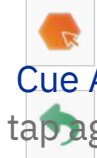
The specific operation process is as follows:

1. Click the delete button, drag the right mouse button to circle the part that needs to be deleted on the model to delete.
2. To undo the tab, click the Undo button once to undo the previous step and click again to undo it all.



 **Show / hide button:** Click on or off to display or hide the present jaw.

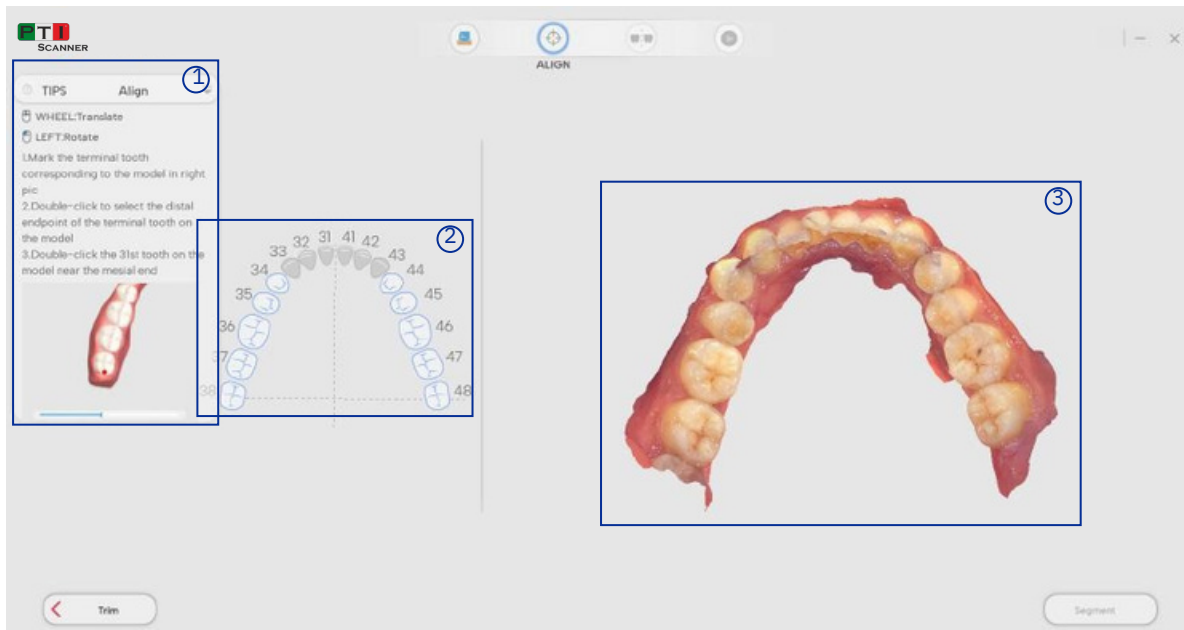
Close button: Click to close the software.



Cue Area Show/Hide button: Click this button to show the cue area, and tap again to hide the cue area.

2.2 Alignment

This function module realizes the generation and confirmation of the origin of the coordinate system of the model, so that the tooth number can be correctly displayed and the segmentation operation can be performed when the model enters the segmentation function. The main interface is introduced as follows:



①Step prompt area.

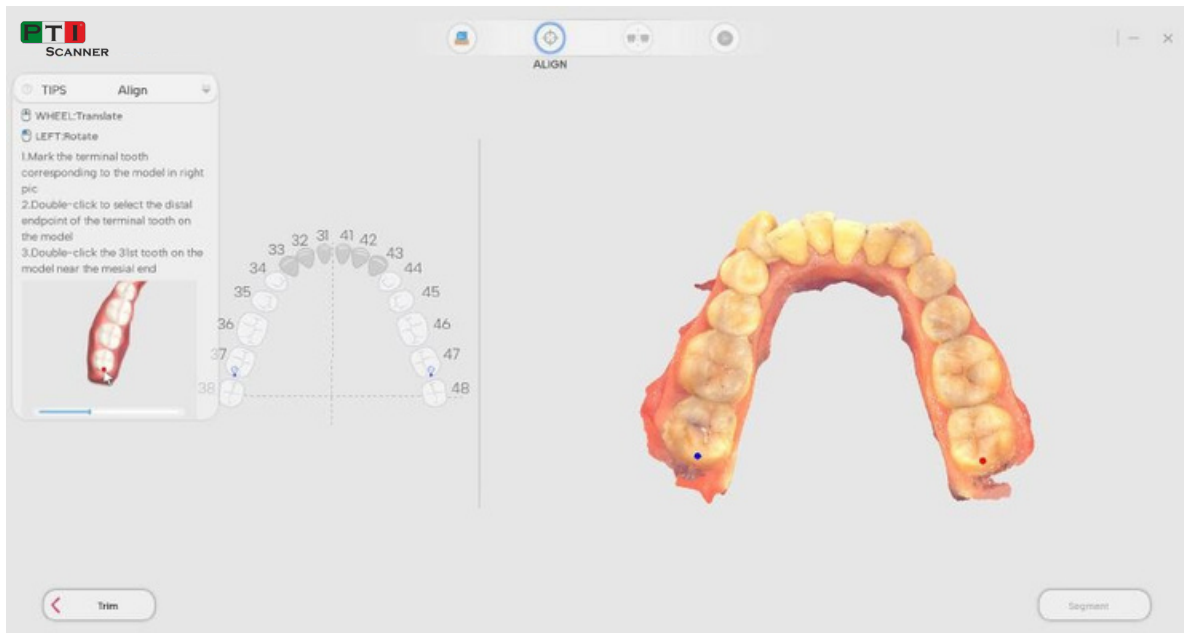
②Tooth selection operation area.

③Loaded orthodontic model operating area.

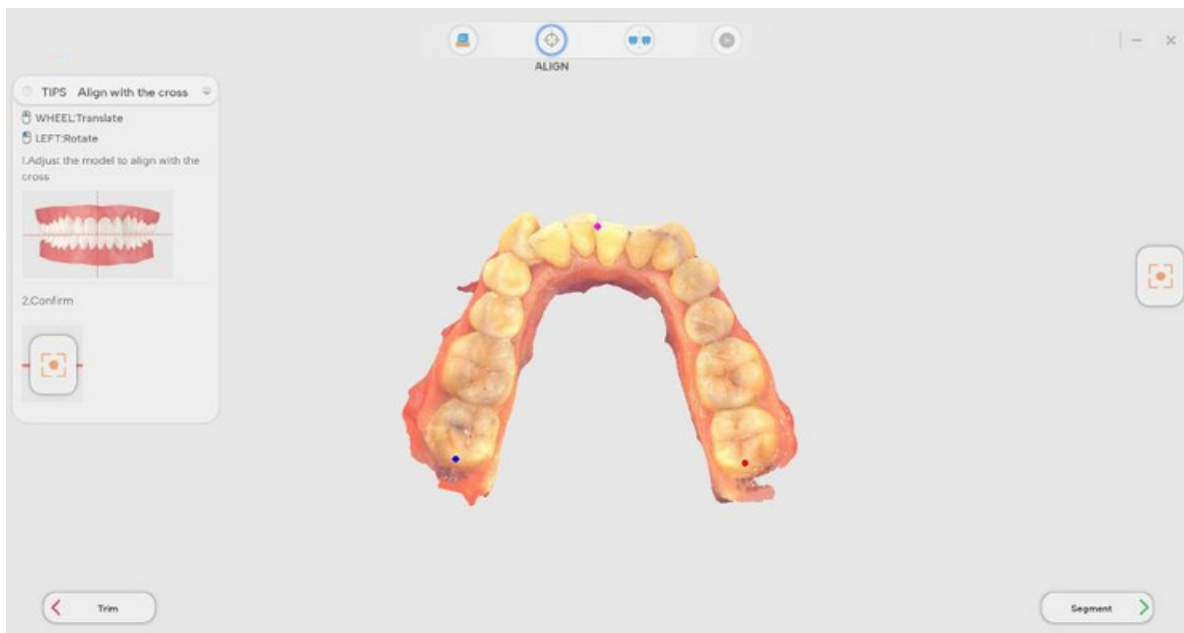
2.2.1 Coordinate selection

The specific operation procedure is as follows:

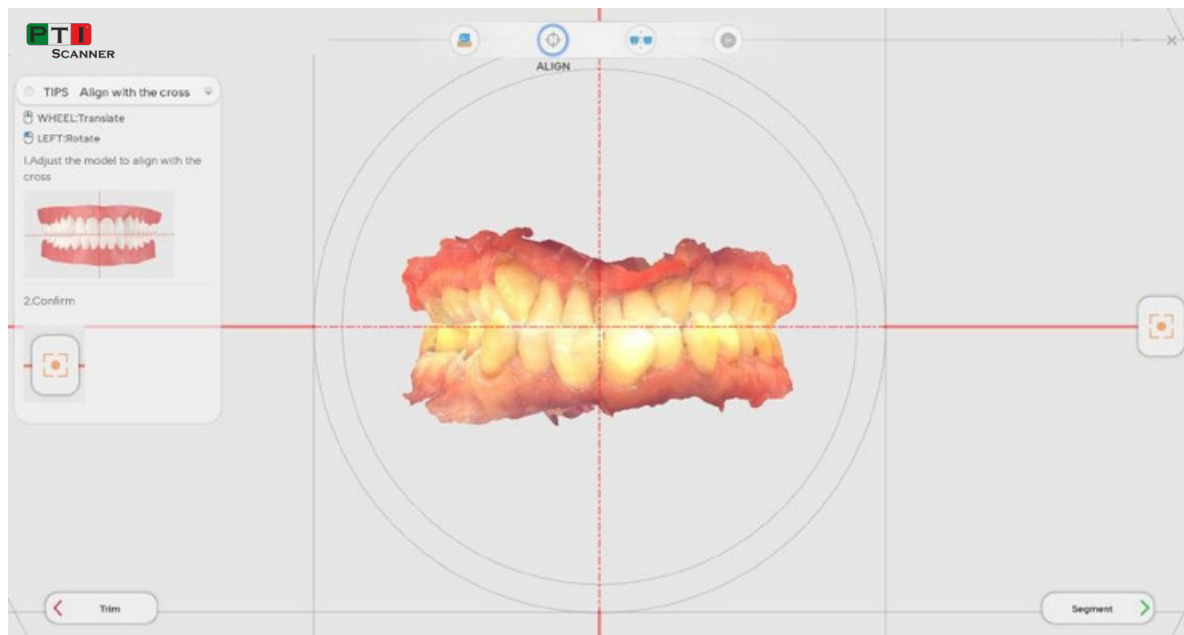
1. According to the tooth conditions of the model, select the terminal tooth number with symmetrical tooth in the tooth selection operation area.



2. After the terminal tooth position is marked in the tooth selection operation area, double-click the left key on the model to mark the distal point of the terminal tooth, and mark mesial point the tooth number 31 according to the prompts.



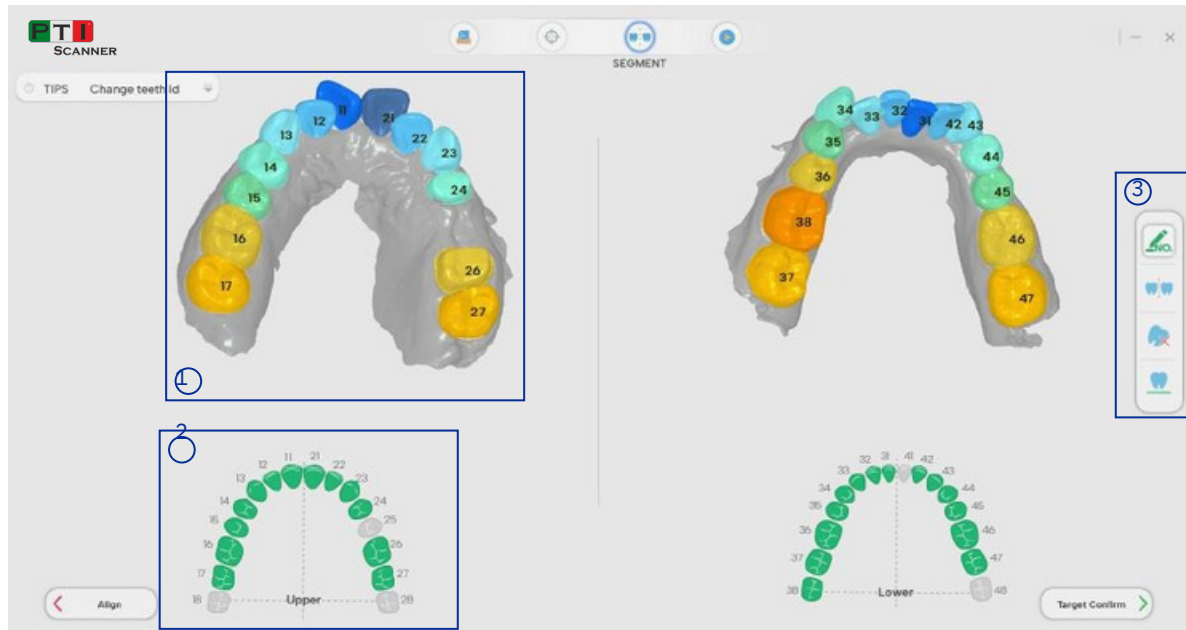
3. After tooth selection, the model is adjusted by rotation or translation operation as needed. After the midline is aligned with the cross mark and the occlusal plane is aligned, click the adjust coordinate origin button to complete the coordinate adjustment.



Confirm button: Click this button to pop up "Orient global co- ordinate is done!" prompt box.

2.3 Segmentation


This function module realizes the functions of changing the model number, manually segmenting to reduce or increase the area of the tooth area, removing a certain tooth, and retaining a certain tooth. The main interface is introduced as follows:




① Model manipulation area.

② Tooth selection operation area.

③ Change numbering, manual splitting, tooth removal, retention of tooth position button operation area of the segmentation module.

 **Change teeth Id button:** Select the tooth number in the tooth selection operation area, and after double-clicking the tooth position to be replaced with the left mouse button on the image, the model tooth position number is automatically replaced with the tooth number selected in the tooth selection operation area.

 **Manual segment button:** 1. Select the tooth number in the tooth selection operation area, and use the right button to apply on the model to increase the tooth area. 2. Do not select the tooth number in the tooth selection operation area, and use the right button on the model to apply to reduce the tooth area.



Extract Tooth button: Left-click to select the tooth to be extracted in the selection operation area, and left-click again to cancel the tooth extraction.

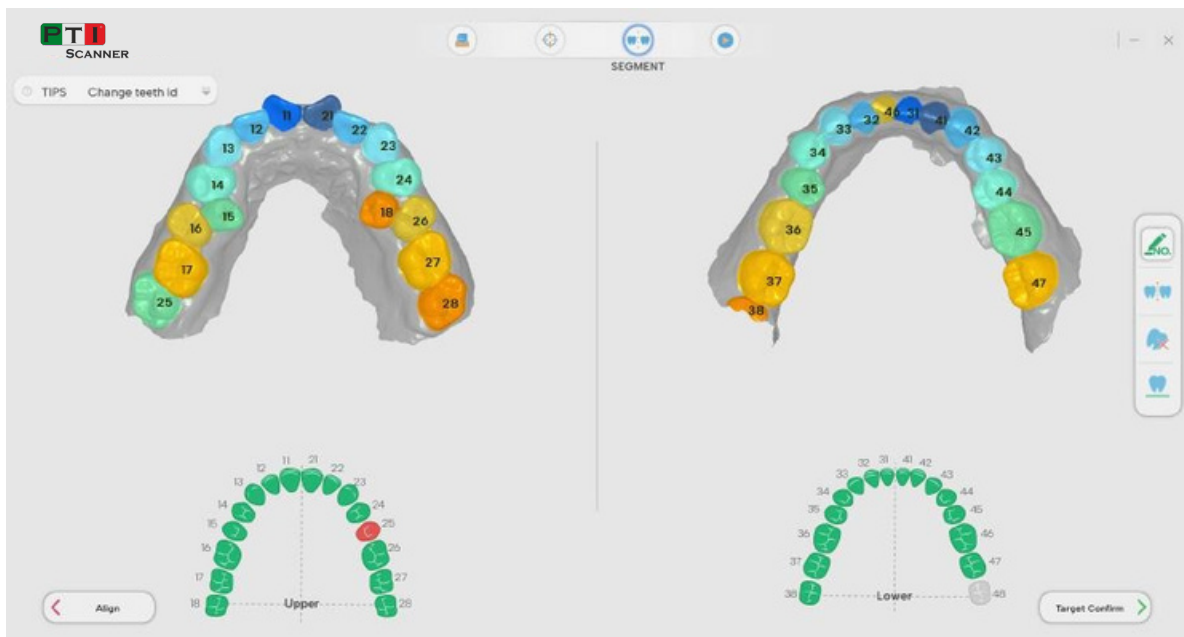


Keep Tooth button: Left-click the position you want to keep in the selection area, and left-click again to cancel the position reserve, this function is used for the position preservation of missing teeth.

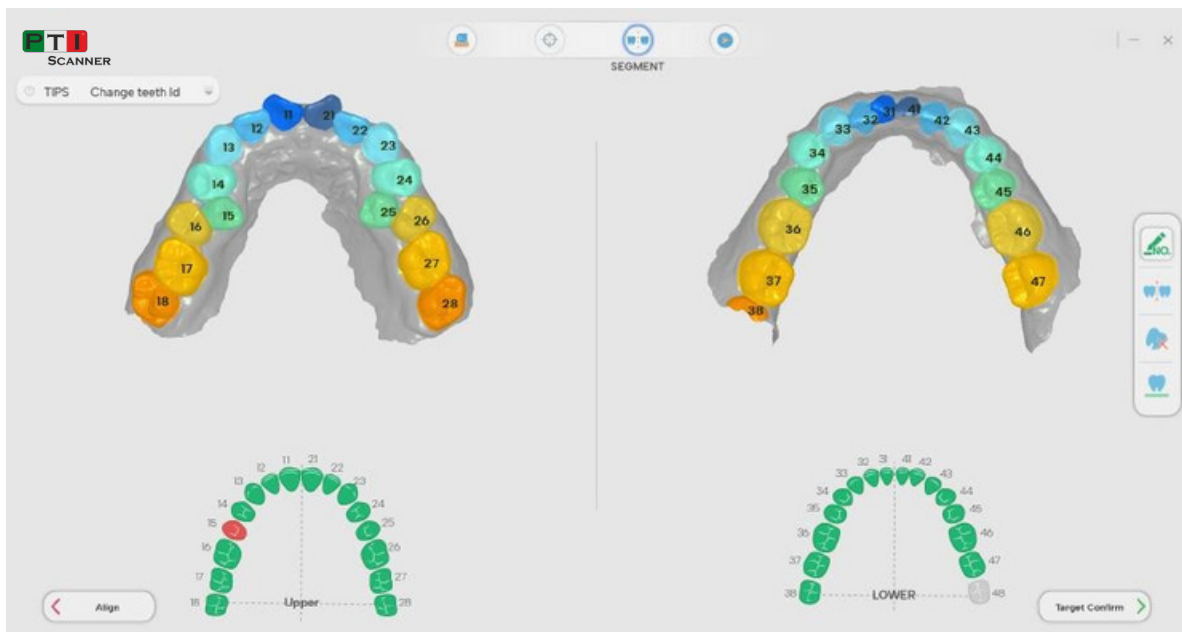
2.3.1 Change teeth ID

The specific operation procedure is as follows:

1. Left-click to select tooth position 25 in the selected tooth operating area.



2. Double-left-click the 18th tooth position on the model, and the 18th tooth position is replaced by the 25th tooth position.

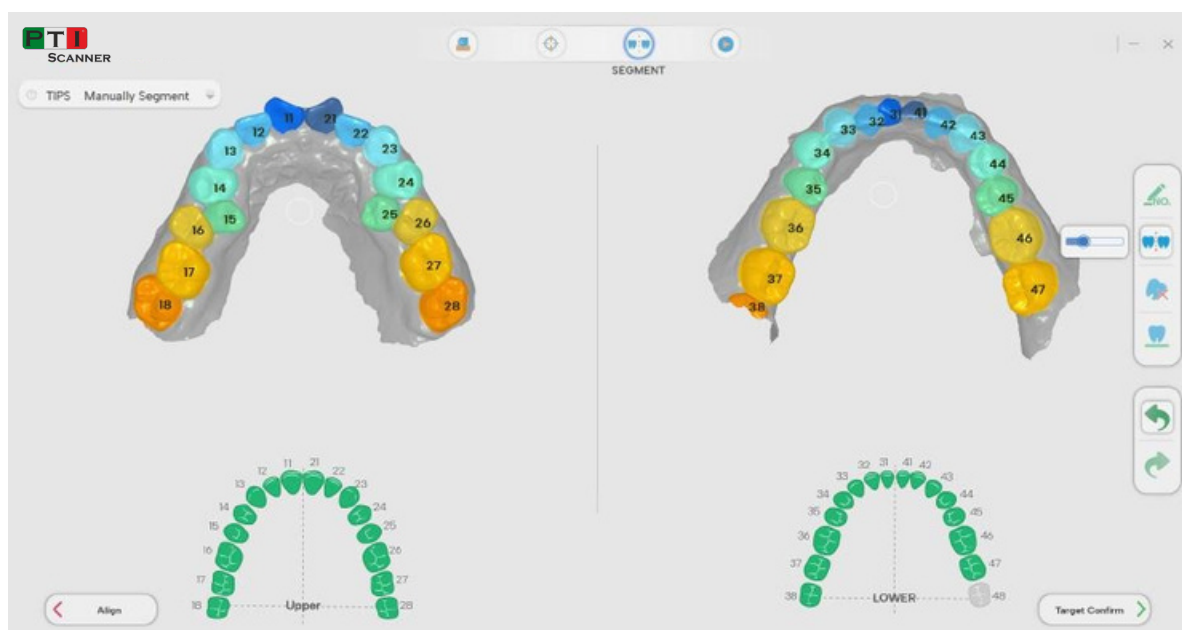


2.3.2 Manual segmentation

The specific operation procedure is as follows:

1. Removal of the tooth area:

If the tooth position is not selected in the selection operation area, click the manual split button on the right and apply it on the model, and the erased part will change to the color of the gum, that is, it will be erased.

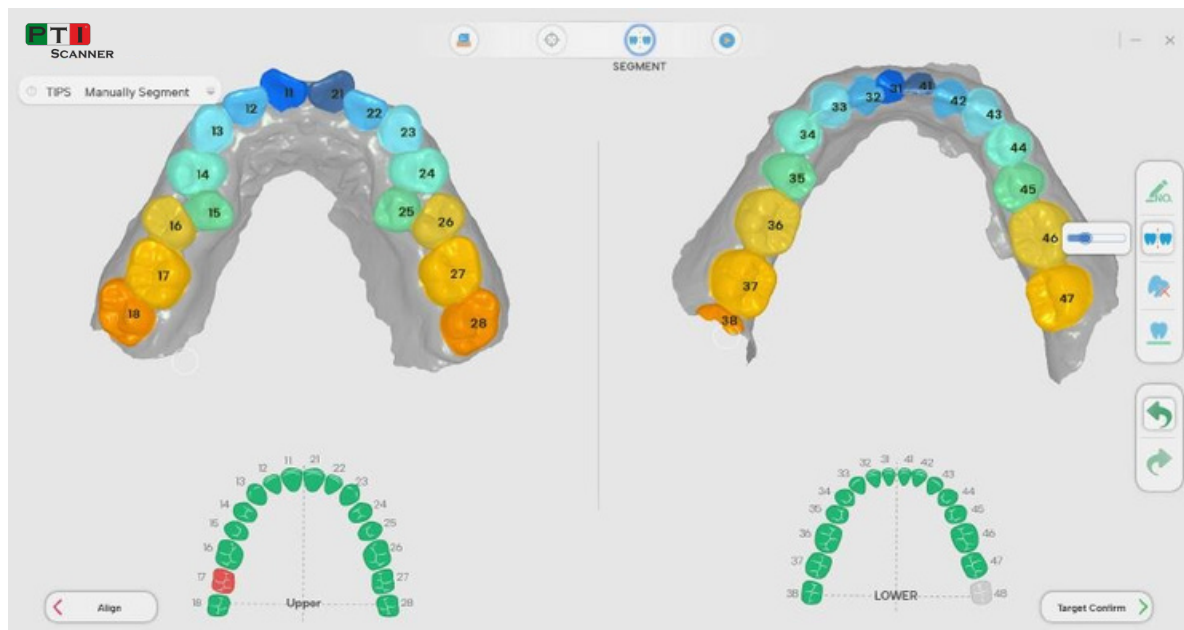


2. Co-opted dental area:

A: Click the manual segmentation button on the right to enter the manual segmentation function, select the No. 16 tooth position in the tooth selection operation area, right-click to apply the unselected tooth area, if the area of the applied area is larger than the original area of the No. 16 tooth position, the applied part becomes the No. 16 tooth position, otherwise the application is invalid.

B: Click the manual split button on the right to enter the manual segmentation function, select the No. 16 position in the tooth selection operation area, and apply the tooth position on the model, the tooth area is smeared and changed to the No. 16 tooth position.

C: Select the number 16 position in the tooth selection operation area, and the tooth will be automatically divided after the neck edge line of the tooth position on the application model forms a closed curve.



The radius of the brush: Adjust the brush size by dragging the progress bar with the mouse.

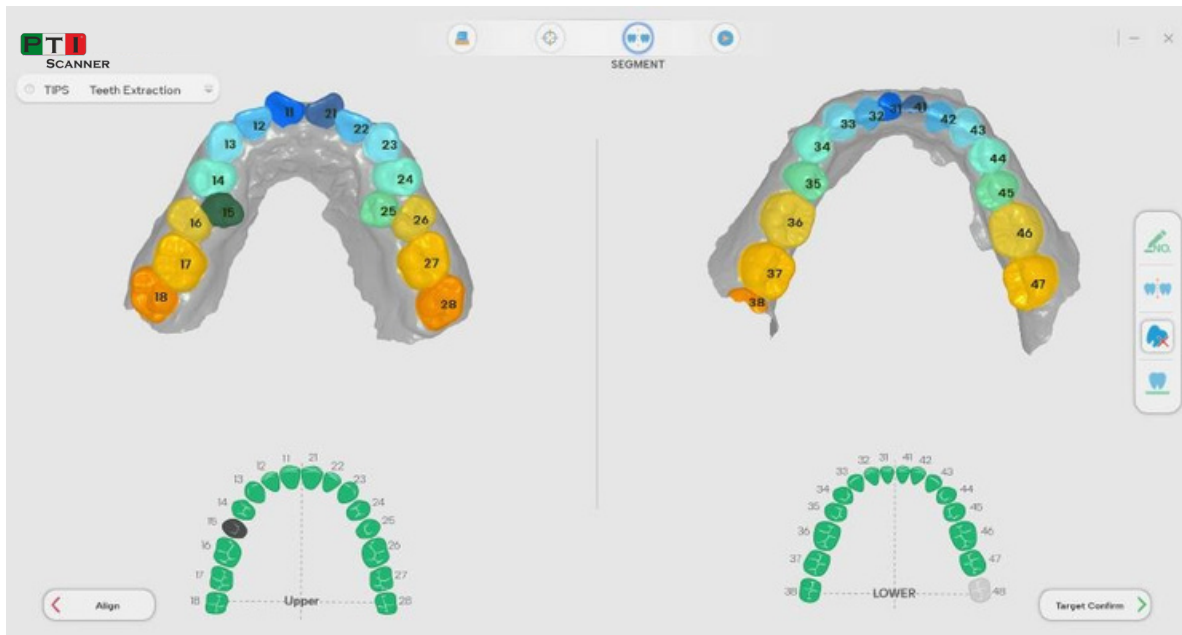
 Undo.

 Redo.

2.3.3 The tooth extraction

The specific operation procedure is as follows:

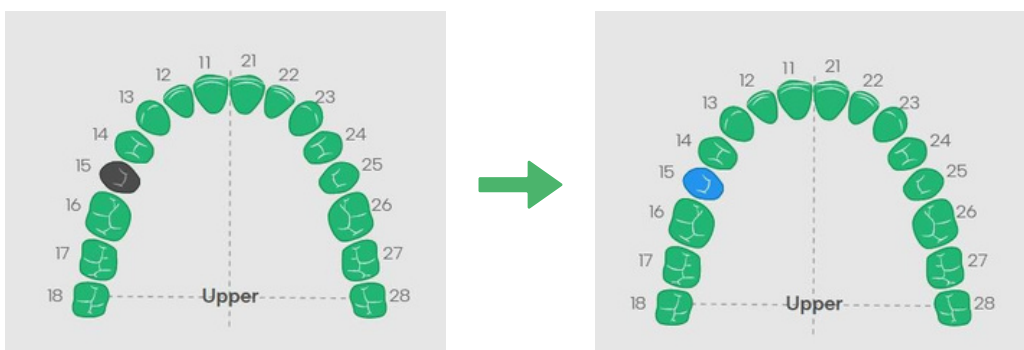
1. Click the tooth 15 in the selection operation area and then the 15 tooth will turn gray.
- 2.If the tooth extraction is cancelled, right click to select tooth 15 again in the tooth selection operation area.



2.3.4 Keep tooth position

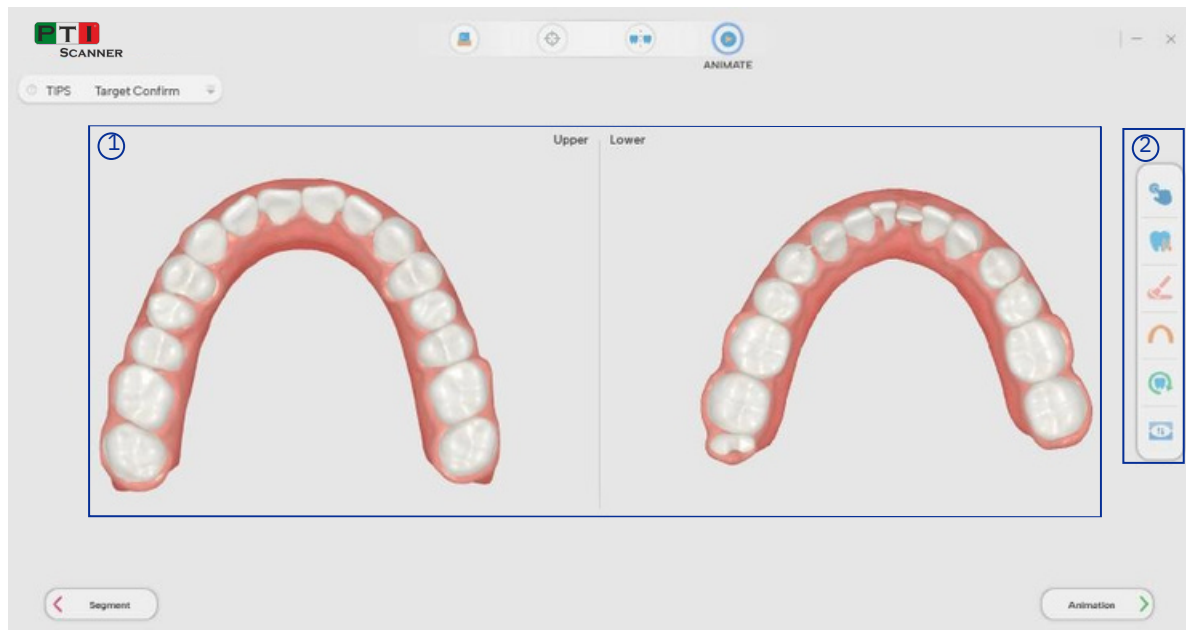
The specific operation procedure is as follows:

1. Select the 15 tooth number to be retained in the selection operation area, then the 15 tooth number on the selection operation area will turn blue.




2.4 Target confirm


This function module mainly completes the final adjustment of the generated 3D tooth model, including the characteristic adjustment of the tooth, manually moving a tooth to the correct position, shaping a single tooth, adjusting the dental arch, and comparing the original position and the jaw before and after. The main interface is introduced as follows:





① Model display area.


② Target bit confirmation module button operation area.


 **Adjust Features button:** Left-click to select the tooth to be adjusted, click the button in the corresponding direction in the arrow button setting area to adjust the direction of the long axis of the tooth, and press and hold the right button to select the near/far midpoint to adjust it.

 **Manually Teeth Moving button:** Double-click the tooth selection by left-clicking, select the tooth blue, and manually move to adjust the tooth position.

 **Sculpt Tooth button:** Left-double-click the selection, press and hold the right button and drag to shape the tooth.

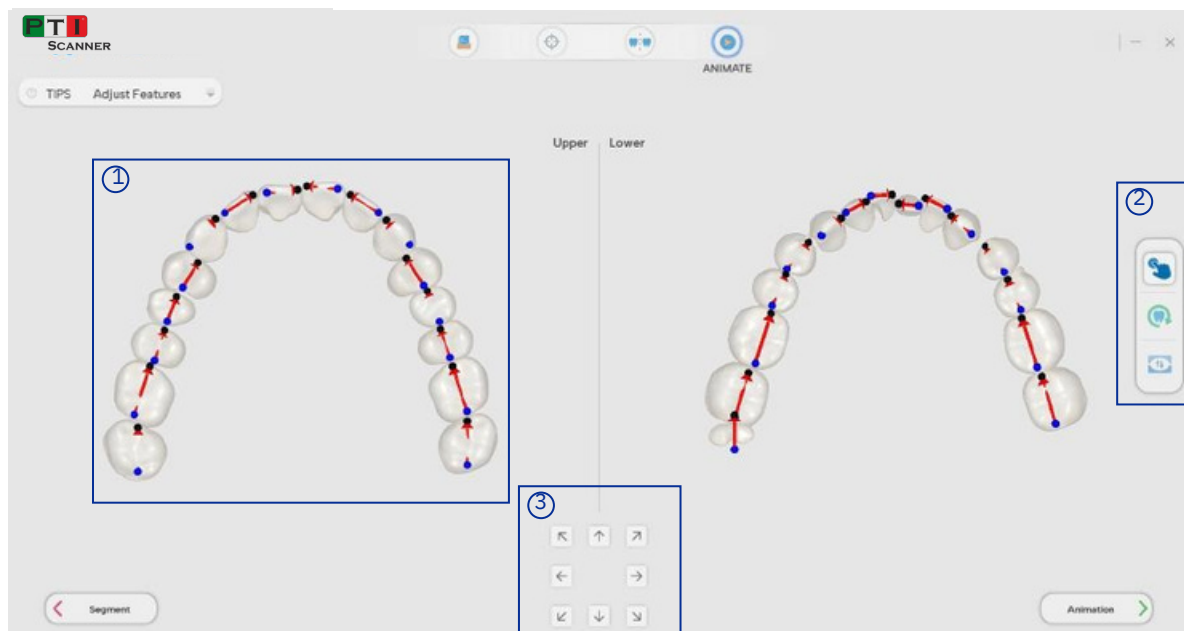
 **Adjust Arch button:** Press and hold the mouse and drag to adjust the arch to the correct position.

 **Origin position button:** Click to show the initial position status of the teeth.

 **Opposite jaw button:** Click to display the opposite jaw of the current jaw face.

2.4.1 Feature adjustment

The main interface of feature adjustment is as follows:



① Model display and operation area.

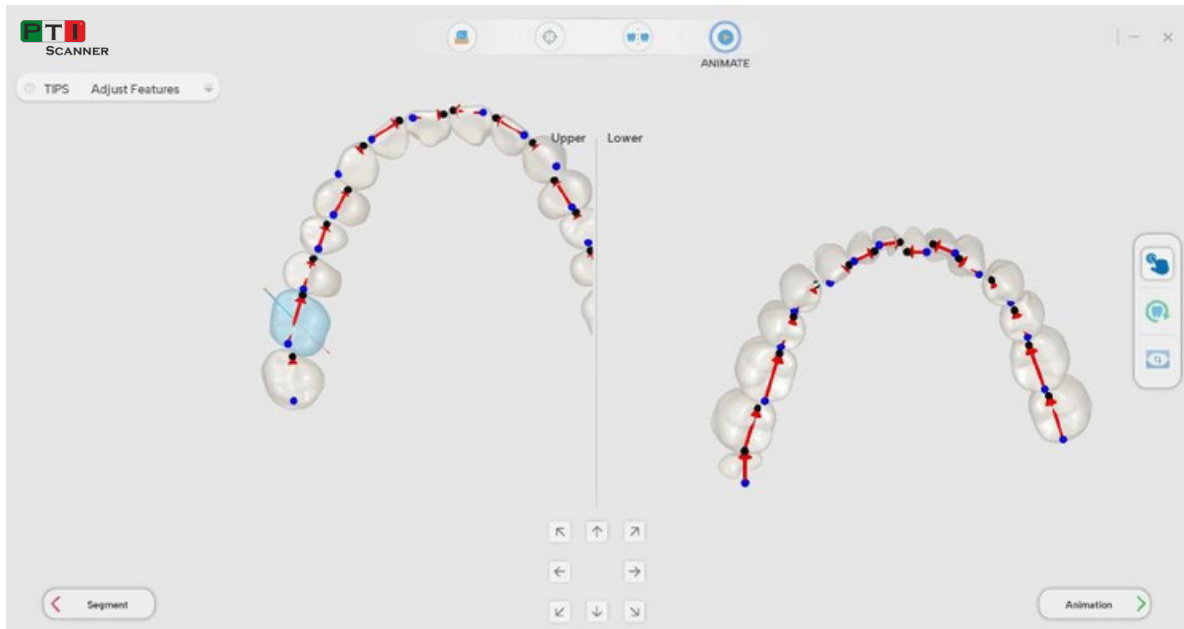
② Feature adjustment button operation area.

③ Arrow button setting area: clicking the arrows in different directions will change the direction of the long axis of the tooth accordingly.

The specific operation procedure is as follows:

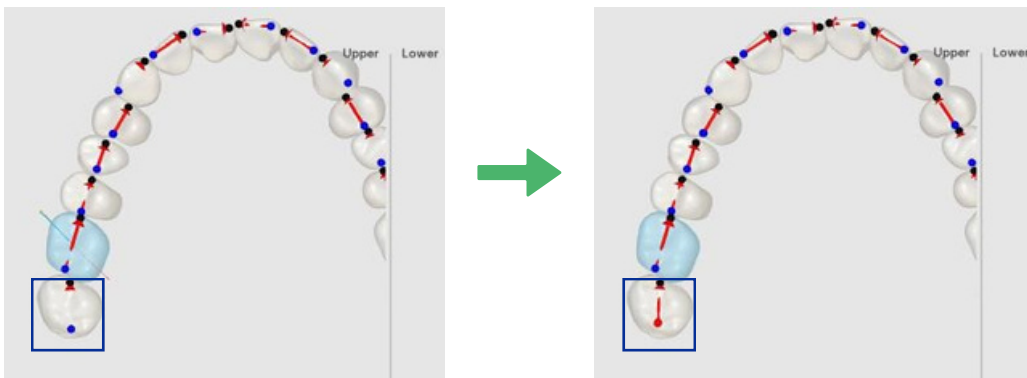
1. Adjust the long axis of teeth

Determine whether the position and direction of the long axis is accurate. If wrong, use the mouse to double click to select the tooth. click Until adjusting the direction of the tooth axis with the direction of tooth growth.



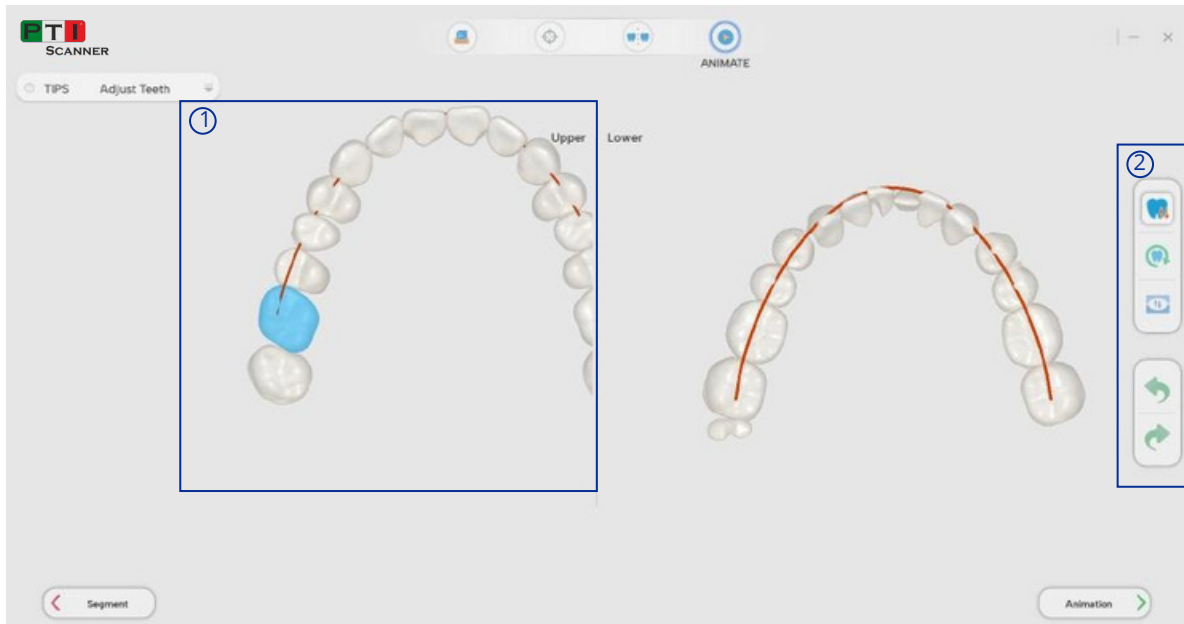
2. Move point

Check whether the near-middle/far midpoint on the model is correctly oriented and positioned, if it is wrong, you can press and hold the right button to select the wrong point to adjust (the anterior tooth area is the ridge direction, the posterior tooth area is the tooth valley direction), and the color of the selected point will turn red, indicating that it is selected.



2.4.2 Single tooth adjustment

The main interface of single tooth adjustment is as follows:



① Model display and operation area.

② Single tooth adjustment button operating area.

The main interface of feature adjustment is as follows:

Double-click to select the tooth to be adjusted, the ctrl + right key for the translation operation, the right key for the rotation operation, the right key and the middle key are the rotation and translation of the view. If the adjustment is wrong, click the cancel button to restore the state before the adjustment.



2.4.3 Sculpt

The main interface of the model sculpting is as follows:



① Model display area.

② Reshape the model button action area.

Increase Add: Add the tooth model material, click to select the Add button, press and hold the right button and drag to shape the tooth.

Reduce Reduce: Double-click the tooth selection by left-clicking, select the tooth blue, manually move to adjust the tooth position.

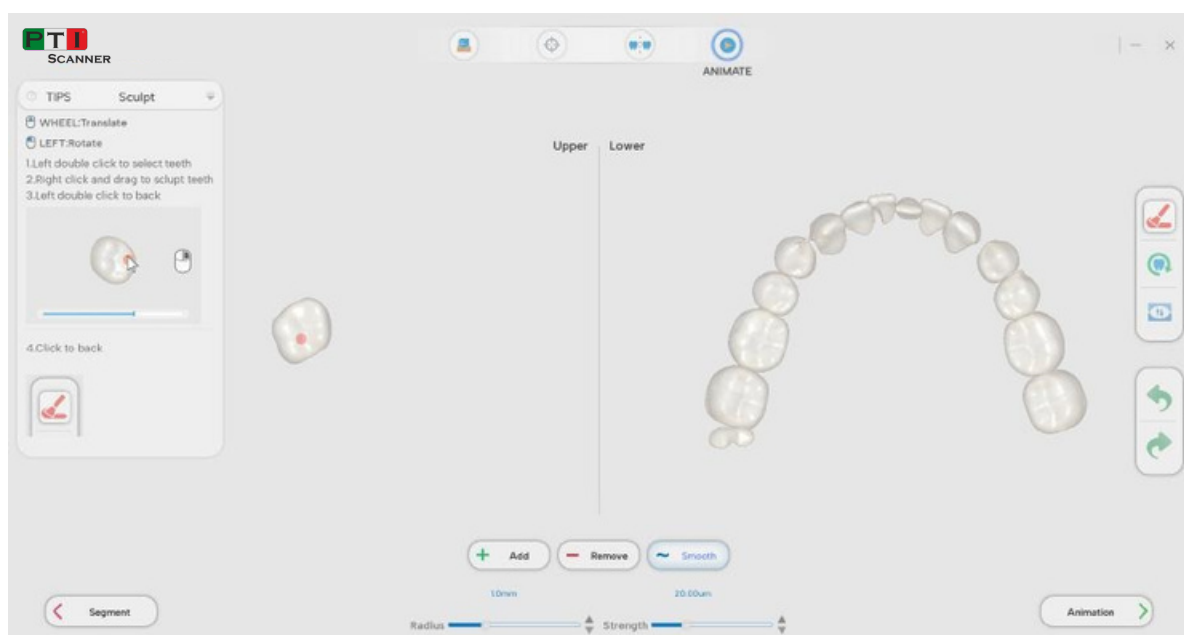
Smooth Smooth: To smooth the surface of the model, click to select the Smooth button, press and hold the right button and drag to shape the teeth.

Radius Radius: Range of brush size value(0.2~3.2);
Modify the value in the input box/drag the mouse to adjust the progress bar.

Strength Strength: Range of brush strength values(4~64); Modify the value in the input box/drag the mouse to adjust the progress bar.

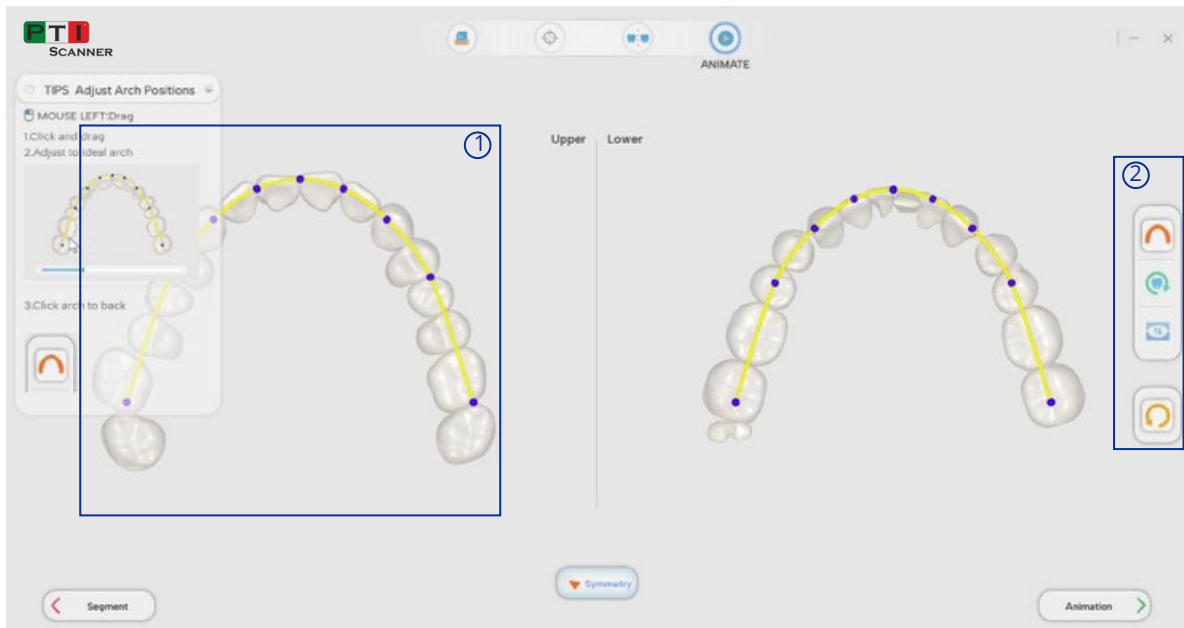
The specific operation procedure is as follows:

1. Click the Retouching Model button to enter the dressing interface, double-click the selected teeth, the rest of the unselected teeth will be hidden.
2. Trim the corresponding teeth by clicking the Increase/Decrease/Smooth buttons, drag the left button to rotate the operation, and drag the right button to shape the teeth.
3. Double-click the tooth again to exit the current selection.



2.4.4 Tooth arch adjustment

The main interface of tooth arch adjustment is as follows:



① Model display and operation area.

② Dental arch adjustment button operating area.

Symmetry Symmetry: When adjusting the one side arch, the same adjustment is made with the symmetrical other side arch.

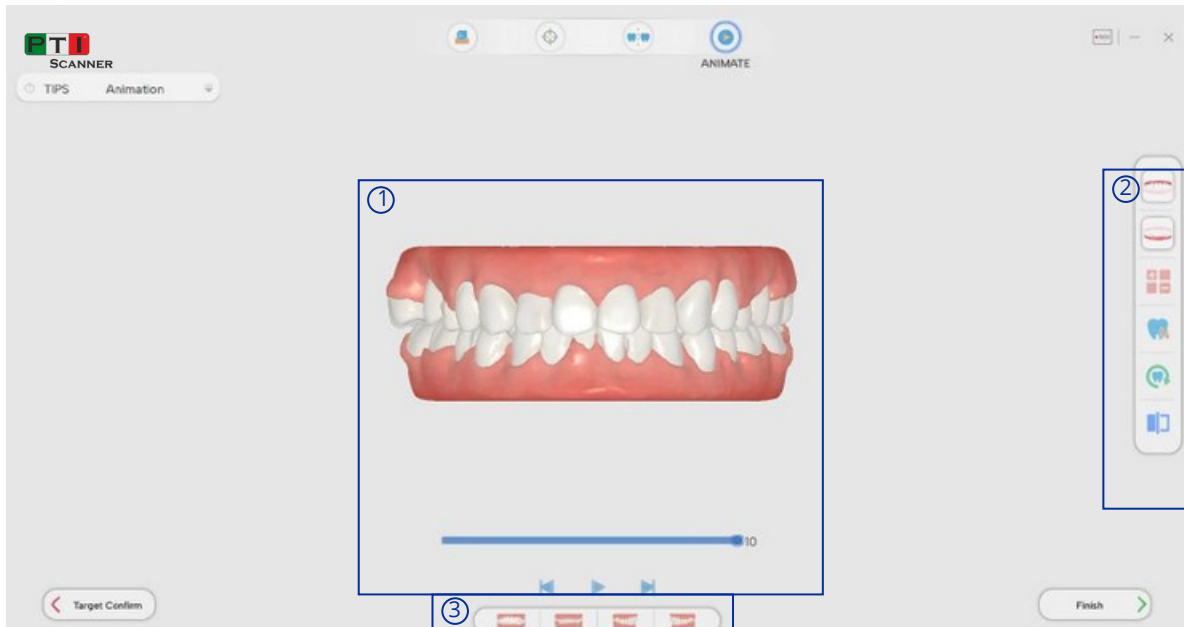
Cancel: All adjustments of the arch were cancelled and the arch was restored to the initial state.

The specific operation procedure is as follows:

1. Click the arch adjustment button to enter the arch adjustment interface.
2. Left/right click long to select, drag the mouse to move the model to the correct position, to align the model up and down the jaw, click the symmetry button, when adjusting the one-sided dental arch, the symmetrical other dental arch will also make the same adjustment.
3. Click arch adjustment button to exit the arch adjustment interface.

2.5 Animate

This step is aimed to display the generated animation model, you can set the number of animation steps and further adjust the teeth, the main interface is introduced below.



① Model display area.

② Tool operation area.

③ View the image button area from different perspectives.



REC button: Click this button to record the resulting animation.

Upper Jaw button: Display the upper jaw model



Lower Jaw button: Display the lower jaw model.



Recalculate Animation button: The input is limited between 6-20, after entering the number of steps then click the button to generate an animation (Automatically generate animation when entering this interface for the first time) ✓



Before view button: Click this button to display a comparison of the model before and after correction.

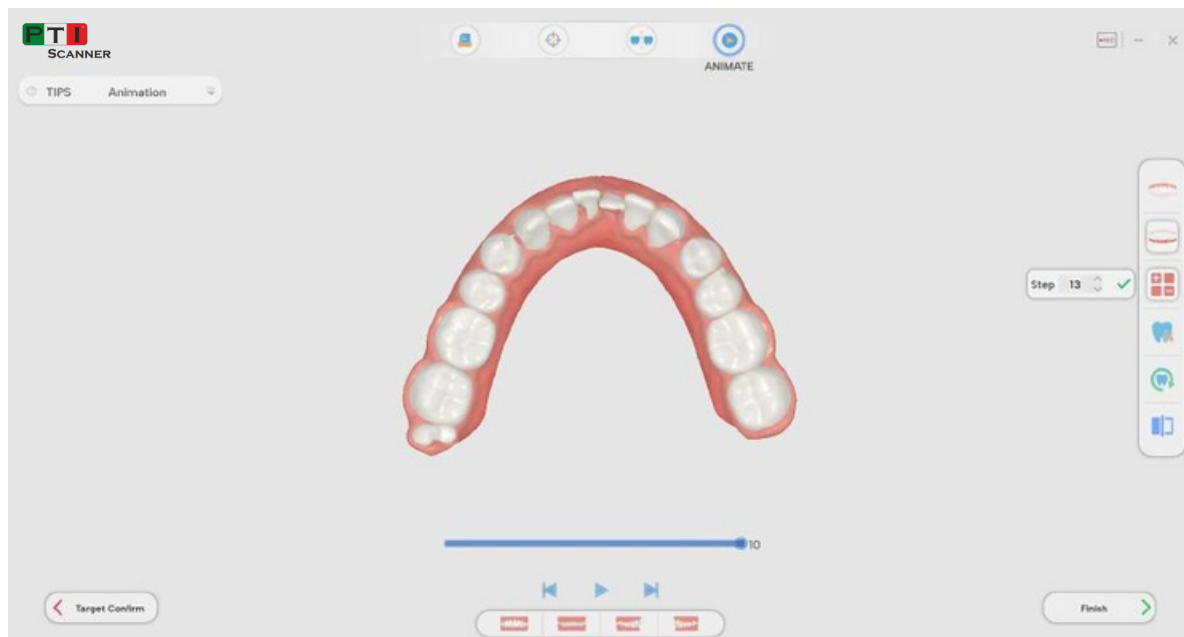


2.5.1 Animation generating

The specific operation process is as follows:

1. Step adjustment

Click the step adjustment button, the step input box will pop up, enter a number between 6~20, or click to adjust the step count, and then click the button to complete the adjustment of the steps.



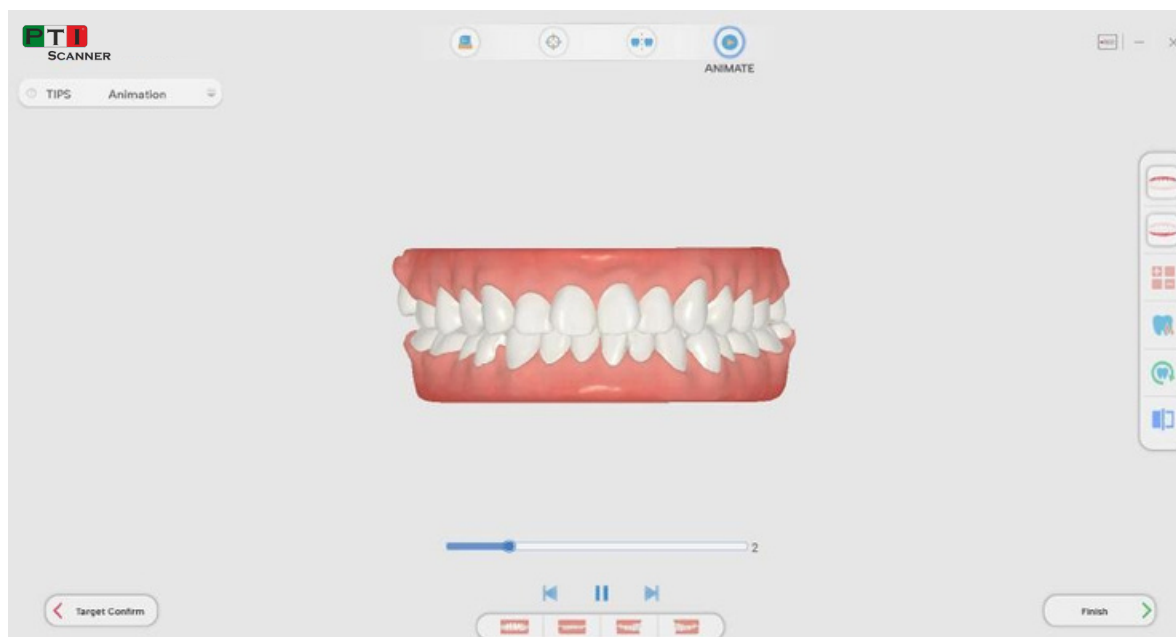
2. Single tooth adjustment

If you find that the model needs further adjustment, click the Adjust Teeth button to adjust the model, double-click to select the tooth position to be adjusted, click ctrl + right key to move the operation, right-click to rotate the operation, and left-click and middle button to rotate and translate the view. If the adjustment is wrong, click the undo button to restore the state of the tooth before the adjustment.



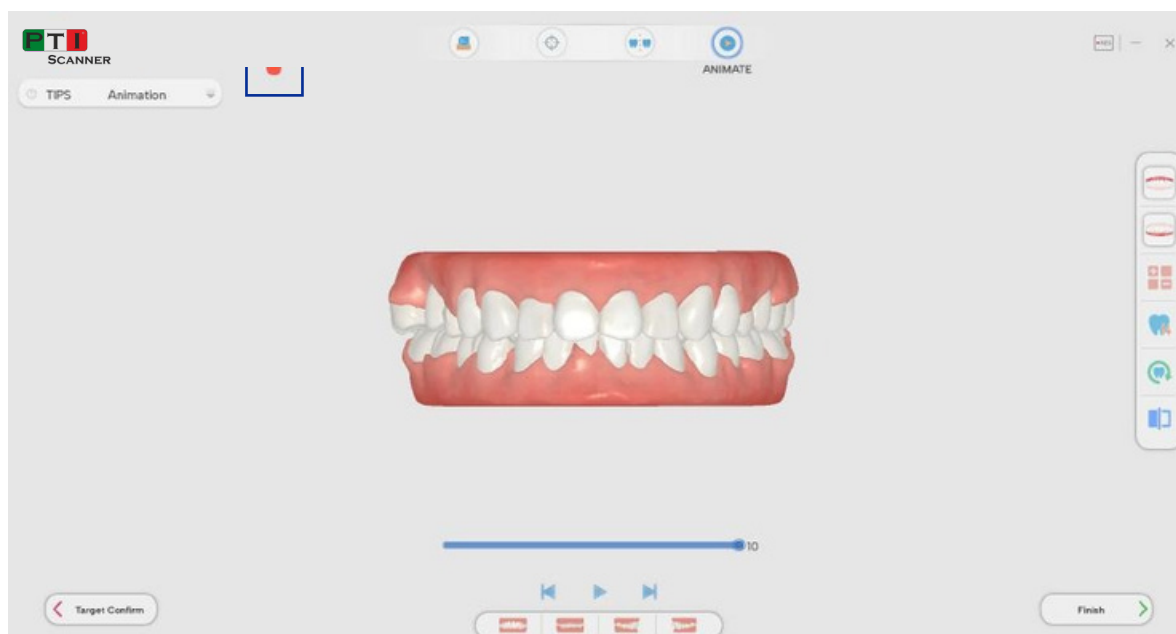
3. Animation playback

Click the play button to play the animation, and the number of steps played is the set step value.



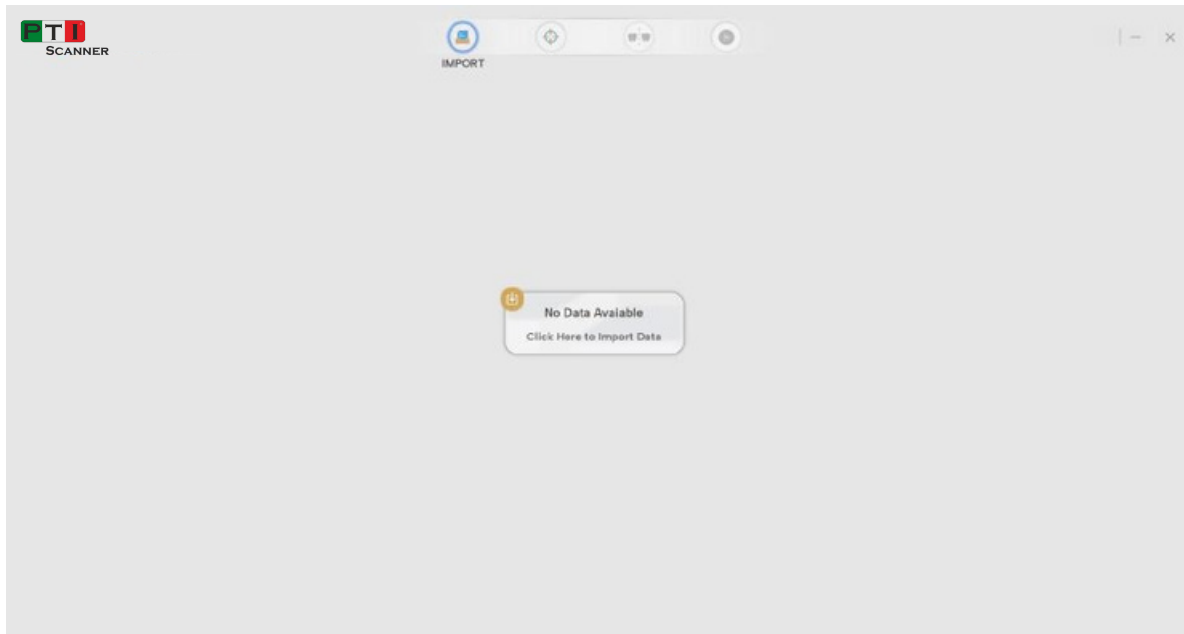
4. Videotaping

Click Record to record related operations; Click again to end the recording. The recording file is stored in the case folder.



5. Done

When you click Finish button, the case ends and the program returns to the initial main interface.





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