V4.6.6

3DMAKERPRO

JMStudio

macOS | Windows

MANUAL

Download latest **JMStudio** from

https://forum.jimumeta.com/home/help/download.html

Get latest **Manual** from

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Update Notes

The version information is as follows:

Version information	Update Notes
2025/3/17	1. Added scan countdown 2. Added smooth mesh function 3. 3D view layout change
2025/6/30	1. Add a cutting surface 2. Added a prompt that the scanning brightness is too low 3. Added the function of adjusting the depth of field
2025/9/25	1. New feature for data management view to save favorite colors and history colors. 2. Added a one-click option to show/hide all data. 3. New graphical and text explanation for advanced parameters in the integration interface.

Software Installation

Operating System Requirement

Recommended Computer Configurations

Intel Core i7 8th, 16GB RAM, NVDIA1060 GPU with 4GB VRAM

Minimum Computer Configurations

Intel Core i5 8th, 16GB RAM, MX250 GPU with 2GB VRAM

How to Install

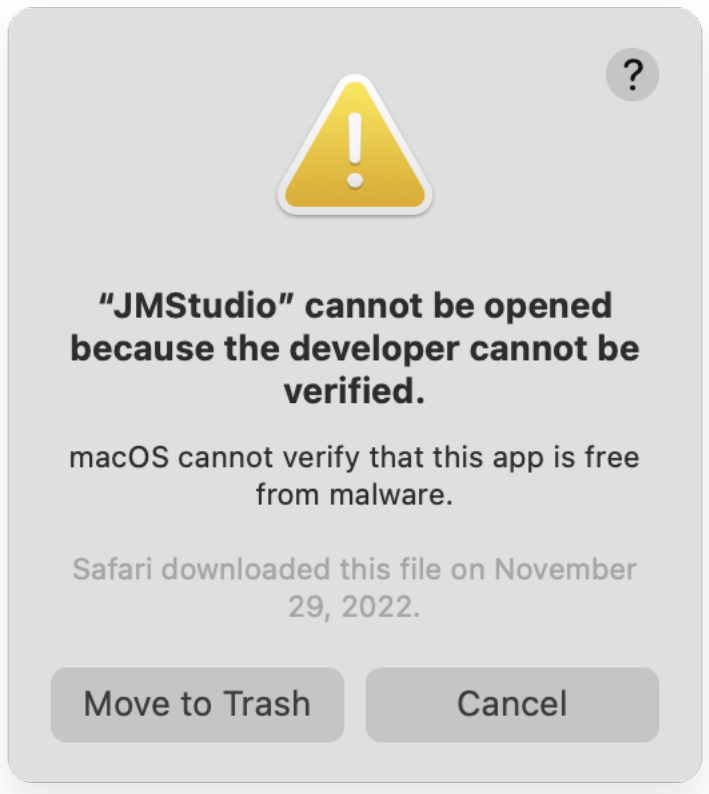
You can acquire the application file by visiting our website.

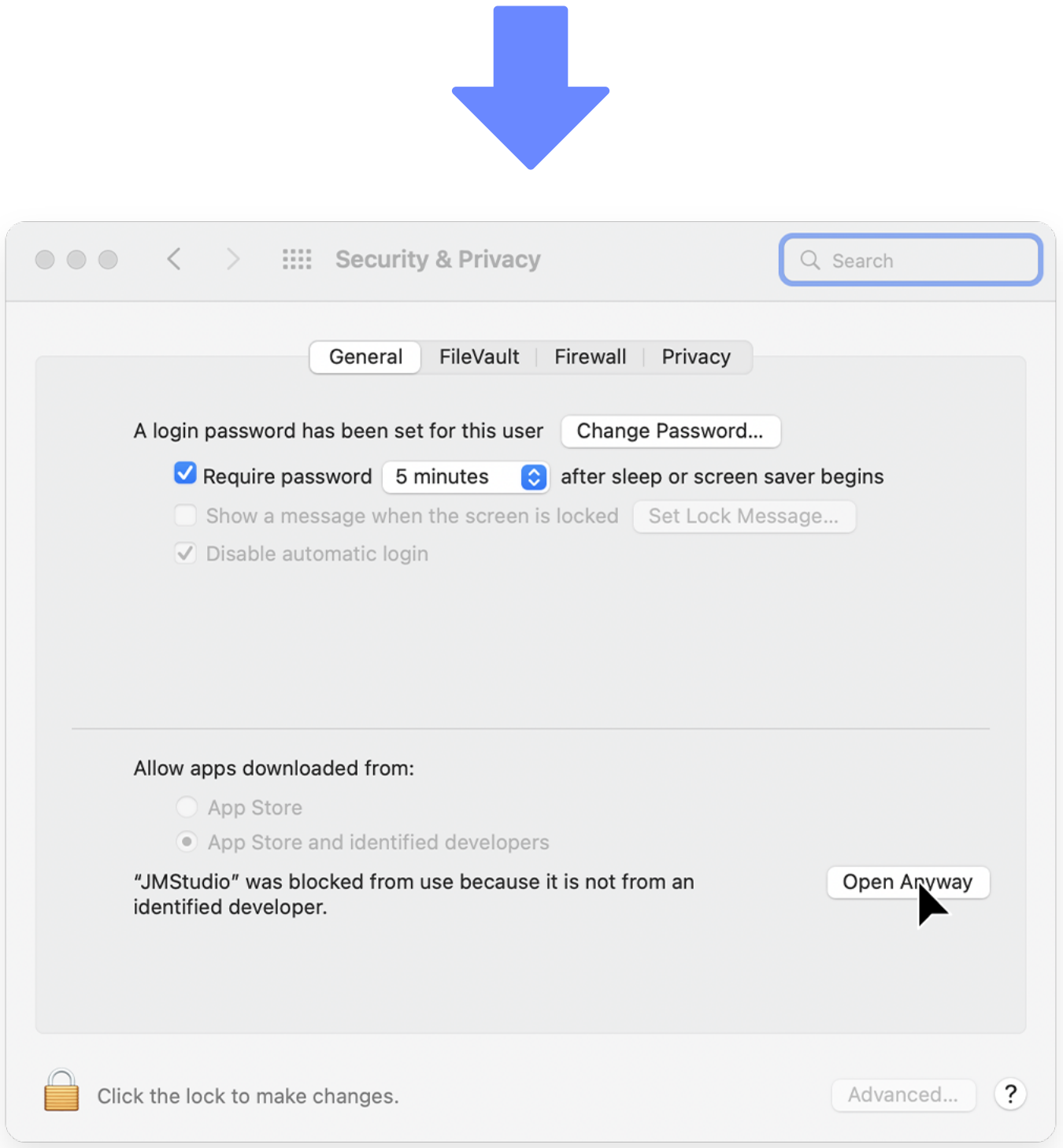
Follow the steps below to install the software.

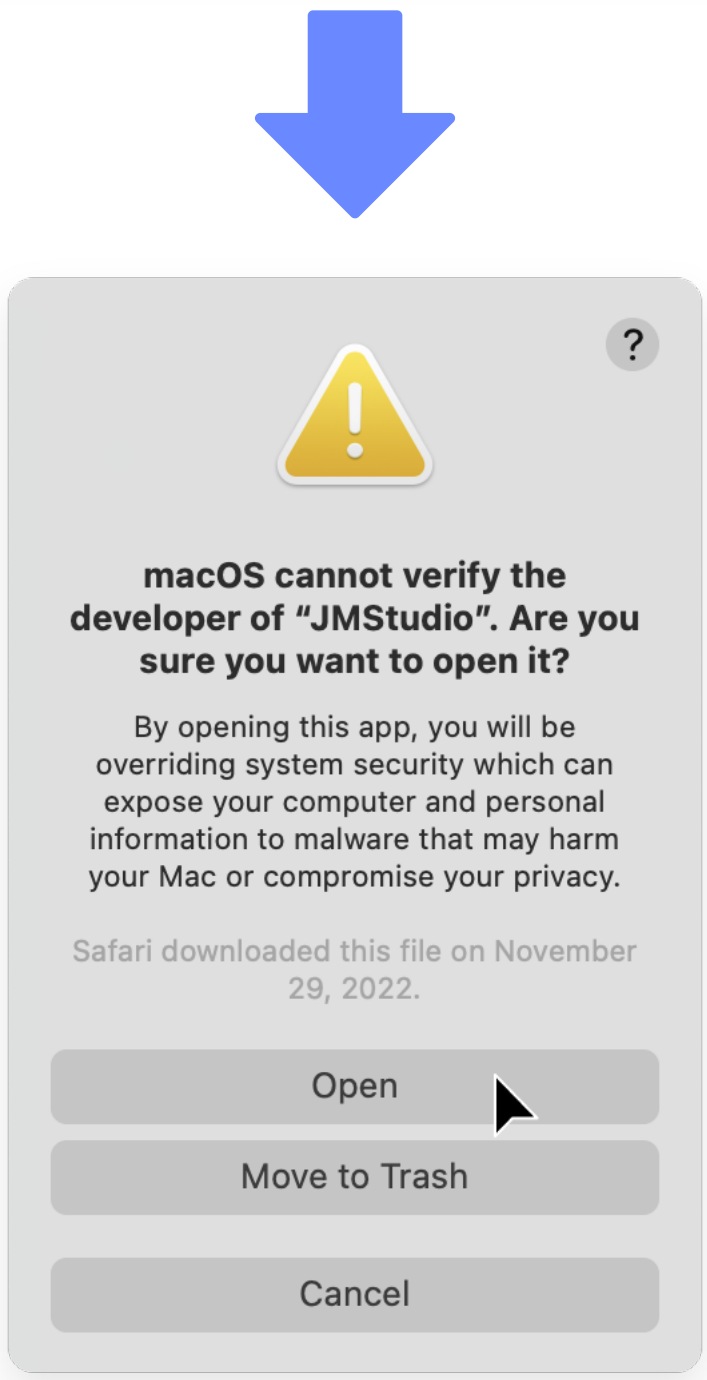
For macOS

①Double-click the application file and drag it to the Applications folder.

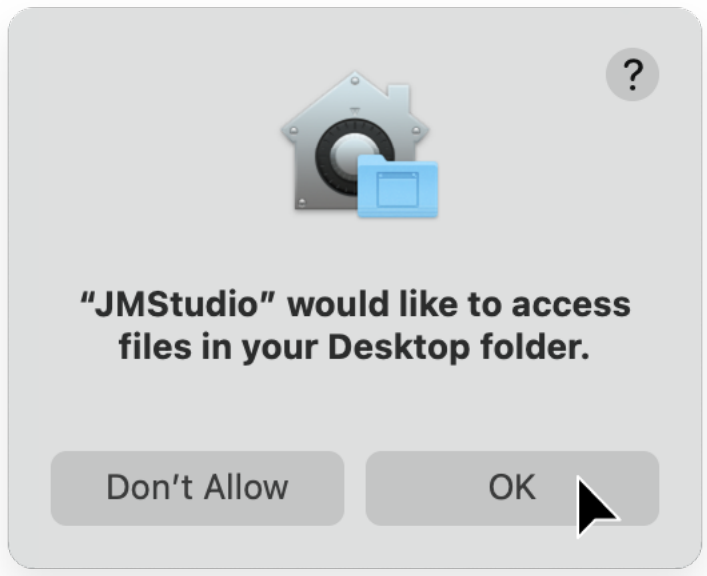
②When this erro occurs, please go into your Security & Privacy，check the App Store and Identified Developers radio button, and click Open Anyway.

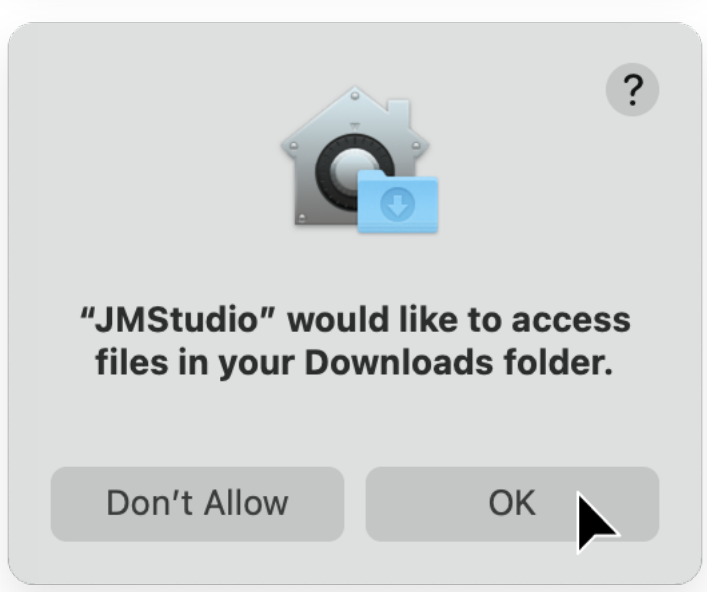


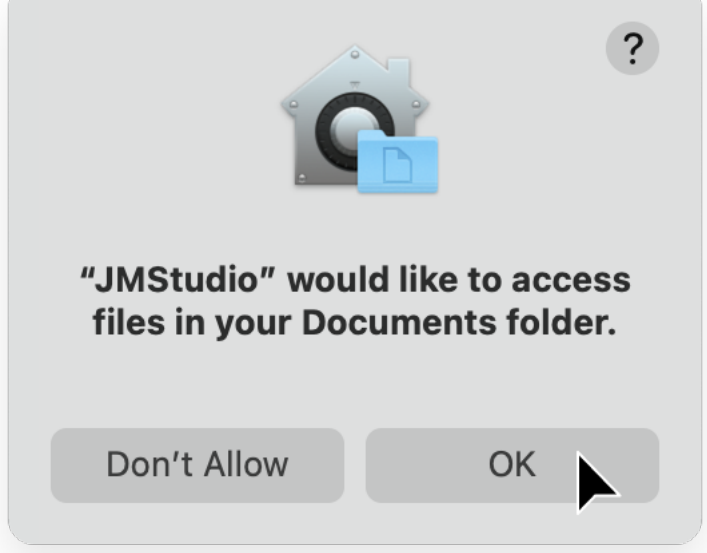

Security & Privacy
Search
General
FileVault
Firewall
Privacy
A login password has been set for this user
Change Password...
Require password
5 minutes
after sleep or screen saver begins
Show a message when the screen is locked
Set Lock Message...
Disable automatic login
Allow apps downloaded from:
App Store
App Store and identified developers
"JMStudio" was blocked from use because it is not from an identified developer.
Open Anyway
Click the lock to make changes.
Advanced...
?


?
macOS cannot verify the developer of "JMStudio". Are you sure you want to open it?
By opening this app, you will be overriding system security which can expose your computer and personal information to malware that may harm your Mac or compromise your privacy.
Safari downloaded this file on November 29, 2022.
Open
Move to Trash
Cancel

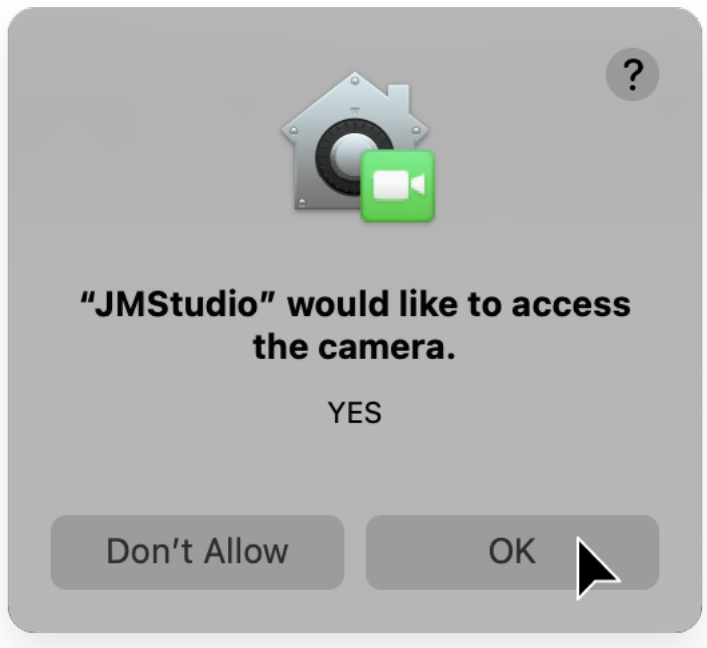
③Allow JMStudio to access files in your Desktop folder.





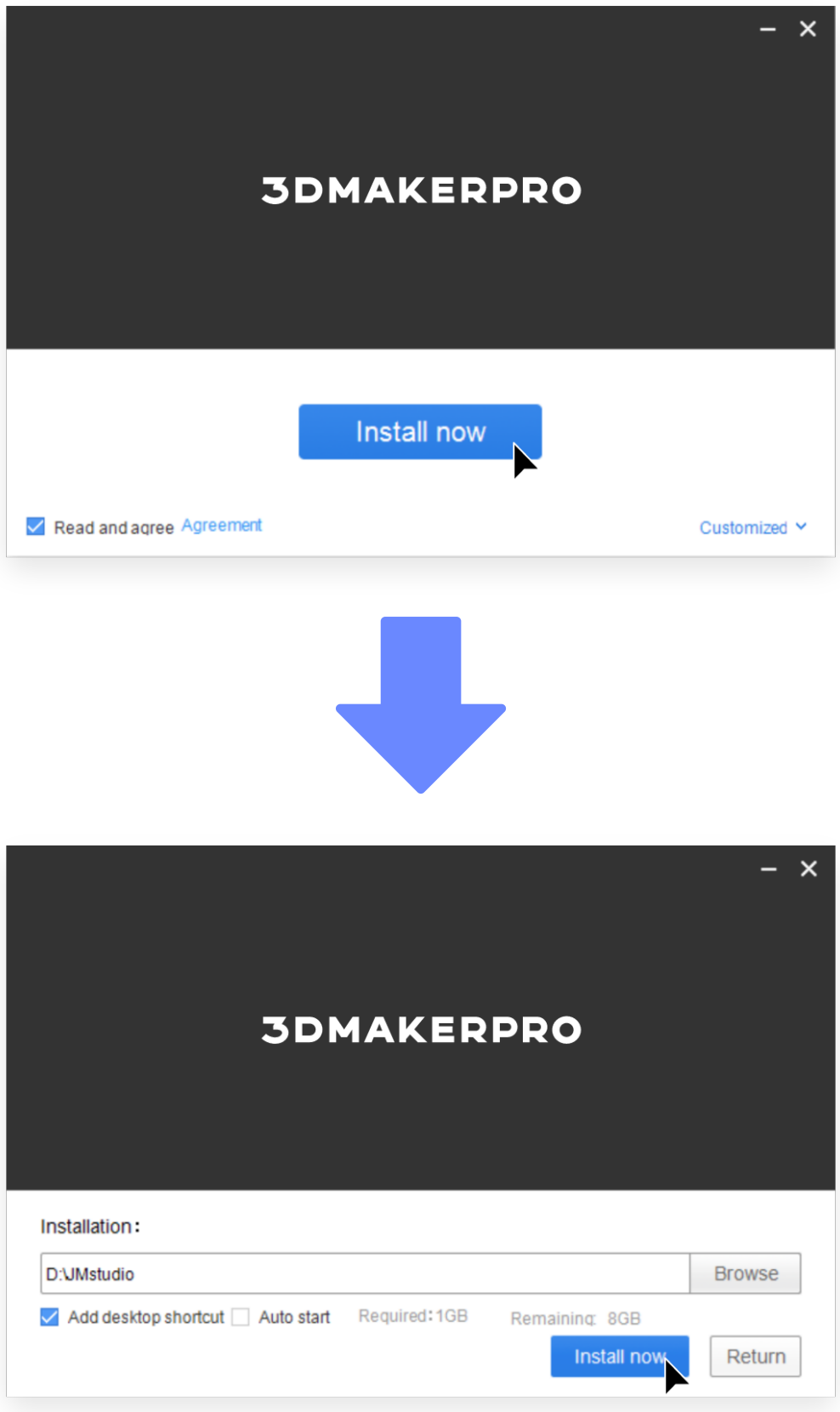


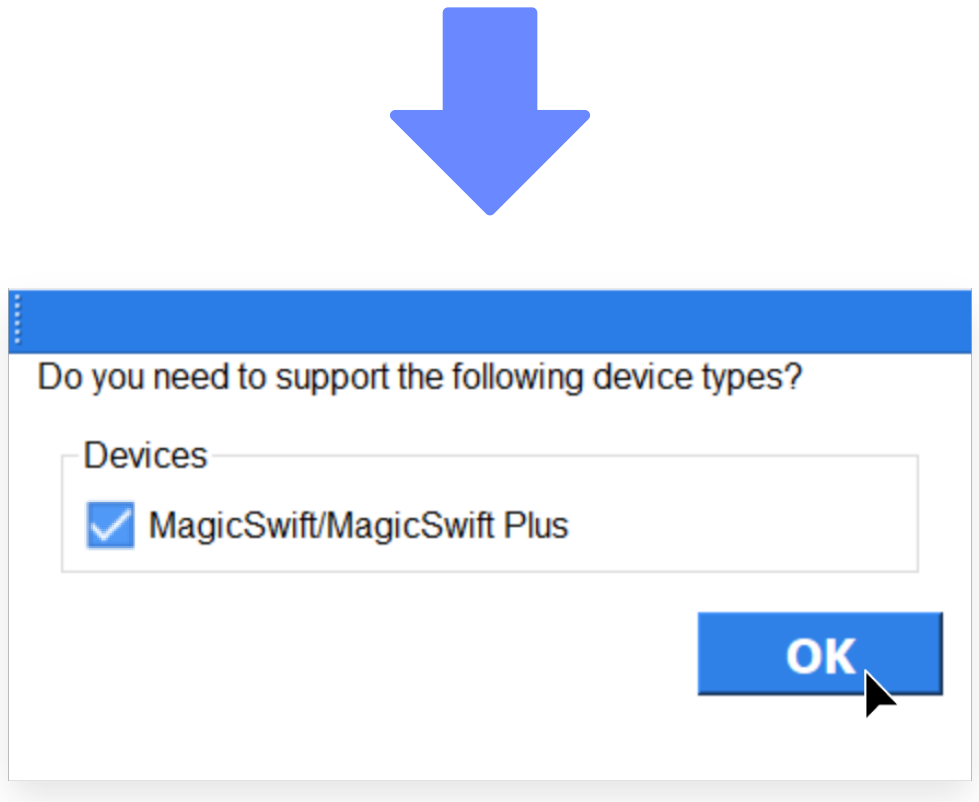
④Run JMStudio, allow it to access the camera, now the installation is completed.

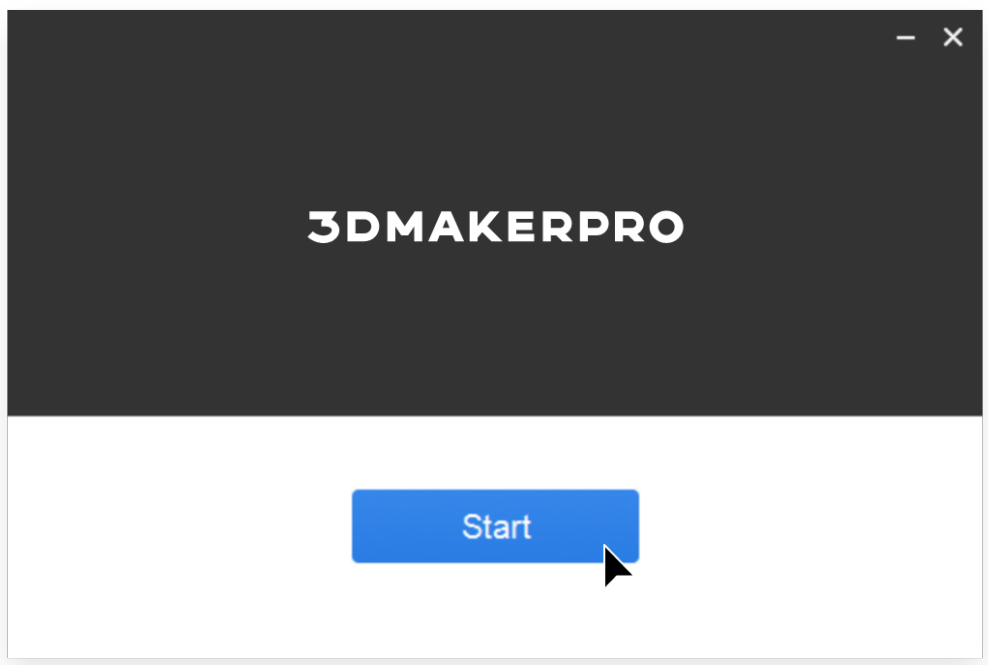


For Windows

Click on the application file, follow the intallation wizard and click Next to install the software.







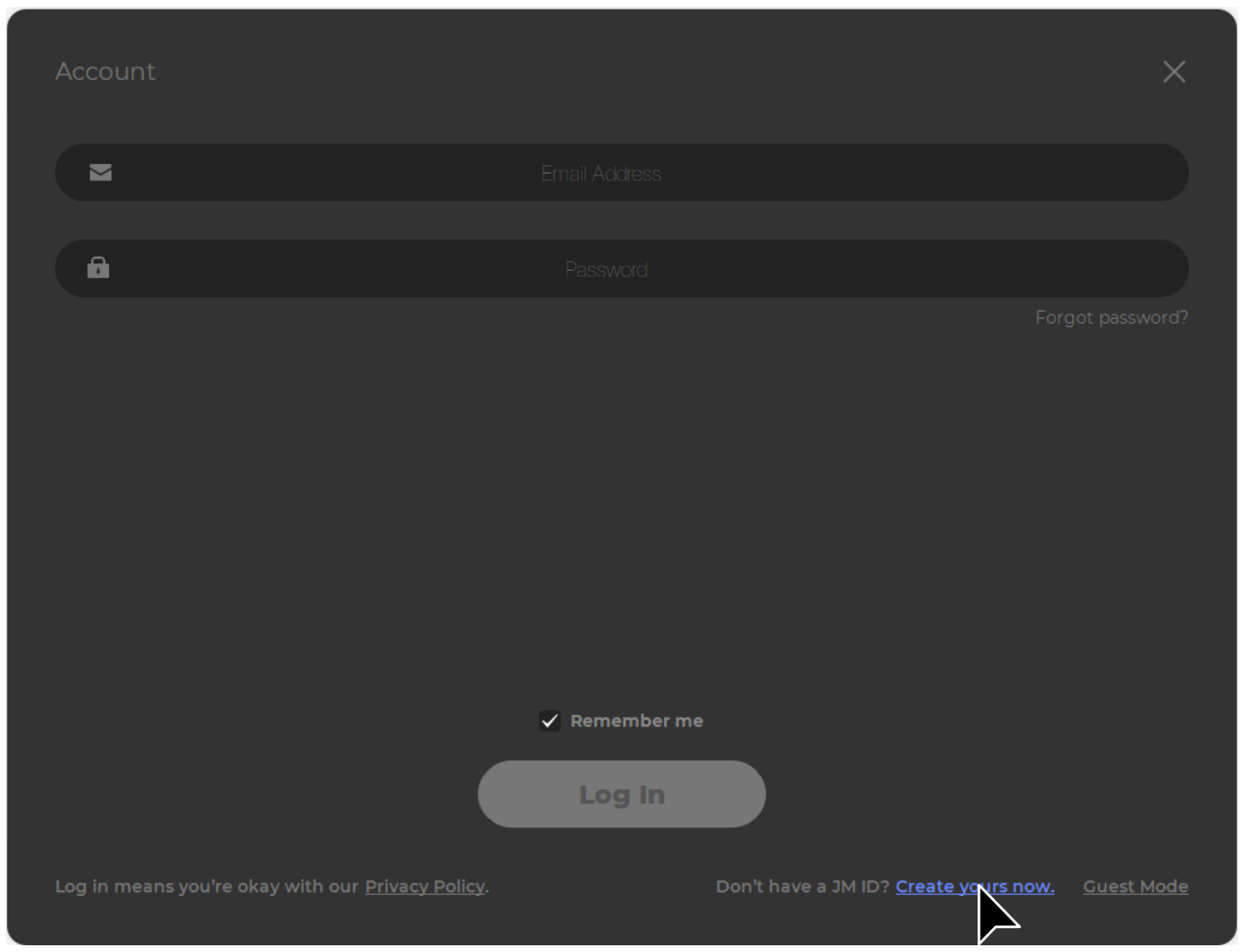
Software Upgrade

Please make sure you’re running the lastest version of software.

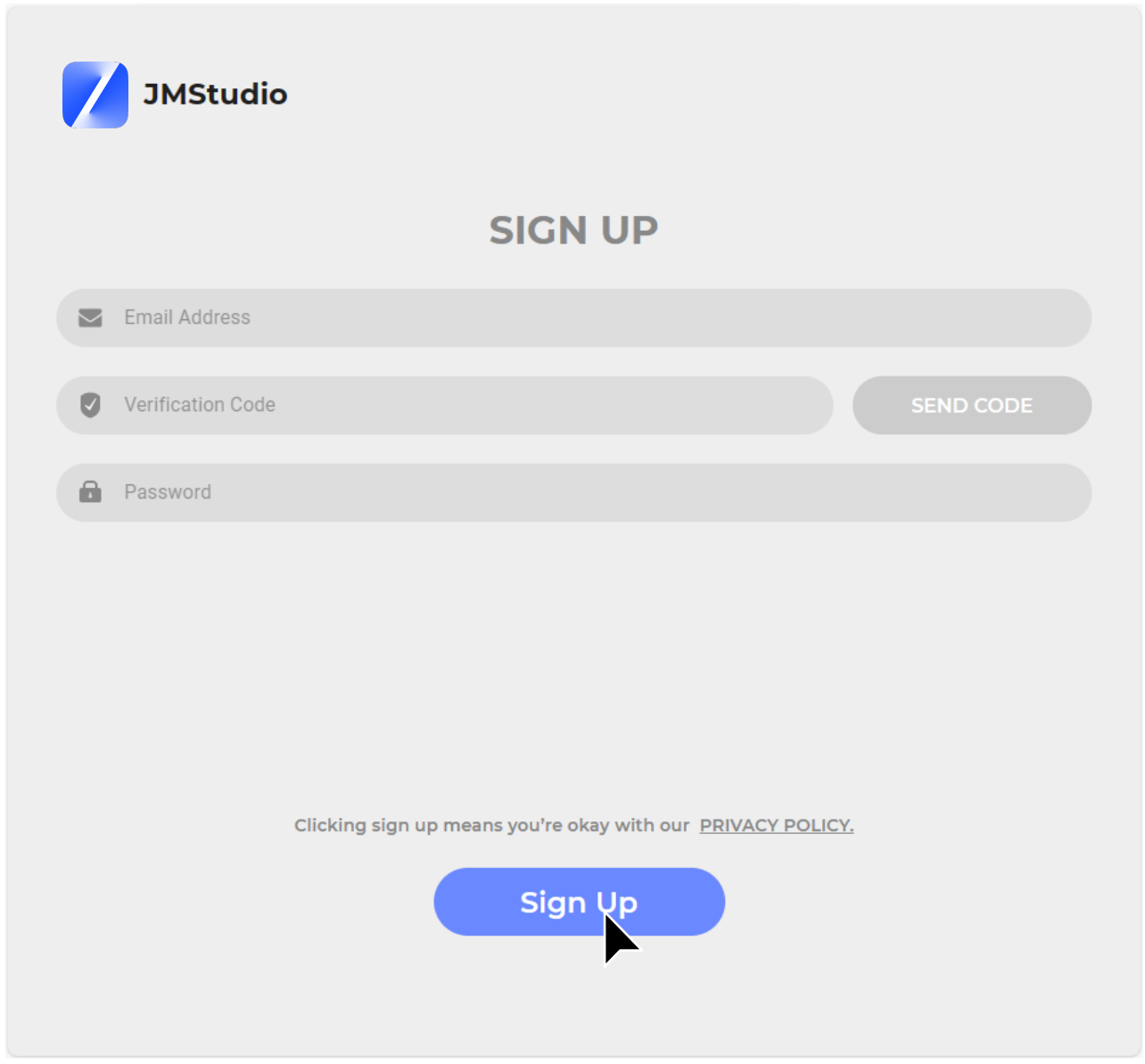
Log in to register

Log in with your JM ID. If you have not registered, you can click "Create yours now." in the lower right corner to jump to the official website to register.

* You can also use it directly through the "Guest Mode" in the bottom right corner.

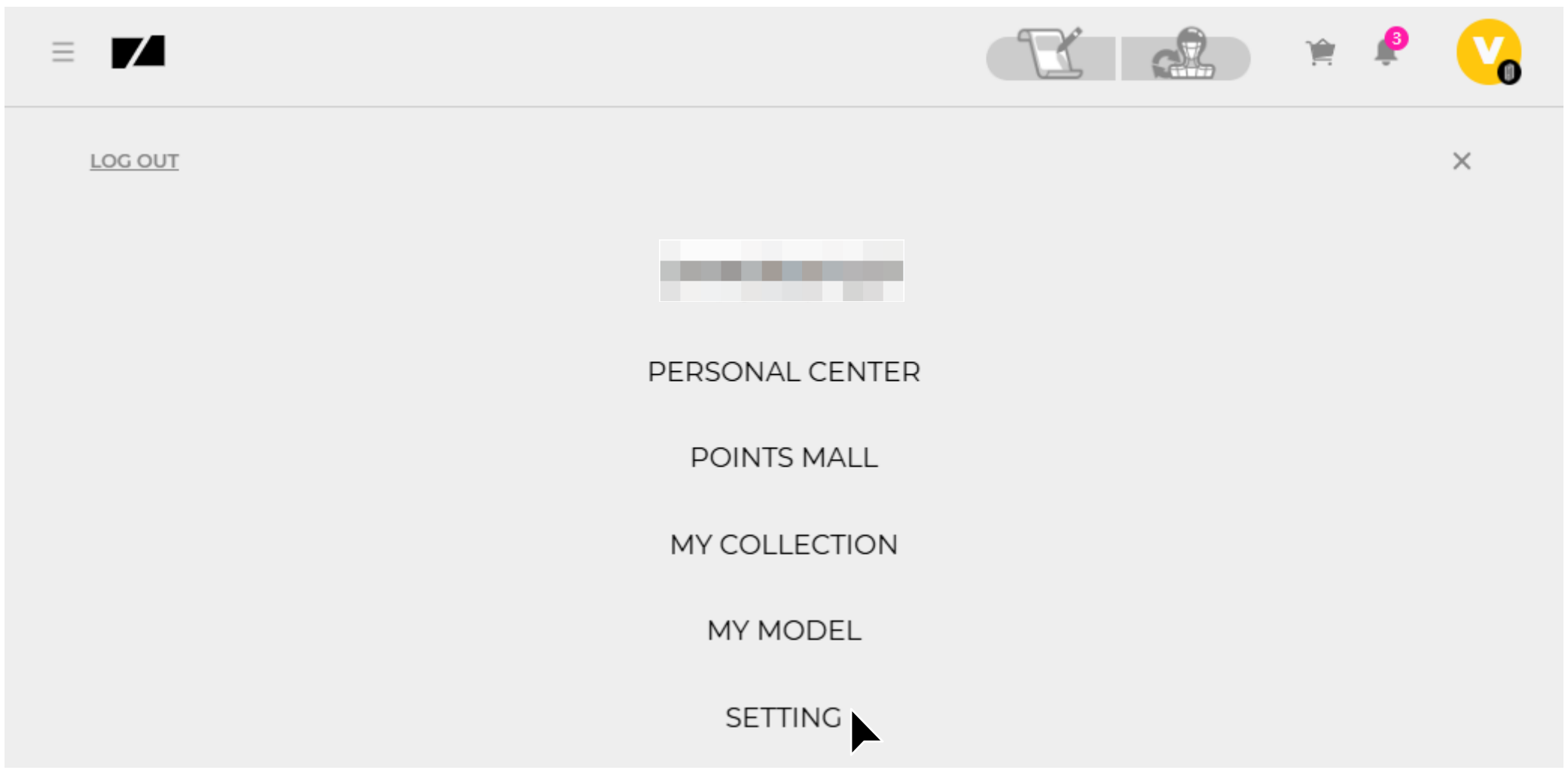


Enter the email information, click "SEND CODE", enter the verification code in the email and set the account password to register.

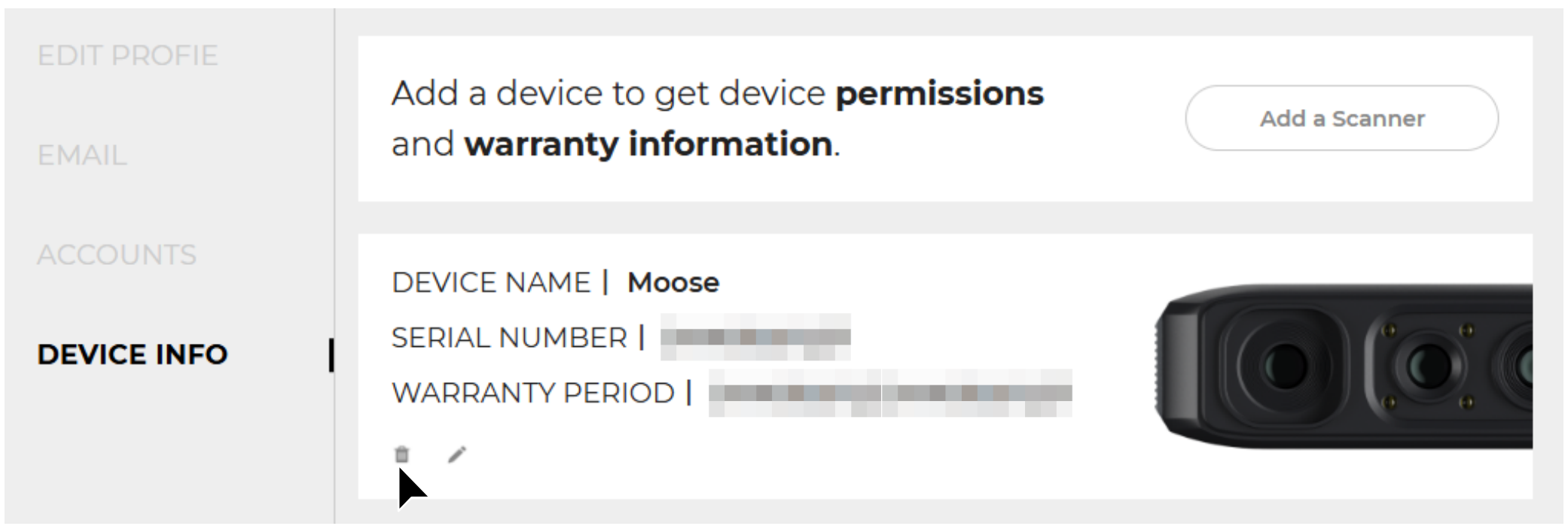


*Maintenance of equipment information

Open JMMeta in your browser (https://forum.jimumeta.com/home.html), log in to your JM ID, expand your login account information in the top right corner, and click "SETTING".



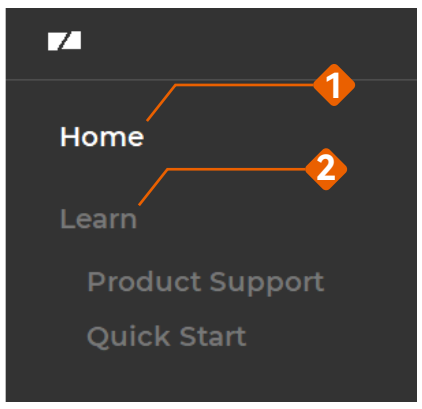
In "DEVICE INFO", check the devices under your name. If you need to unbind the device, click the delete button at the bottom of the device.



Start page

The start page is divided into two parts:

① Home ② Learn



Home

The Home function partition is as follows:

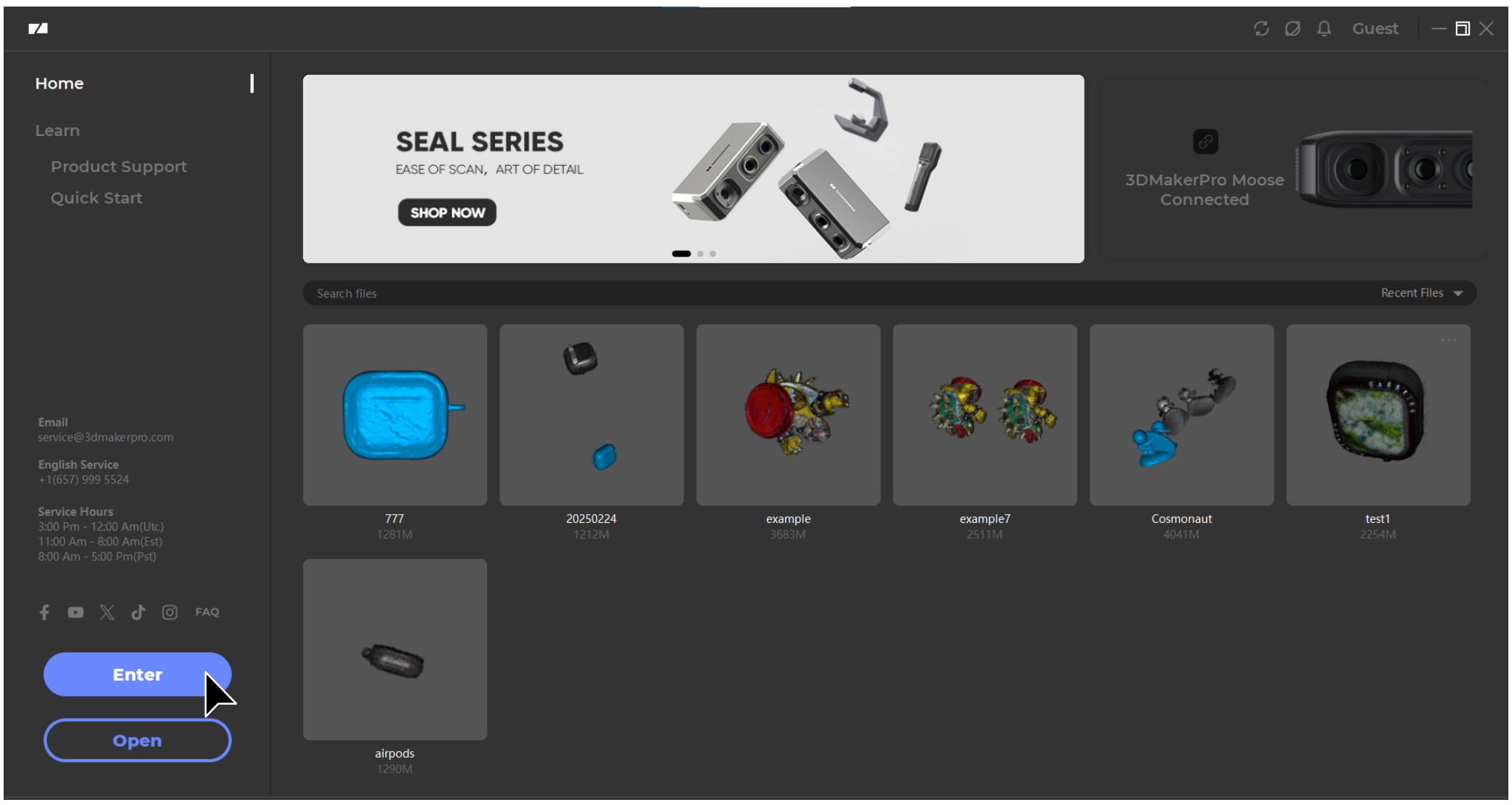
①Title Bar ②Navigation Bar ③Official Information Bar ④Main Operation Area ⑤Bulletin Board ⑥Device Status Bar ⑦File List ⑧Status Bar

Learn

The Learn function is divided as follows:

①Title Bar ②Navigation Bar ③Official Information Bar ④Project New Construction ⑤Study Area ⑥Status Bar

You can directly understand the general operation content in "Learn", and then select "Enter" from "Home" to enter the scan preview state.

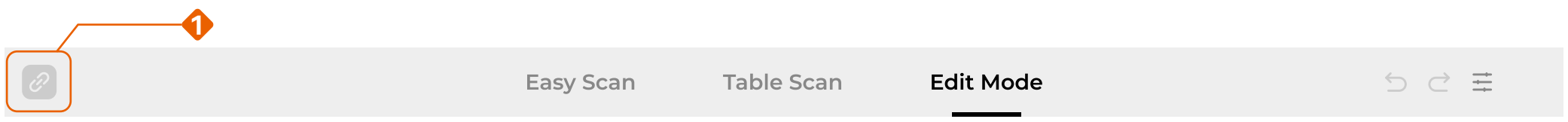


Device status confirmation

The user interface consists of the following parts:

①Title Bar ②Tool Bar ③Work Mode ④3D Viewer ⑤Work Panel ⑥Data Panel ⑦Status Bar

Make sure that you have connected your device to your computer correctly, and you can check the "Device Connection Status" in the "Work Mode ".



Number	Operate	Illustrate
1	Device connection status	Check the connection status of the device. The device did not connect successfully The connection status is being refreshed The device is connected

If your device does not connect successfully, you can reconnect your device and tap to re-

fresh (the connection status will be automatically refreshed after the MacOS side completes the import calibration).

Import Calibration & Device Binding

The first-time scan requires you to calibrate the scanner by importing the calibration file.

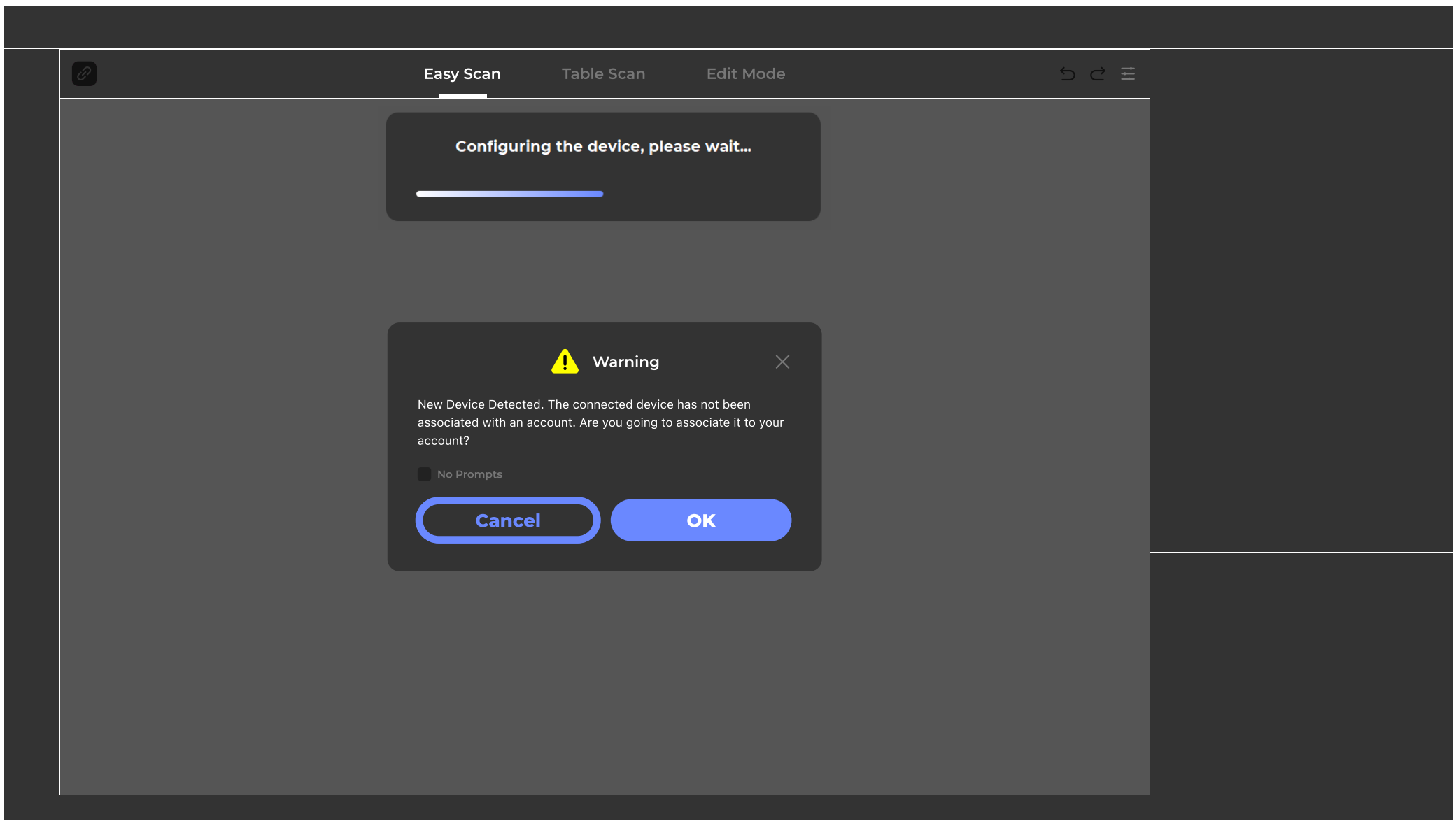
Make sure your PC is networked to download the calib file. For Windows, JMStudio can automatically identify your scanner and download the calib as well; for macOS, it requires you to set the scanner type first then download it.

When you download the calibration file, you will be prompted to bind the device to your account.If the pop-up window prompts that you cannot bind in the system, you can click "OK" in the pop-up window to directly open the upload interface, upload your device information, and the human customer service will help you manually bind it in time after receiving your application.

For Window

When the device is properly connected and connected to the Internet, the calibration file is automatically downloaded. When you download the calibration file, click OK in the pop-up box to bind the device to the current account. If you do not need to bind the device, you can simply click Cancel.

*If you log in as a guest, the device will not prompt for binding.

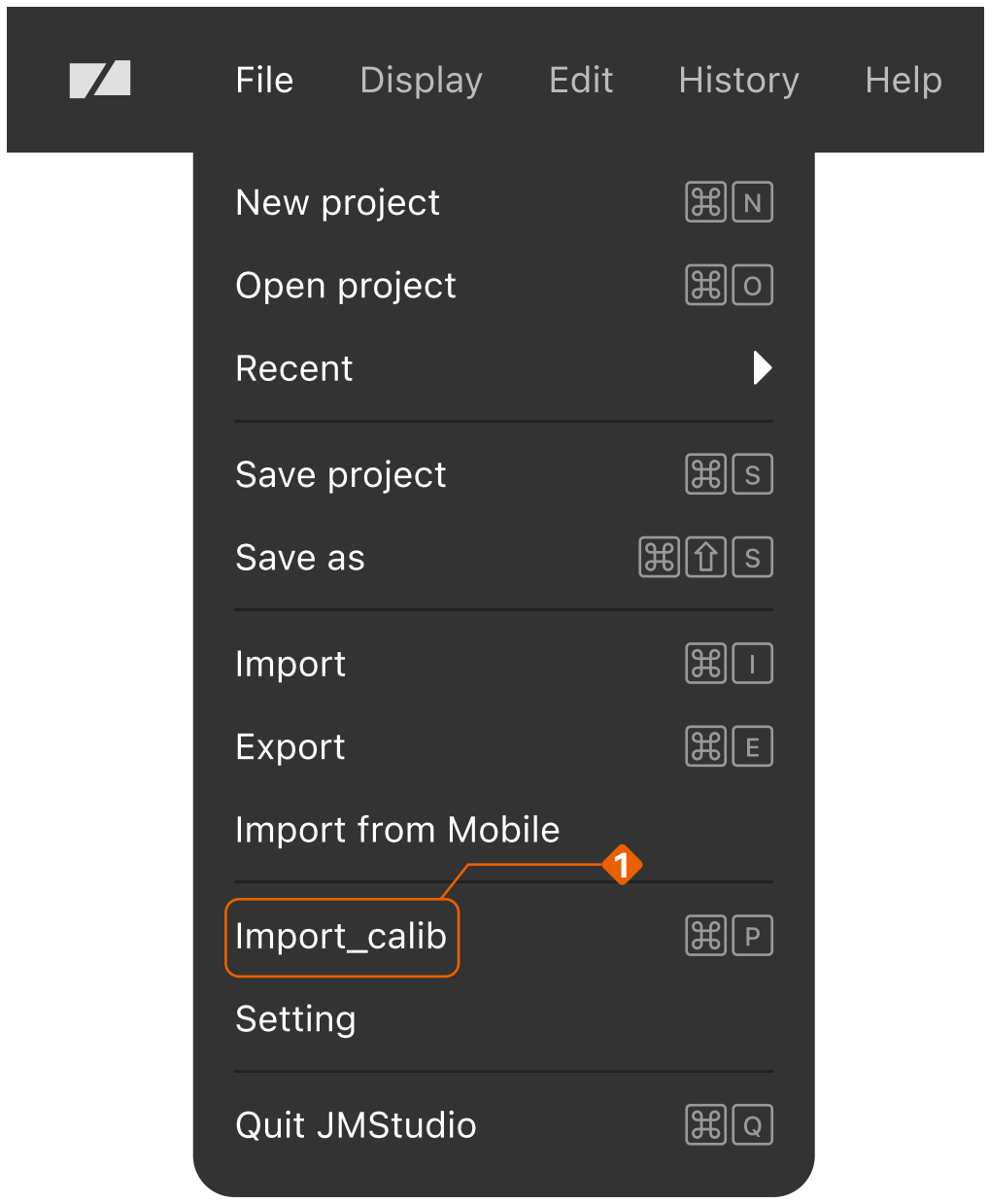


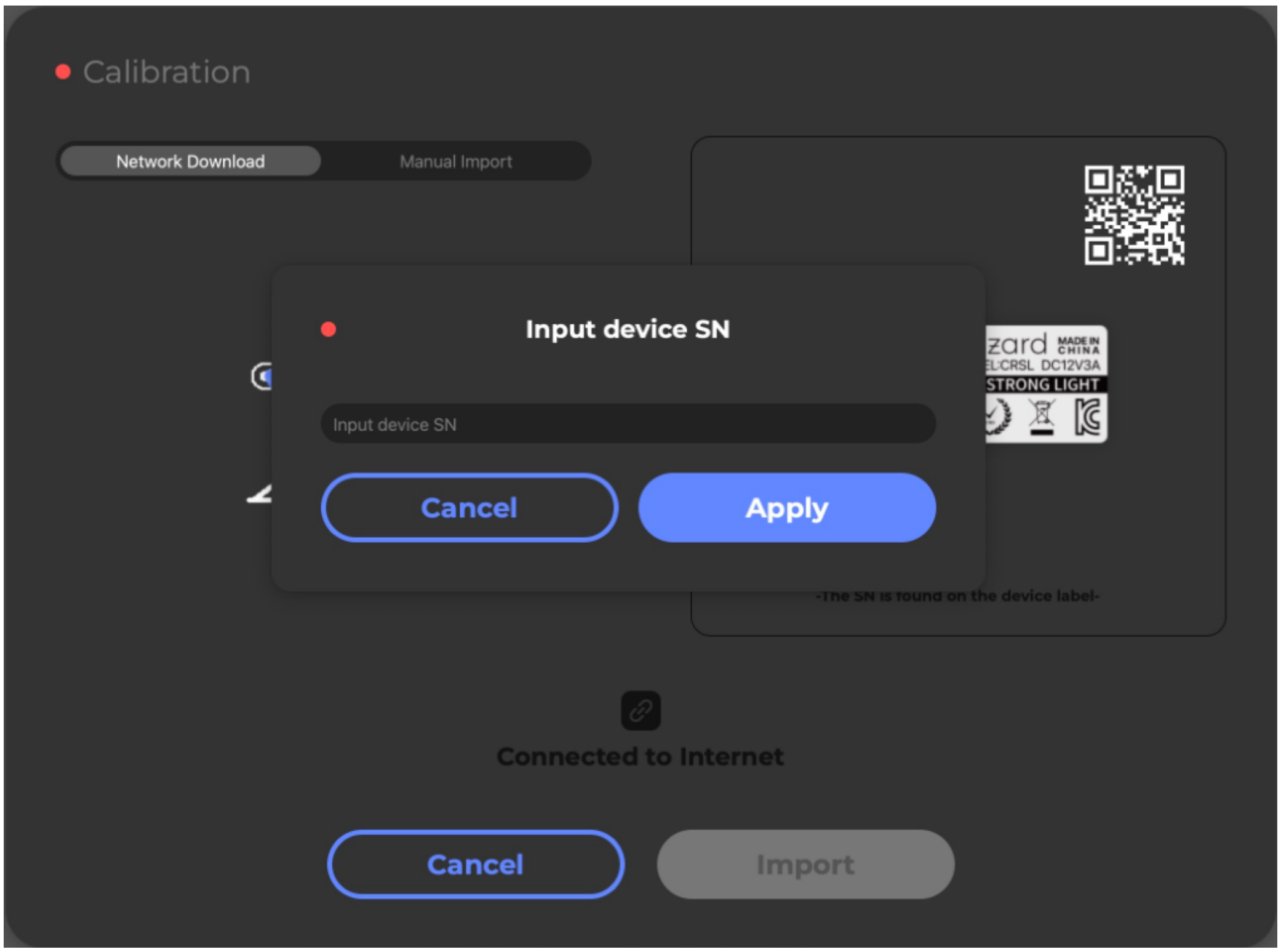
For macOS

①In the Title Bar, click File_Import calib and go into Network Download, then input the device SN and click “Import”.

The device SN can be found at the buttom of the scanner body, then input the letters and numbers and apply to await the prompt “Import successfully”.

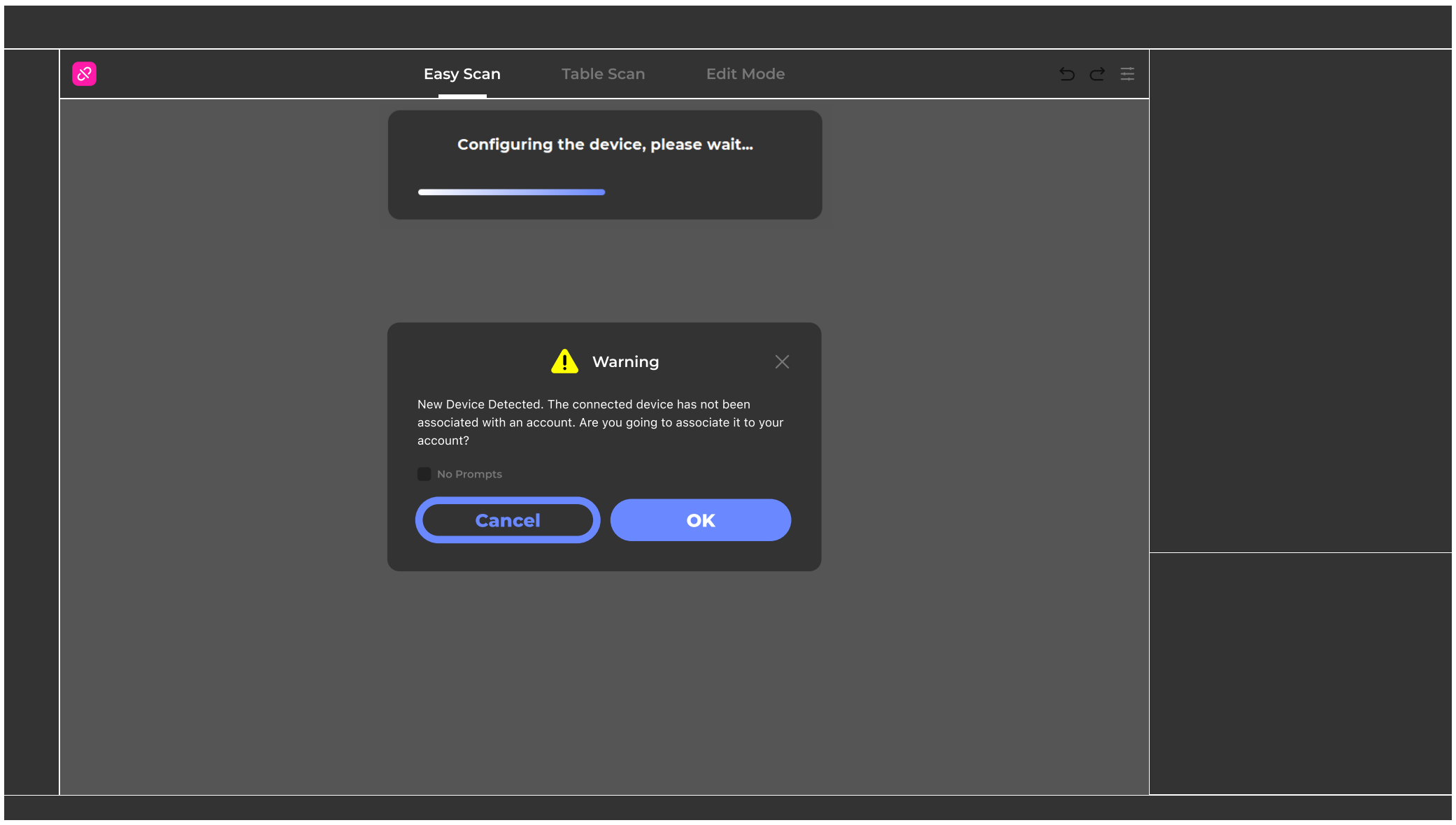
Note: Please enter the last 7 digits of "SN" for CR-Scan lizard; Moose and Moose Lite automatically recognize the serial number without the need to enter it.



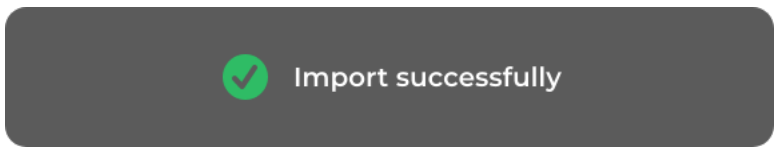


② When Moose & Moose Lite downloads the calibration file, click OK in the pop-up box to bind the device to the current account. If you do not need to bind the device, you can simply click Cancel.

*If you log in as a guest, the device will not prompt for binding.

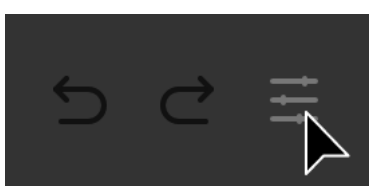


③ After the prompt appears, the import is successful:



④ The models that have been added and selectable will show in the Settings-Scanner menu, right corner of the Work Mode panel.You can add multiple models once and for all for future reference.

Please make sure the selected calibration file matches your connected model.



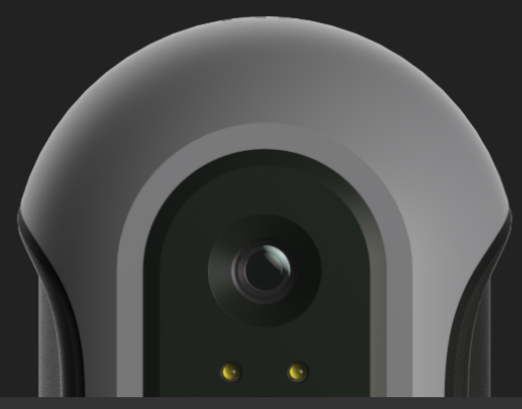
Setting

Generic | Shortcut Key | Language | Scanner

Device Name | **Mole**

Device Model | **JMM1**

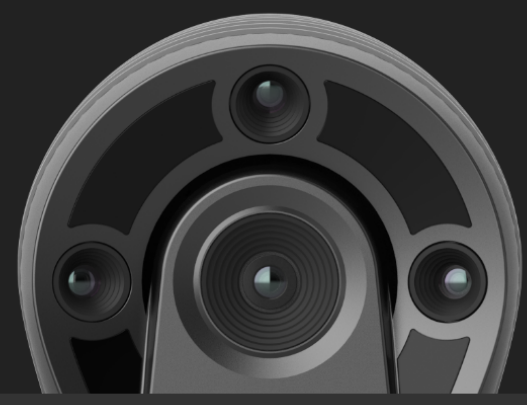
Serial Number | **JMM1000000**



Device Name | **Whale**

Device Model | **JMSW**

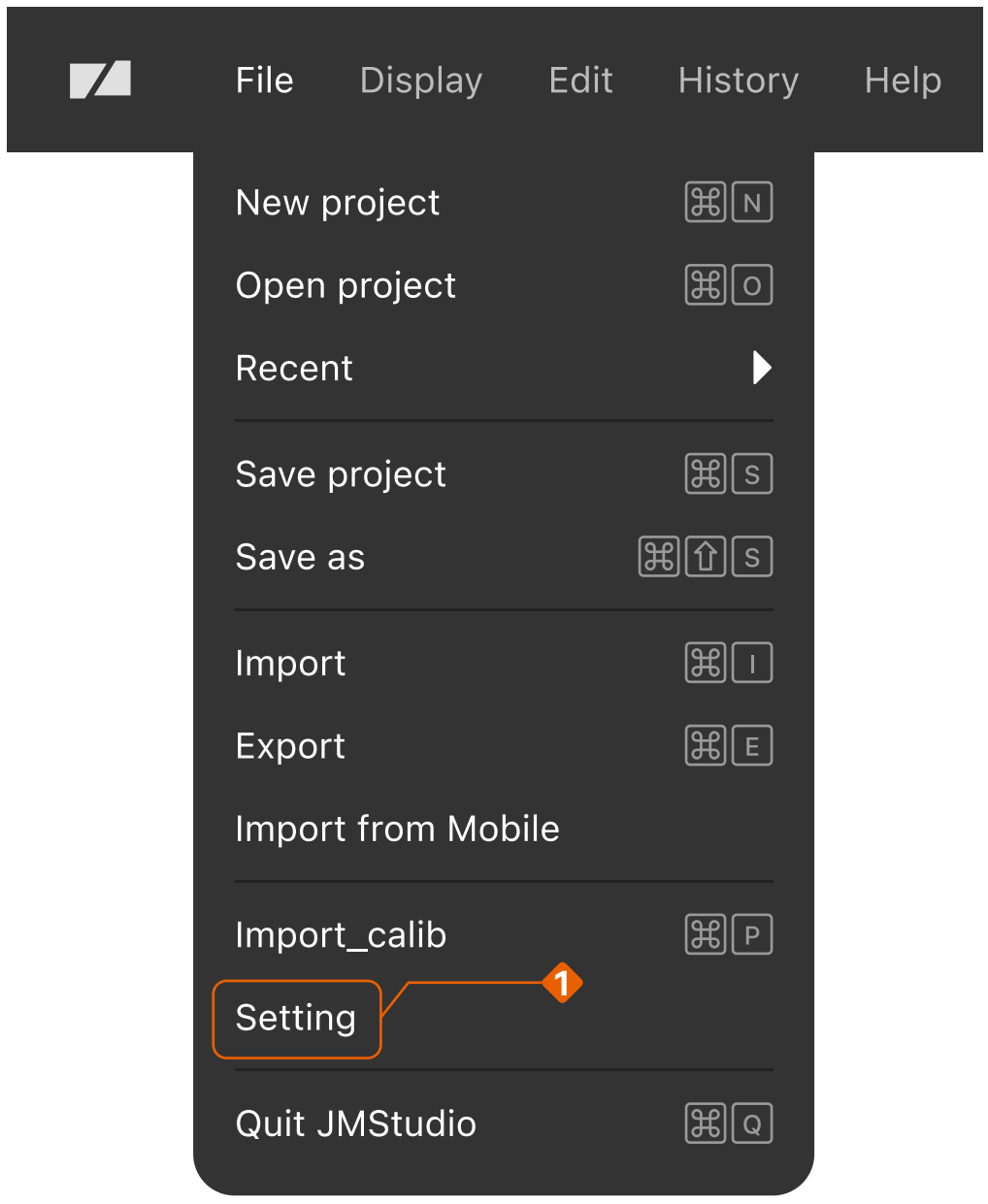
Serial Number | **JMSW000000**



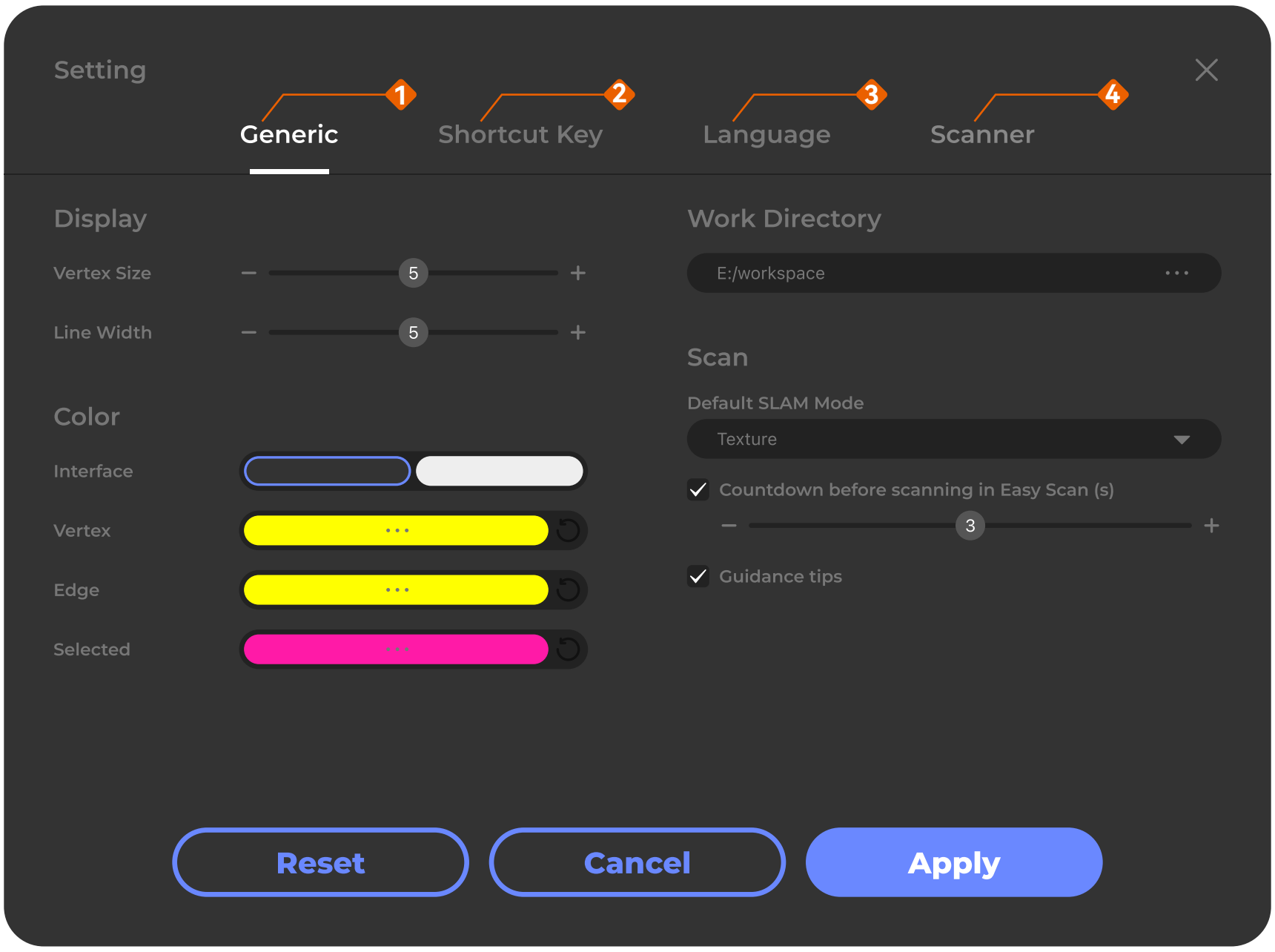
Reset | Cancel | Apply

*Settings Panel

If you need to modify the language, storage location, scan information, and other related configuration information, click File_Settings in the Title Bar at the top of the page.



The details are as follows



Number	Operate	Illustrate
1	Generic	**Display: Countdown before scanning in Easy Scan (s)** Vertex Size —— The size of the point in the point cloud state. Line Width —— The width of the line in the grid state. **Color:** Interface —— You can choose between dark or light colors. Vertex —— When Display Mode is a point, it controls the color of the point. Edge —— When Display Mode is Line or Line Top, it controls the color of the line. Selected —— The color of the selected area when the box is selected. **Work Directory**: The location where the project is

		saved. **Default Slam Mode**: Choose between texture and geometry mode. **Countdown before scanning in Easy Scan (s)**: When enabled, you can adjust the countdown of scanning in Easy Mode. **Guidence Tips**: After the operation, there is a small bubble prompt, click on the small bubble to view.
2	Shortcut Key	Add and change the shortcut to the operation in the software.
3	Language	If you modify the current language of the software, the software will be closed after the modification and will take effect after restarting.
4	Scanner	View information about the currently connected scanner devices.

Preparation

Preparation for special objects

Moose: Moose has a standard format of 200mm and an accuracy of 0.03mm, which can capture more target features and is suitable for fine scanning of small objects.

Moose Lite: Moose Lite has a standard format of 200mm and an accuracy of 0.05mm, which can capture more target features and is suitable for fine scanning of small objects.

Seal: Seal is a macro scanner with an accuracy of up to 0.01mm and a capture range of 100mm, suitable for ultra-fine scanning of small objects.

Seal Lite: Seal Lite is a macro scanner with an accuracy of up to 0.02mm and a capture range of 100mm, suitable for ultra-fine scanning of small objects.

lynx: With 400mm wide capture range, lynx is capable of capturing as many as details, and scanning large sized objects in a smooth and fast manner.

Mole: Mole has a standard format of 200mm and an accuracy of 0.05mm, which can capture more target features and is suitable for fine scanning of small objects.

Whale: With two cores both in one, Whale is able to scan large-sized objects by activating its wide core; while captures the greatest details of small-sized objects with the micro core at work.

MagicSwift Plus: With 400mm wide capture range, MagicSwift Plus is capable of capturing as many as details, and scanning large sized objects in a smooth and fast manner.

CR-scan lizard: CR-scan lizard has a standard format of 200mm and an accuracy of 0.05mm, which can capture more target features and is suitable for fine scanning of small objects.

Please choose the right scan mode according to the size of the object, for more information: Scan Mode

Objects needing special treatment

In order to get a better scanning result, please use spray, dry shampoo, powder, etc. on the following types of objects before scanning:

①transparant objects (glass products, plastic bottles, etc.)

②deformable objects (clothes, animals, etc.)

③reflective, shinny objects (metal products, electroplated parts, etc.)

Before

After

Scanning Workflow

Preview and Adjustment

Scan Mode

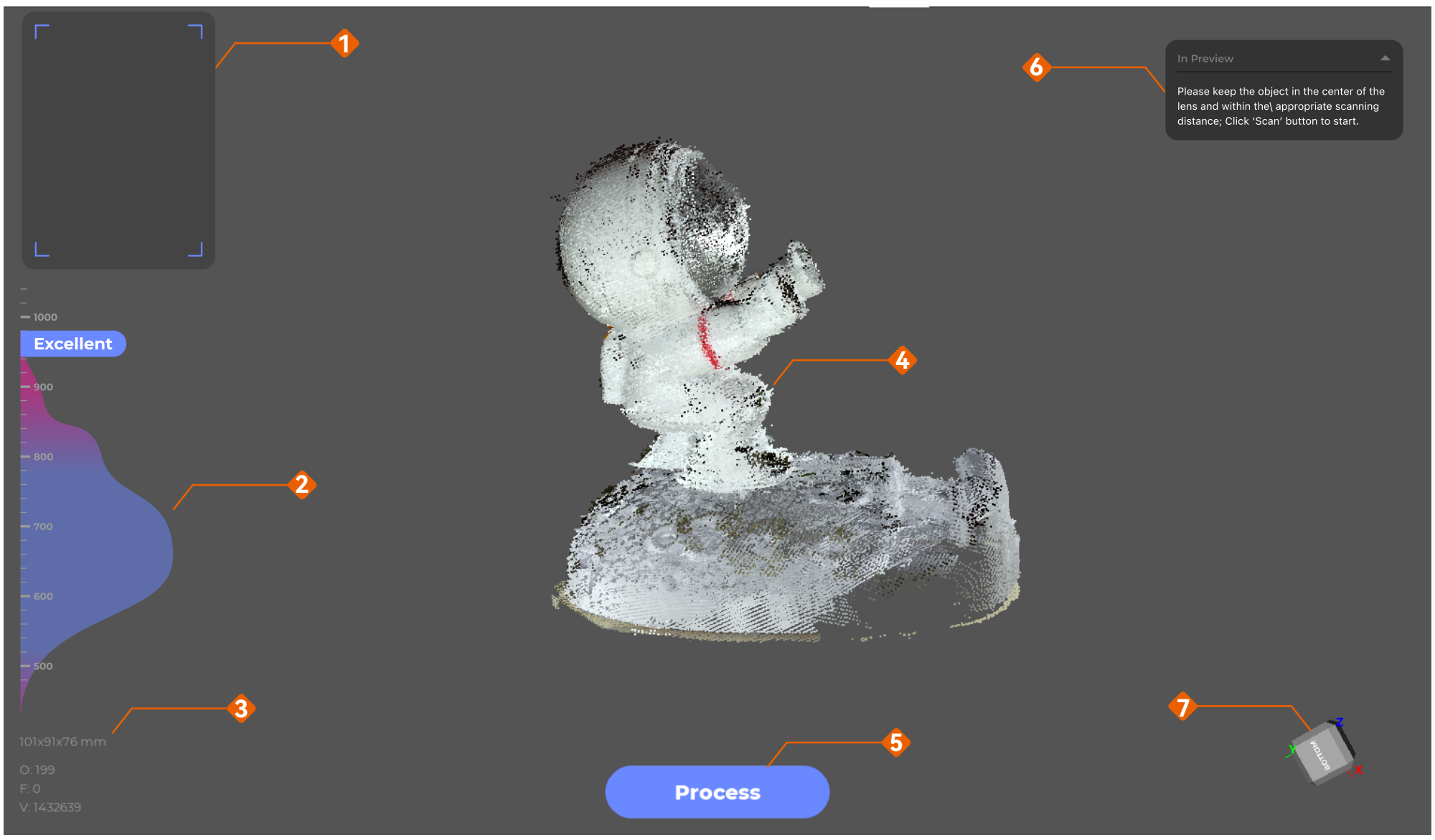
Choose “Easy Scan” or “Table Scan” in the Work Mode.

Number	Operate	Illustrate
1	Easy Scan	Free and flexible, suitable for scanning irregularly shaped objects and large objects.
2	Table Scan	It can be used with a tripod and turntable, so it does not need to hold the scanner, and is suitable for scanning small objects.

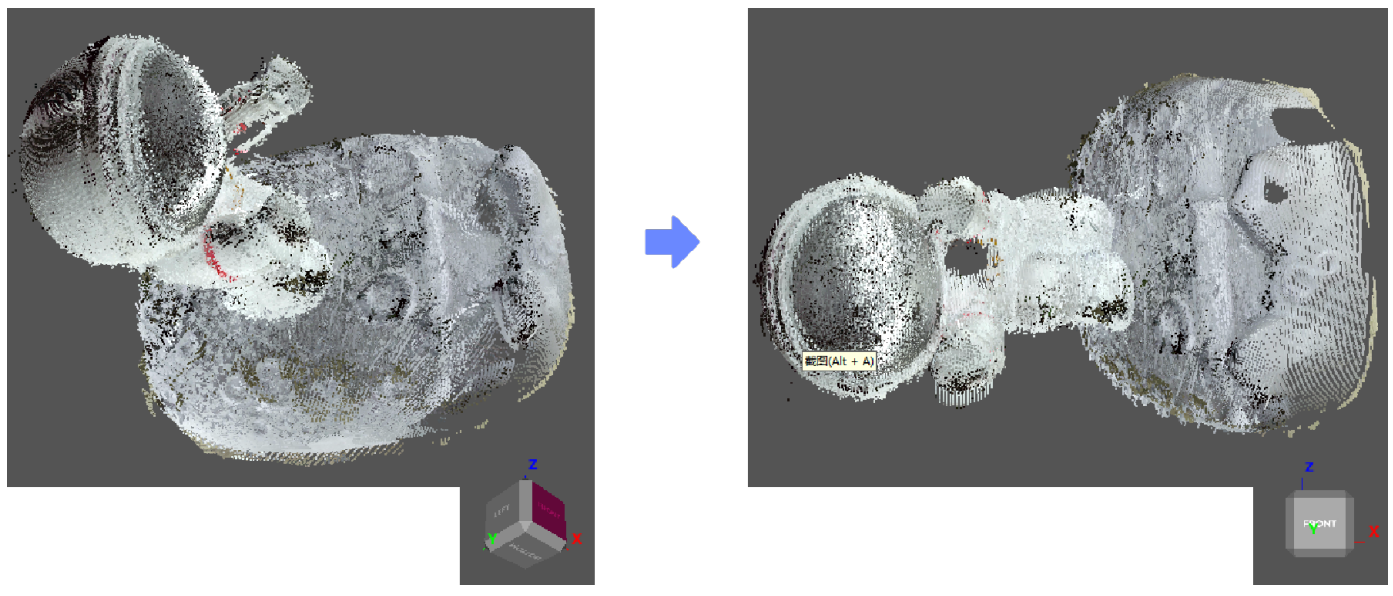
Adjust the scan parameters

Move the scanner slowly, observe the scan status in the 3D View, and adjust the scan parameters in the Editing Panel to achieve the best scan quality.

The interface description of the 3D view is as follows:



Number	Operate	Illustrate
1	Camera Live	Display while scanning, view the current scanner shooting in real time, there are two live modes: texture and geometry. When the screen brightness is too low, it displays blue; when overexposed, it displays red. **Texture mode**: Used to observe exposure and ensure texture quality. The following scenes are displayed when scanning 1. Texture mode 2. Check "Color Scan" in geometric mode **Geometric mode**: Used to align objects to ensure that they are recognized by the scanner.
2	Distance prompter	It is displayed when scanning, which is used to indicate the scanning distance.
3	Data Information	Scan Status: Displays information about the number of frames, objects, faces, and points of real-time scanning.

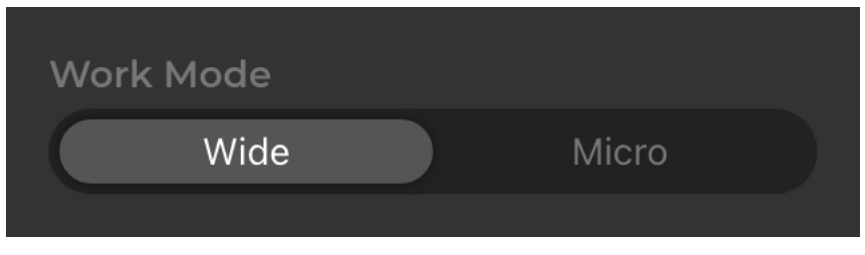
		Edit Status: Displays information about the length, width, height, number of objects, number of faces, and number of points of 3D data.
4	Imaging	It displays the current scanning image and the processed image.
5	Main Operation Area	Action confirmation or cancellation.
6	Tips panel	Used to prompt the operation method. You can click the top ▲ to collapse the panel, and click ▼ again to open the panel. If you don't need the prompt panel, you can uncheck "Guidance Tips" in File > Settings > General > Guidance Information.
7	3D coordinate map	In the editing state, click on different sides of the coordinates to view the images from different angles. Hover over a polygon to highlight it, and click it to automatically change the imaging angle. 

*① For Whale

We suggest you scan an object of arround 20x20x20cm at your first attempt.

If the data cannot be captured or the software says “tracking lost”, please follow the above sheet to adjust the distance between the scanner and the object, and make sure the latter is clear of clutter. If the scanning goes well, please adjust the scanner’s angle and confirm again; if not, please contact us here: Send us a message

Choose “Wide” or “Micro” for the Work Mode in the Work panel_Adjust.

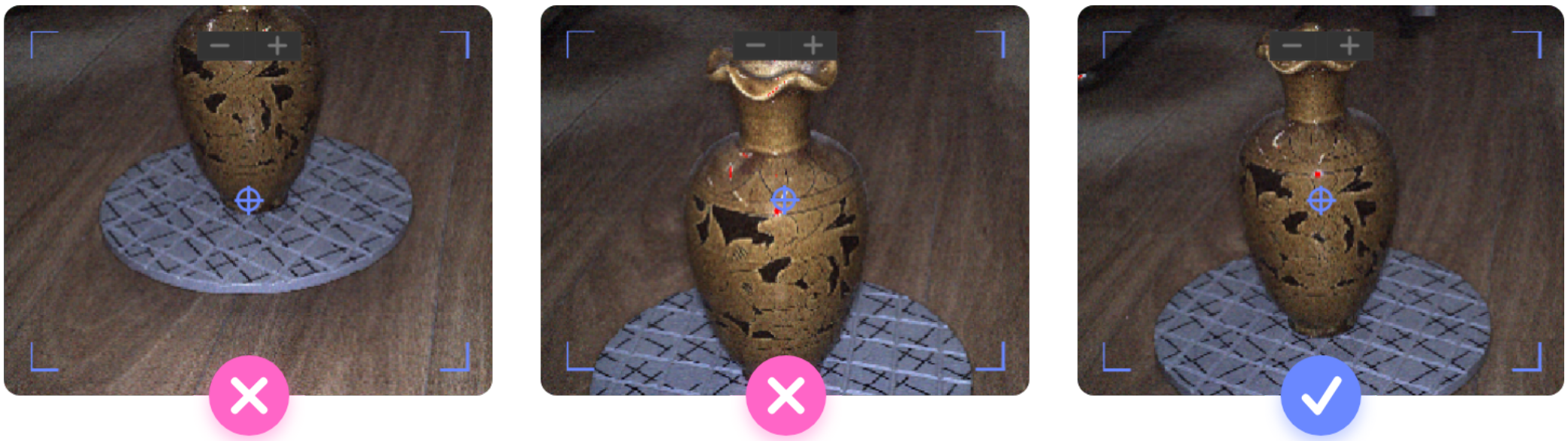


② Working Distance

The distance indicator on the left side of the 3D viewer can help you find the optimal woking distance.

③ Locate the Object

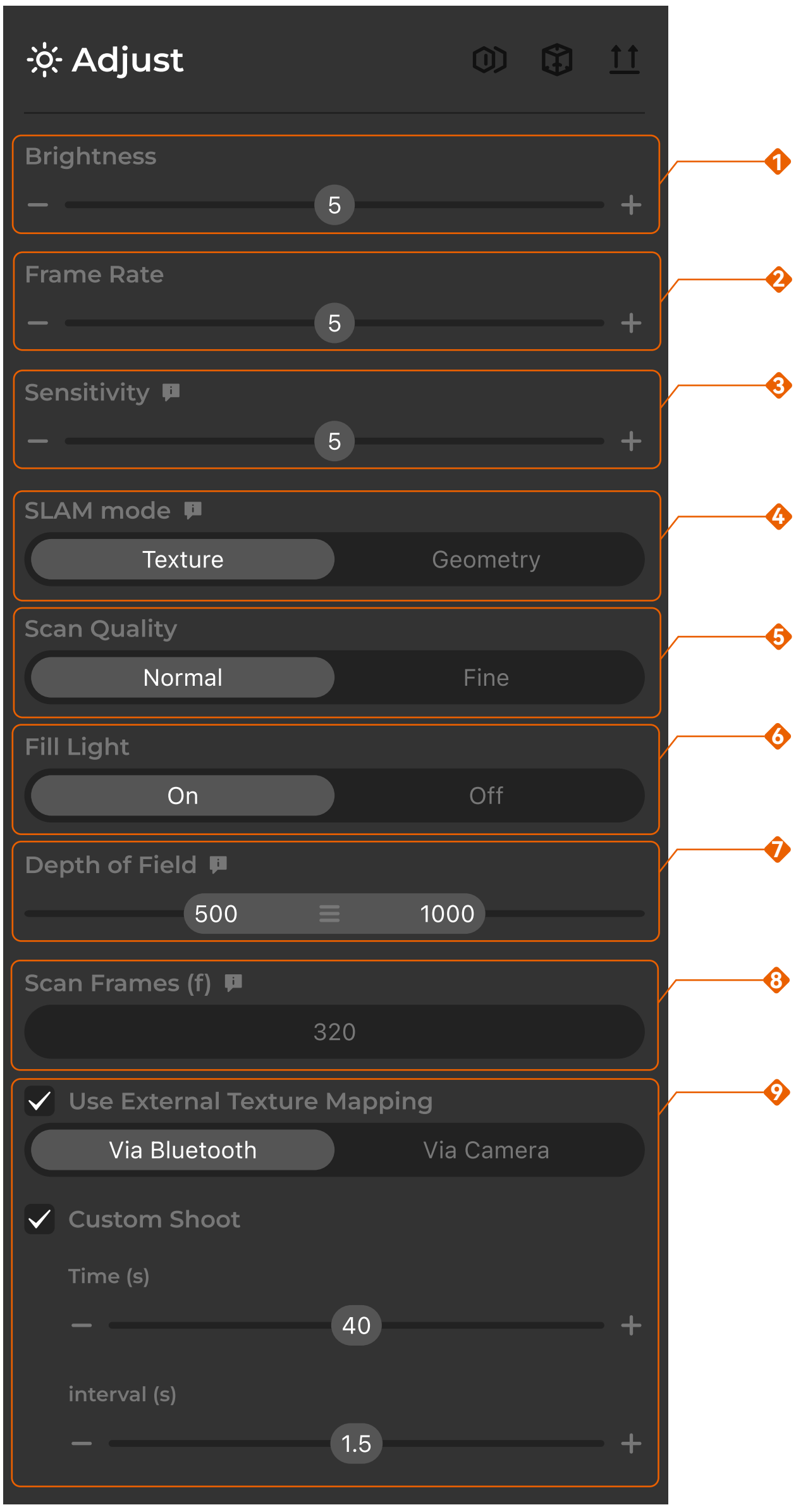
The preview window on the top right of the 3D viewer helps you locate the object. Make sure it fully exposed in the preview window.



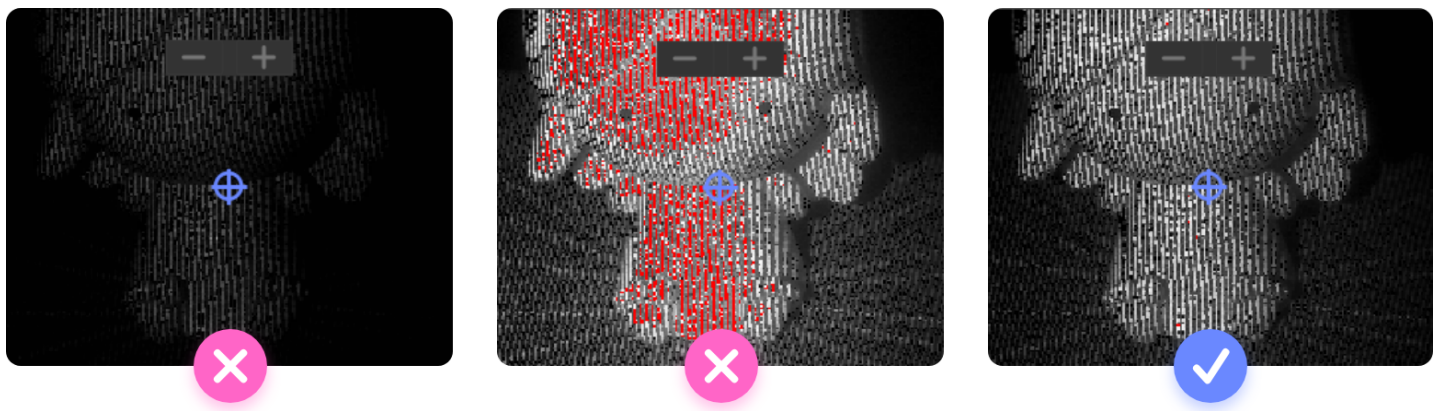
④ Sweep parameter adjustment

According to the preview box in the upper right corner of the canvas, adjust the scan parameters

in the Editing Panel



Number	Operate	Illustrate

1	Brightness	Adjust the light intensity of the scanner. When the screen brightness is too low, it displays blue; when overexposed, it displays red. 
2	Frame Rate	Displayed for magicSwift series devices. The higher the frame rate, the more complete the image at the same time, but the same amount of data is larger, which may cause data redundancy and occupy more memory.
3	Sensitivity	Controlling how sensitive the scanner is to light can affect the quality of the scanned data. The high sensitivity can improve the completeness of the acquisition, but at the same time increase the noise of the scan data, which is suitable for dark subjects; Low sensitivity is the opposite.
4	SLAM mode	Geometric mode: Obtain the surface information of 3D objects and generate 3D images that only require shapes. It is suitable for scanning objects with obvious surface concave and convex surfaces and obvious geometric features. Texture mode: Map the texture pattern to the surface of the 3D image, and use the corresponding color in the corresponding texture pattern when drawing a point on the surface of the object. It is suitable for scanning objects with rich patterns and vivid textures. *When the stitching mode is "Geometry", you can choose to check "Color scanning" to retain the color information of the model, and you can do texture mapping; If "Color scanning" is not checked, the color information of the model will not be captured. When the stitching mode is set to "Texture", the color information is required and does not need to be checked.

		 Geometric	 Texture
5	Scan Quality	Available in Easy Scan mode. When scanning delicate objects, it is easier to get more information about the object by selecting "Fine" to scan the object.	
6	Fill Light	Available for some of the 3DMakepro models. When the light is dark, you can turn on this setting to fill in the light.	
7	Depth of Field	Controls the minimum working distance to the maximum working distance for scanner scanning. The default is the maximum to minimum range of the scanner, which can be modified by manually entering the value or dragging ☰ with the left mouse button.	
8	Scan Frames(f)	In Table Scan mode, you can customize the number of scan frames to control when to stop the rotation of the turntable. The default is 320 frames, and the adjustable range is 1~800 frames.	
9	Use External Texture Mapping	Available in Table Scan mode. There are two ways to connect the color kit to your computer, Bluetooth and camera controller cable. Bluetooth can connect to a camera or mobile phone, and the camera cable can only connect to a camera. After connecting, you can customize the duration and interval of shooting. For example, if the shooting time is 40s, the frequency is 1.5s.	

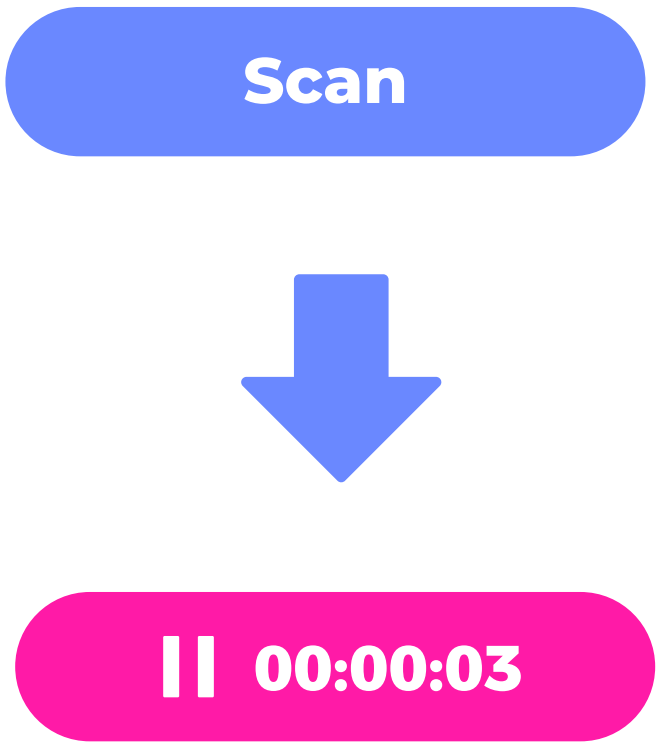
Easy Scan

Scan

Adjust the scanner’s position and angle to centre the target object in the preview window; check if they’re kept in a proper distance by focusing on the distance indicator.

Click “Scan” on the work panel, hit the spacebar or press the start/stop button on the scanner to start scanning.

If the Countdown before scanning in Easy Scan (s) is enabled in the Quick Scan mode in the settings, the scan will start after the countdown is completed after clicking Scan.



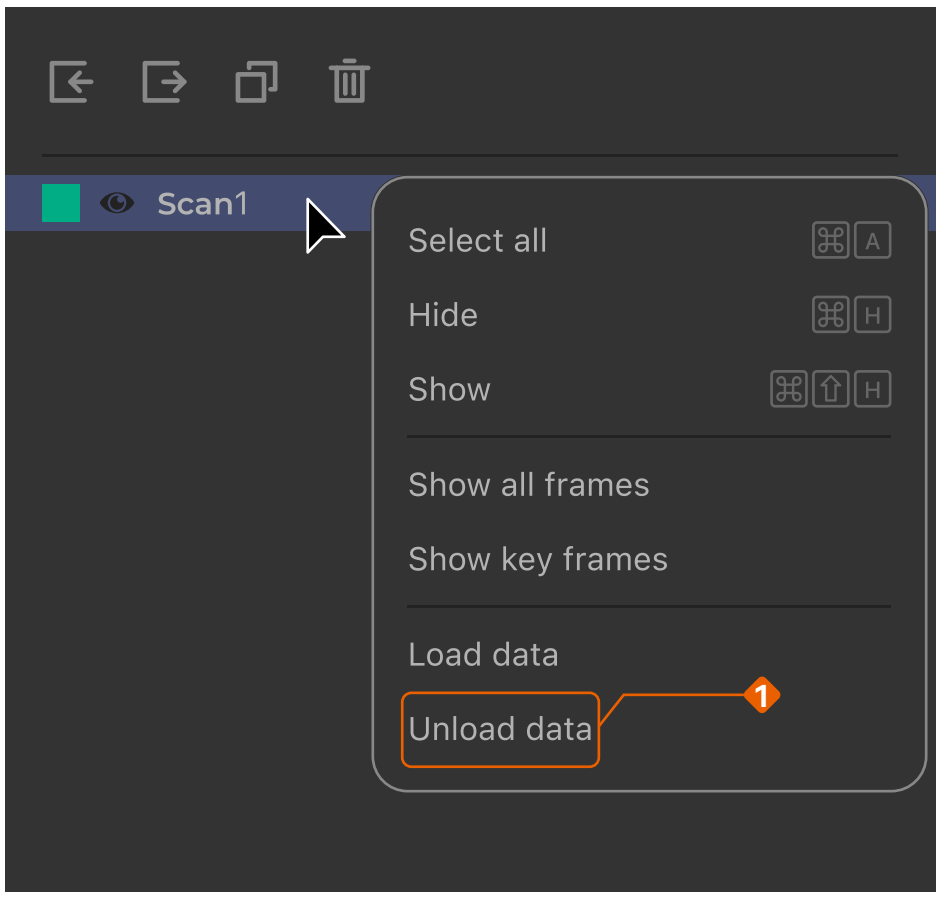
Stop

Click the red counter, hit the spacebar or press the start/stop button on the scanner to stop scanning.It's suggested to limit the single scan within 2000F.

Unload

If the scan data is too large and multiple scans are required, the scanned object can be unloaded to reduce system processing time.

In the "Data Panel" at the bottom right of the main interface, select the scanned point cloud data (hold Ctrl+Left mouse button to multi-select), click the right mouse button, and unload the data in the pop-up operation window.



Append

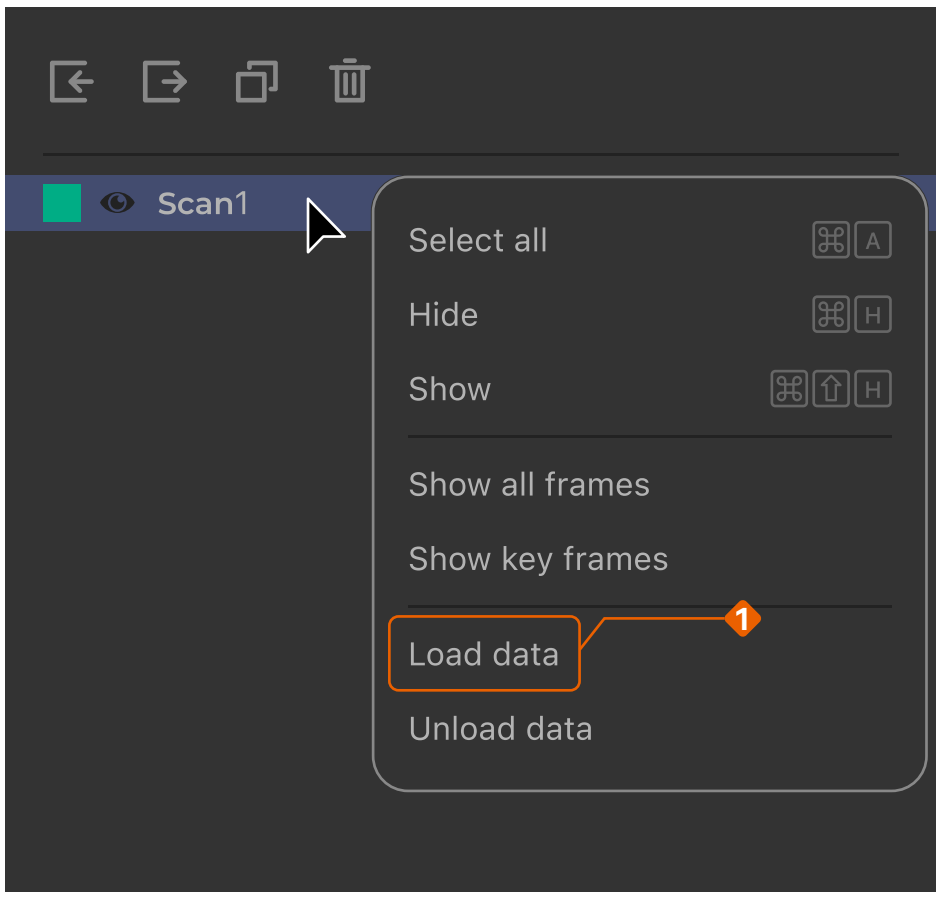
If you want to scan other areas and add a new scan, click “Append”, hit the spacebar or press the start/stop button on the scanner.

Append

Load

After the scan is completed, right click to open the menu and load the data to the processed first before you mesh or edit on it.

In the "Data Panel" at the bottom right of the main interface, select the unloaded point cloud data (hold Ctrl + Left mouse button to multi-select), click the right mouse button, and load the data in the pop-up operation window.



Process

Click “Process”, hit the spacebar or press the start/stop botton on the scanner(supported on specific models) to go into the Edit Mode and process the scan data. You can also hit right or left arrow keys to the next or last step.

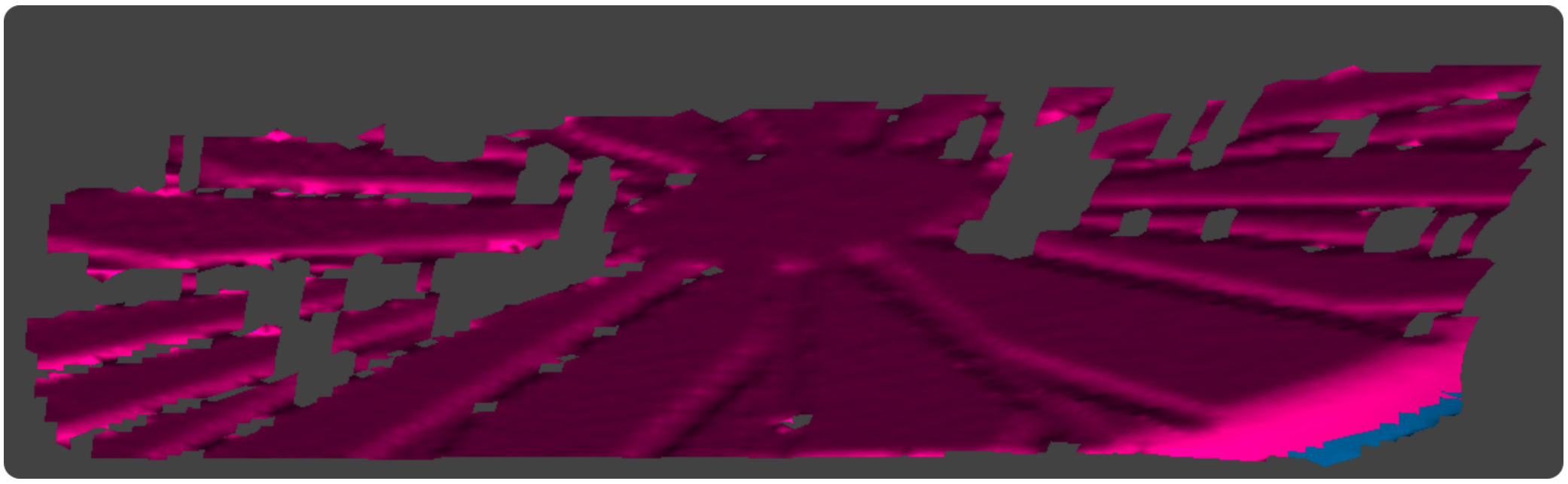
Table Scan

Initial

Adjust the scanner’s position and angle to centre the target object in the preview window; check if they’re kept in a proper distance by focusing on the distance indicator.

Remove the object from the turntable when scanner is well positioned.Click “Initial”, hit the spacebar or press the start/stop button on the scanner to scan the turntable until it turns red.

Initial



Stop Initializing

Click the red counter, hit the spacebar or press the start/stop button on the scanner to stop initializing.It's suggested to limit the single scan within 2000F.

60F*

Scan

Leave the turntable there and place the target object in the centre of it. Click “Scan”, hit the spacebar or press the start/stop button on the scanner(supported on specific models) to start scanning.

Scan

last step. Click the button “1”, hit the spacebar or press the start/stop button on the scanner(supported on specific models) to re-initialize.

1

Stop

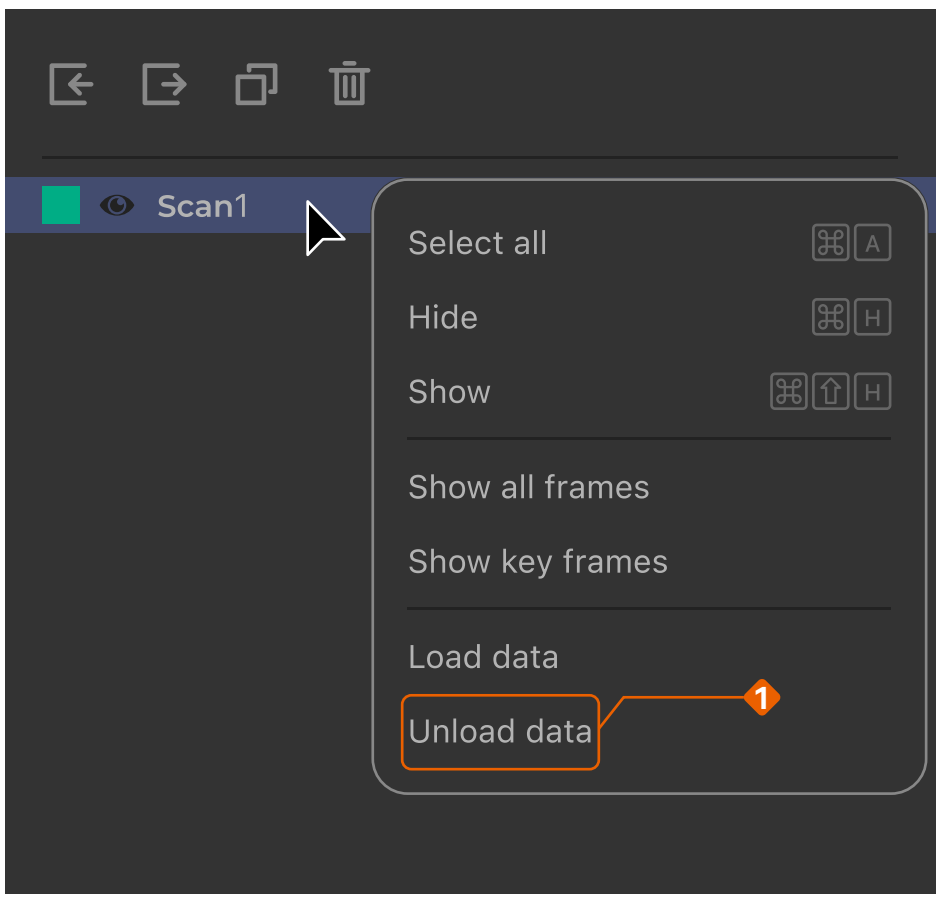
Click the red counter, hit the spacebar or press the start/stop button on the scanner to stop scanning.It's suggested to limit the single scan within 2000F.

600F*

Unload

If the scan data is too large and multiple scans are required, the scanned object can be unloaded to reduce system processing time.

In the "Data Panel" at the bottom right of the main interface, select the scanned point cloud data (hold Ctrl+Left mouse button to multi-select), click the right mouse button, and unload the data in the pop-up operation window.



Append

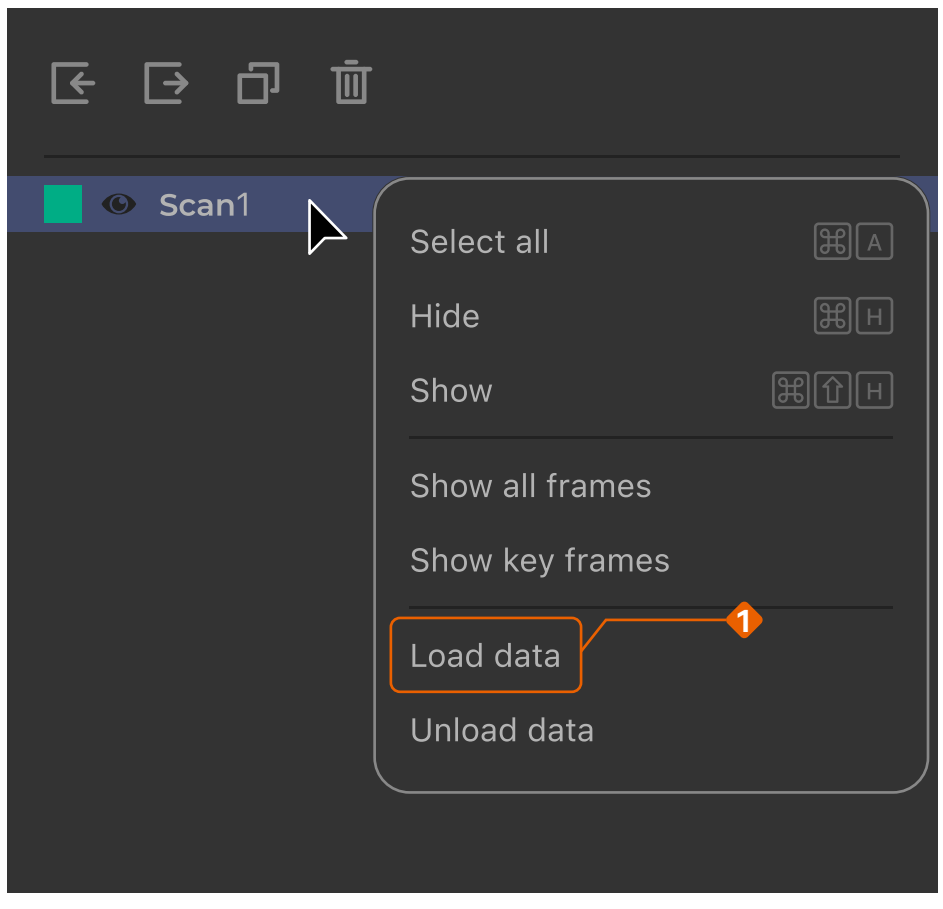
If you want to scan other areas and add a new scan, click “Append”, hit the spacebar or press the start/stop button on the scanner.

Append

Load

After the scan is completed, right click to open the menu and load the data to the processed first before you mesh or edit on it.

In the "Data Panel" at the bottom right of the main interface, select the unloaded point cloud data (hold Ctrl + Left mouse button to multi-select), click the right mouse button, and load the data in the pop-up operation window.



Process

Click “Process”, hit the spacebar or press the start/stop botton on the scanner(supported on specific models) to go into the Edit Mode and process the scan data. You can also hit right or left arrow keys to the next or last step.

Reset

Click “Reset”, hit the spacebar or press the start/stop botton on the scanner(supported on specific models) to initialize again. Or hit right or left arrow keys to the next or last step.

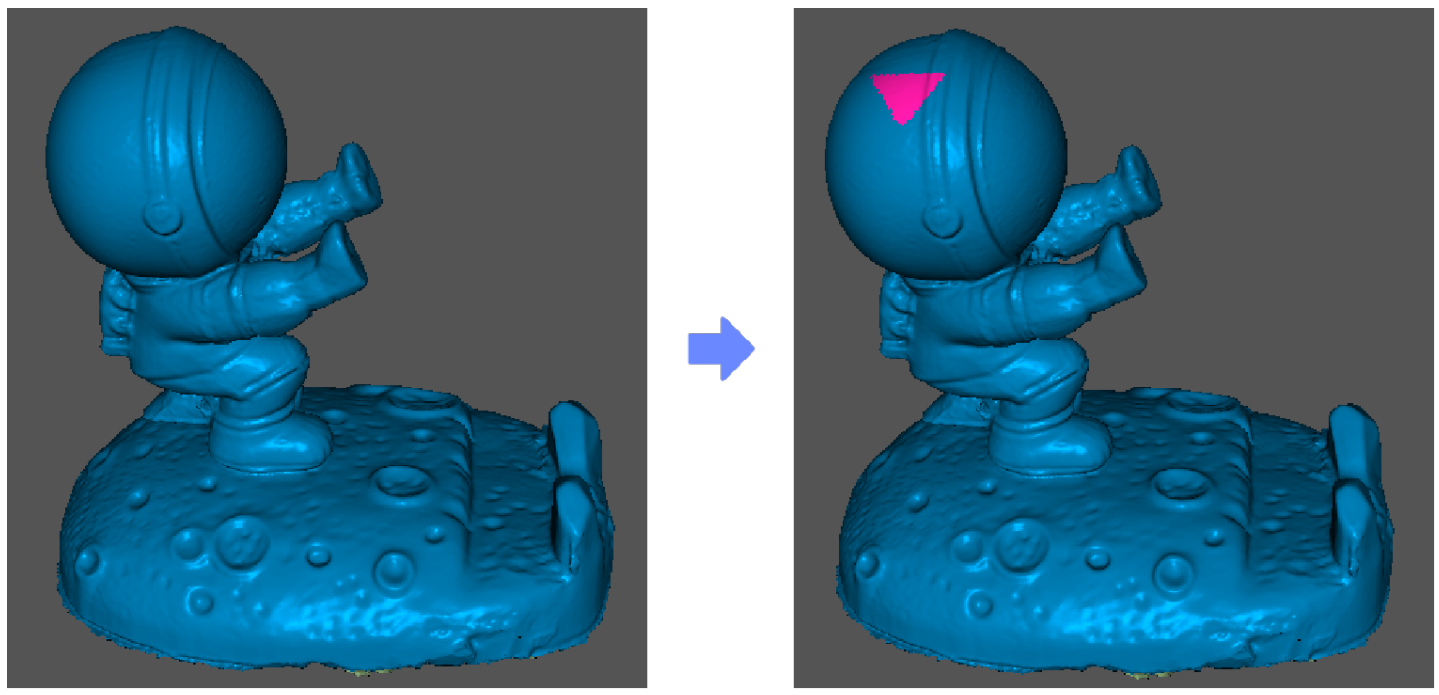
Editing

Data Editing

Before meshing the point cloud data, you can do simple editing on it to delete excess data and ensure the quality of the model.Although the model can also be trimmed after the model is generated, the large amount of redundant data may slow down the processing speed, so it is recommended that you perform simple preprocessing of the point cloud data first.

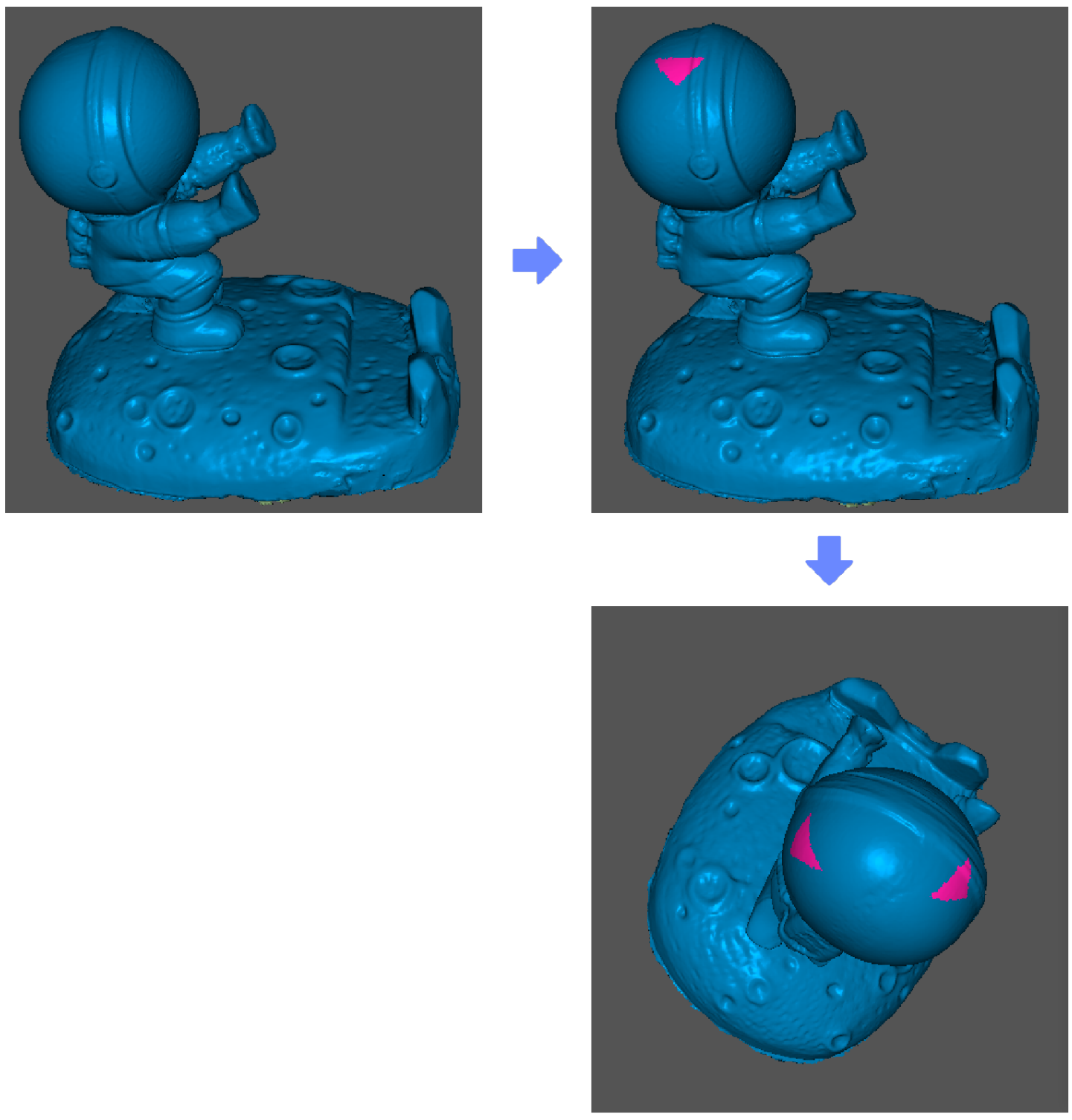
The toolbar is described in detail as follows (some tools are only active for the mesh, so we take the mash data as an example):

Number	Operate	Illustrate
1		To select the corresponding area, Ctrl+Left-click to add a pickup point, Ctrl+Right-click to select the pickup endpoint, and the area will be automatically generated.
	Pick on face	Only the surface information of the selected area is grabbed.



Pick through face

Gripping takes the selected area as a horizontal plane and vertically penetrates all surface information of the area.

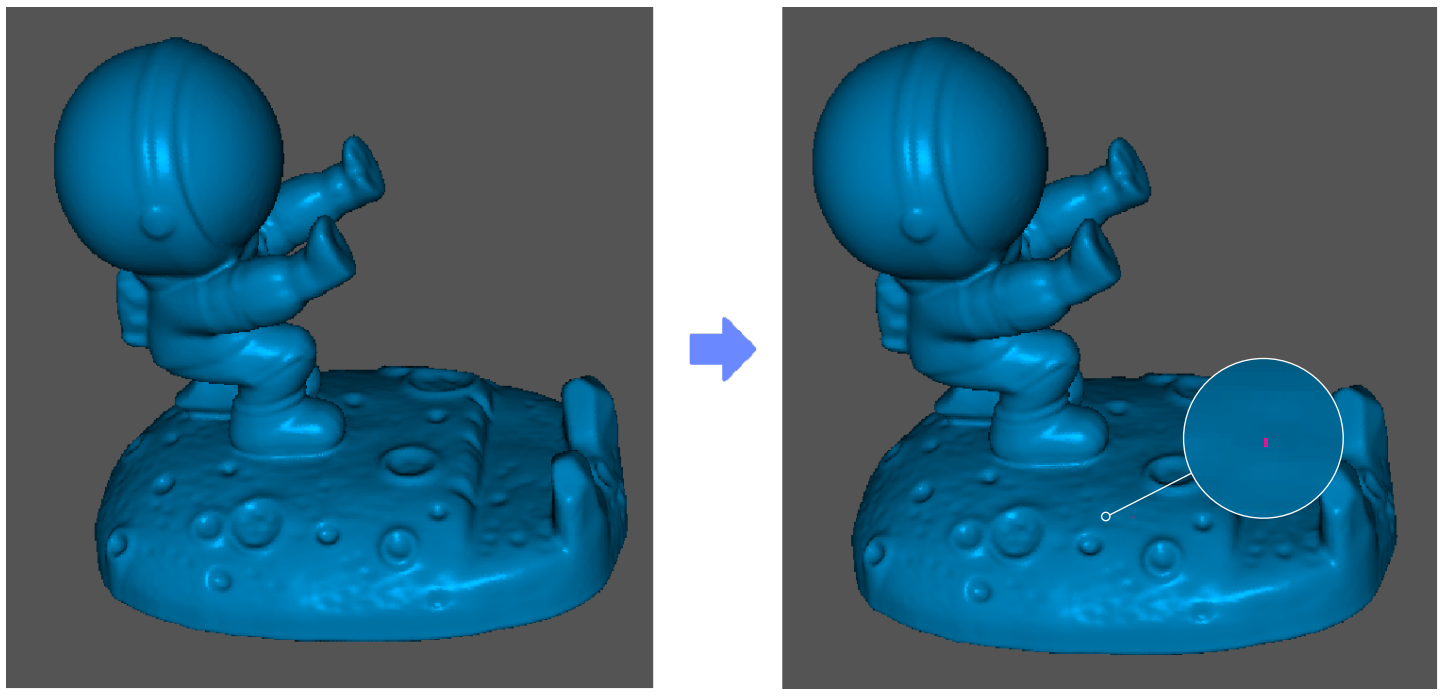


2

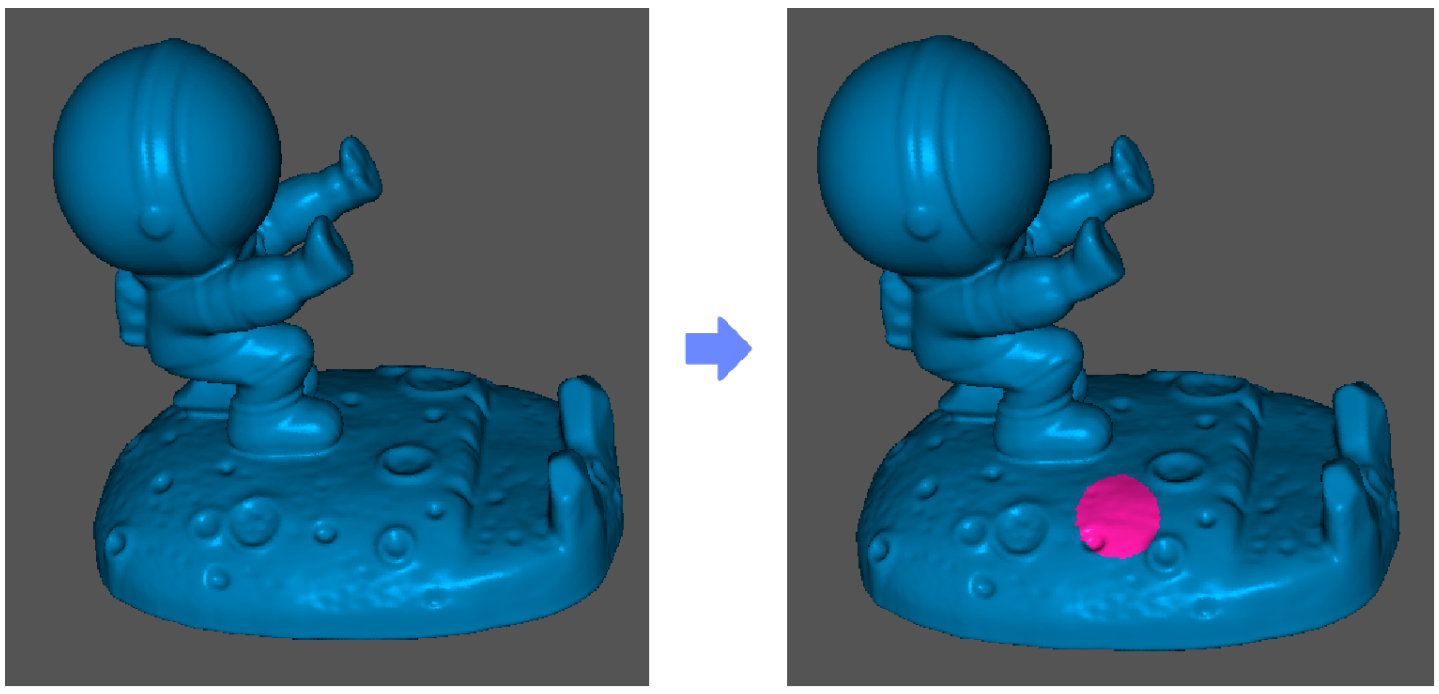
Lets you select the corresponding region.

Point picker

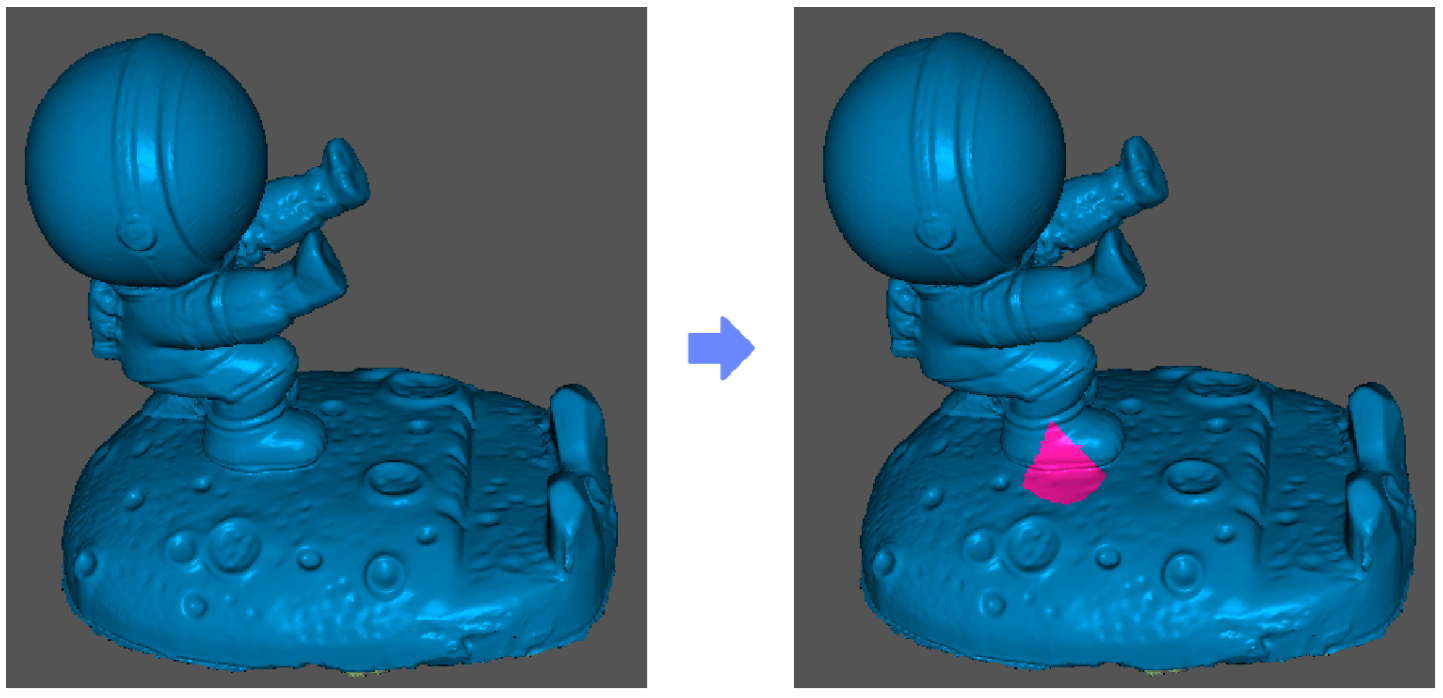
Ctrl+Left mouse button to select a point/area (point is selected under point cloud data, and polygon is selected under mesh data).



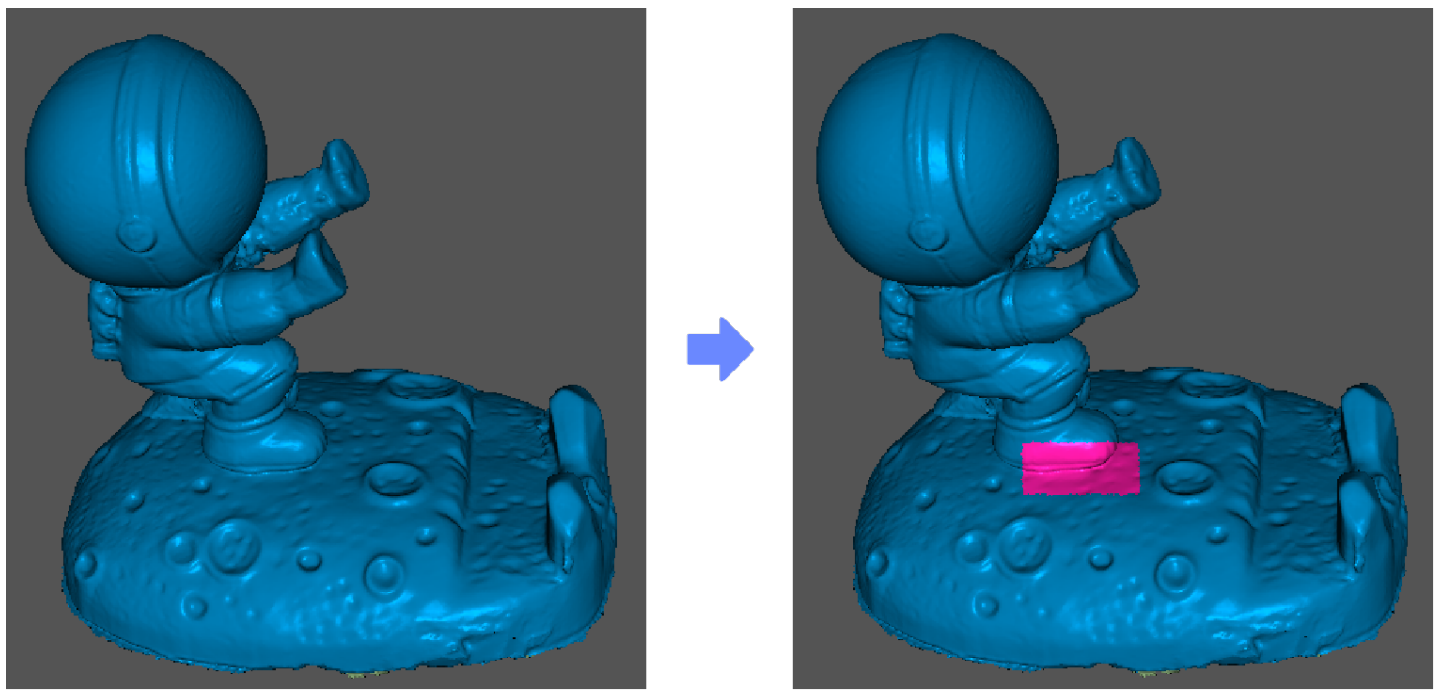
Circle picker Ctrl+Left mouse button to create a circular shape of the selection, Ctrl+mouse wheel to change the size of the circle.



Lasso picker Ctrl+Left mouse button to drag any pull pattern, and the circle range is the selection area automatically generated by the mouse drag route.

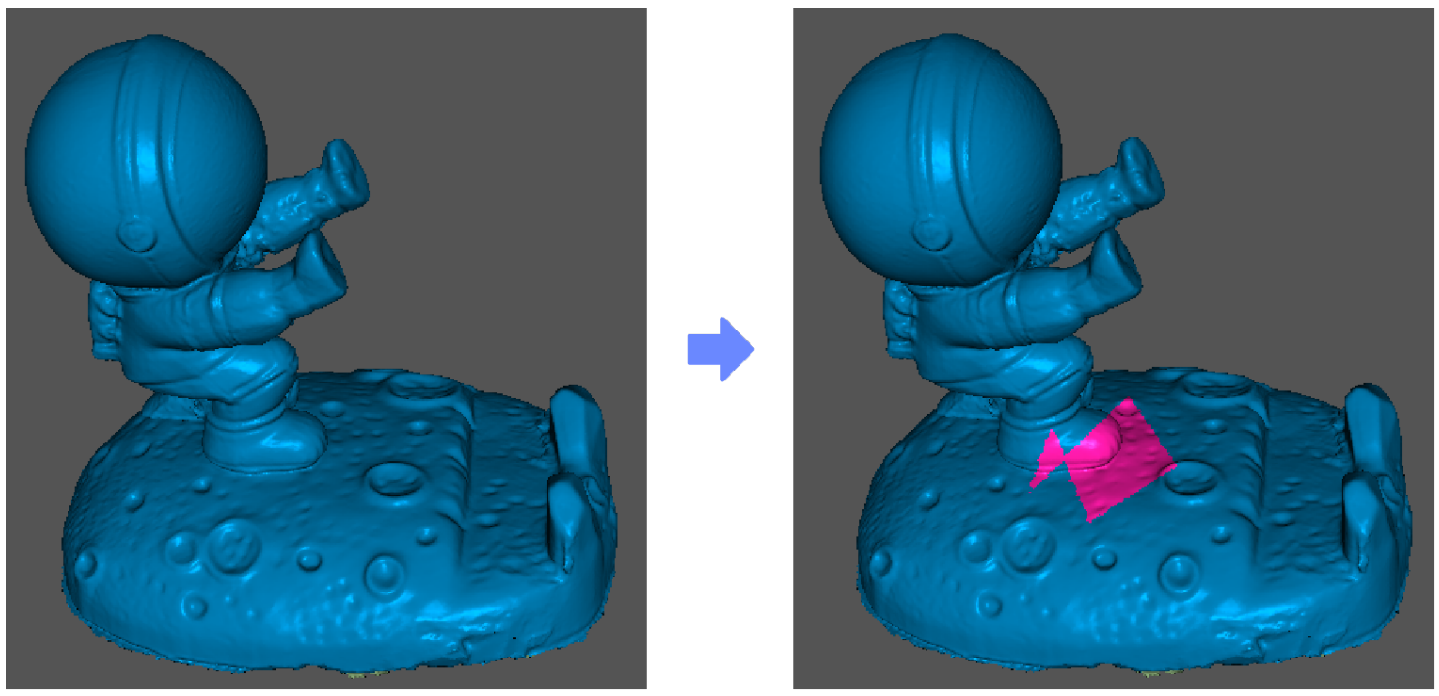


Rectangle pickers Ctrl+Left mouse button to drag any rectangular selection.



Polyline picker

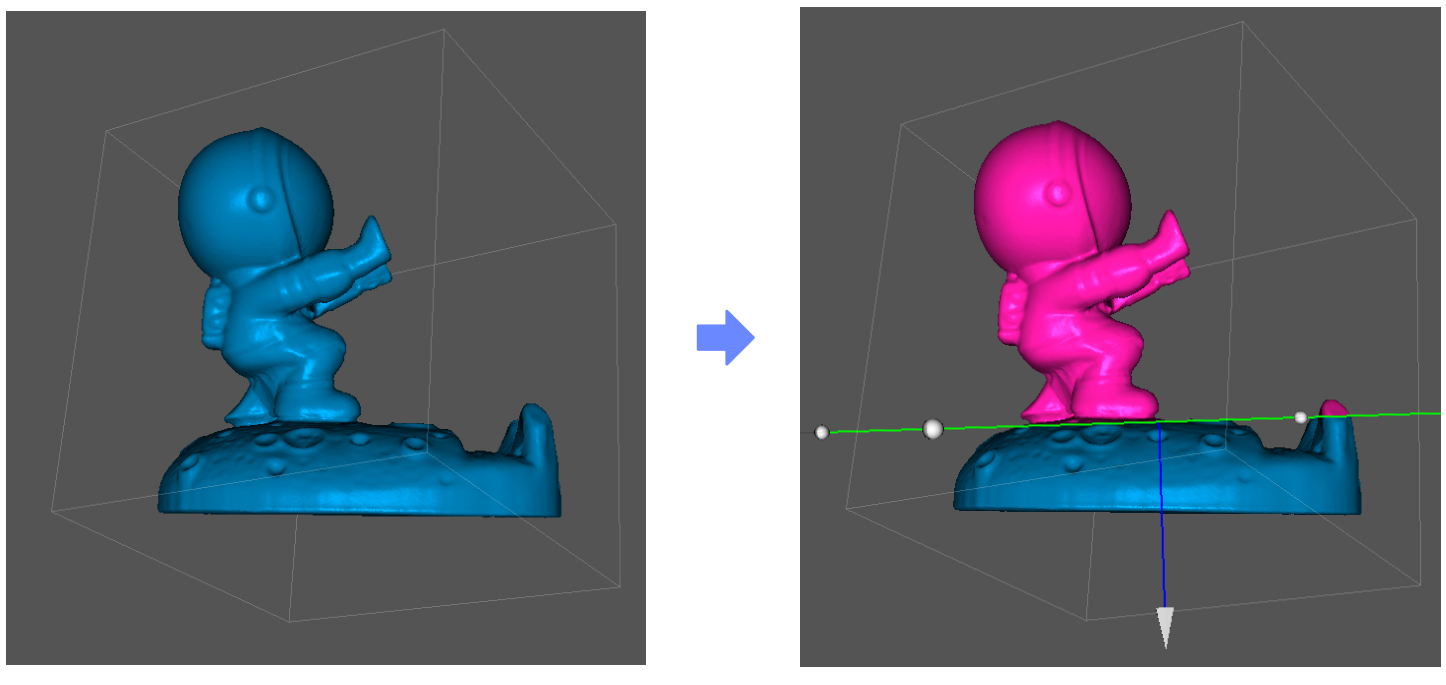
Ctrl+Left-click to add a point, Ctrl+Right-click to select the end point of the point, and the area is automatically generated.

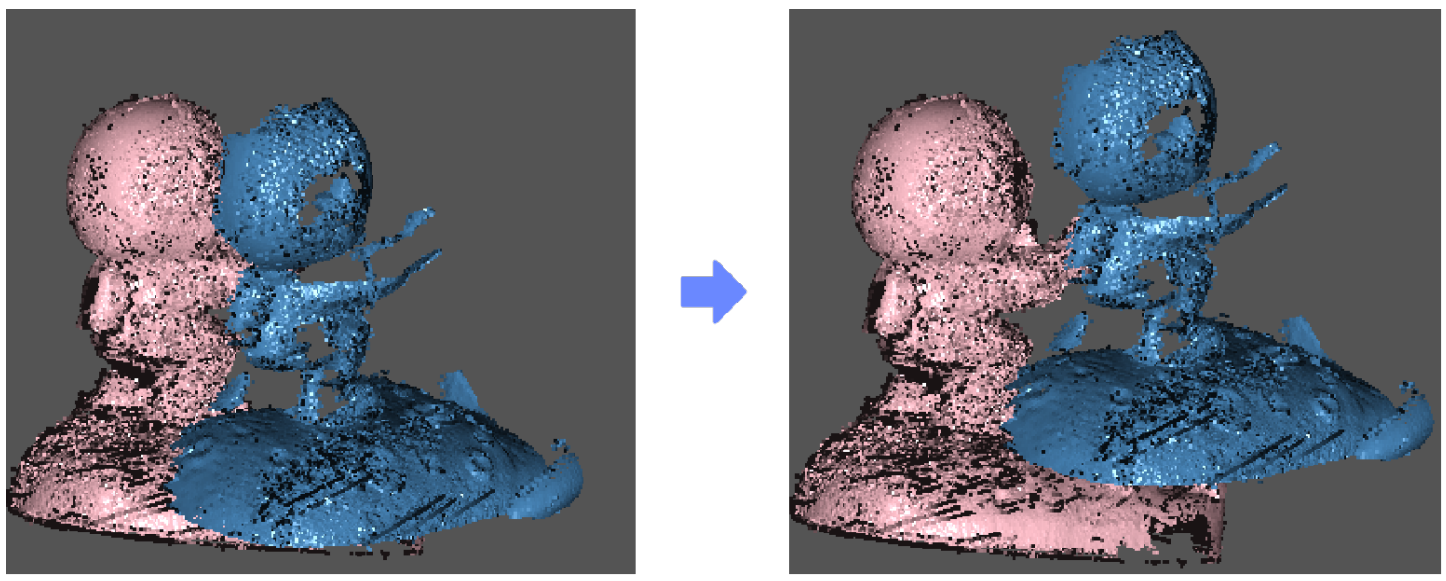
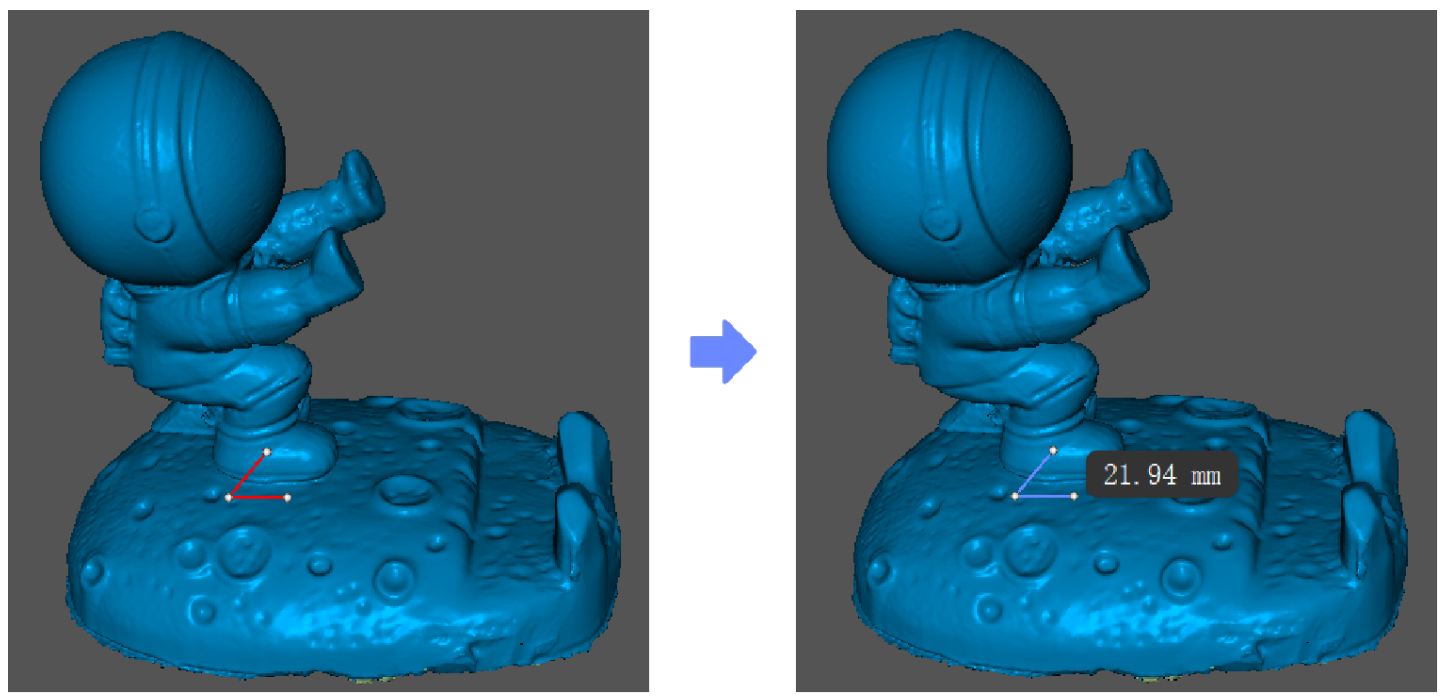


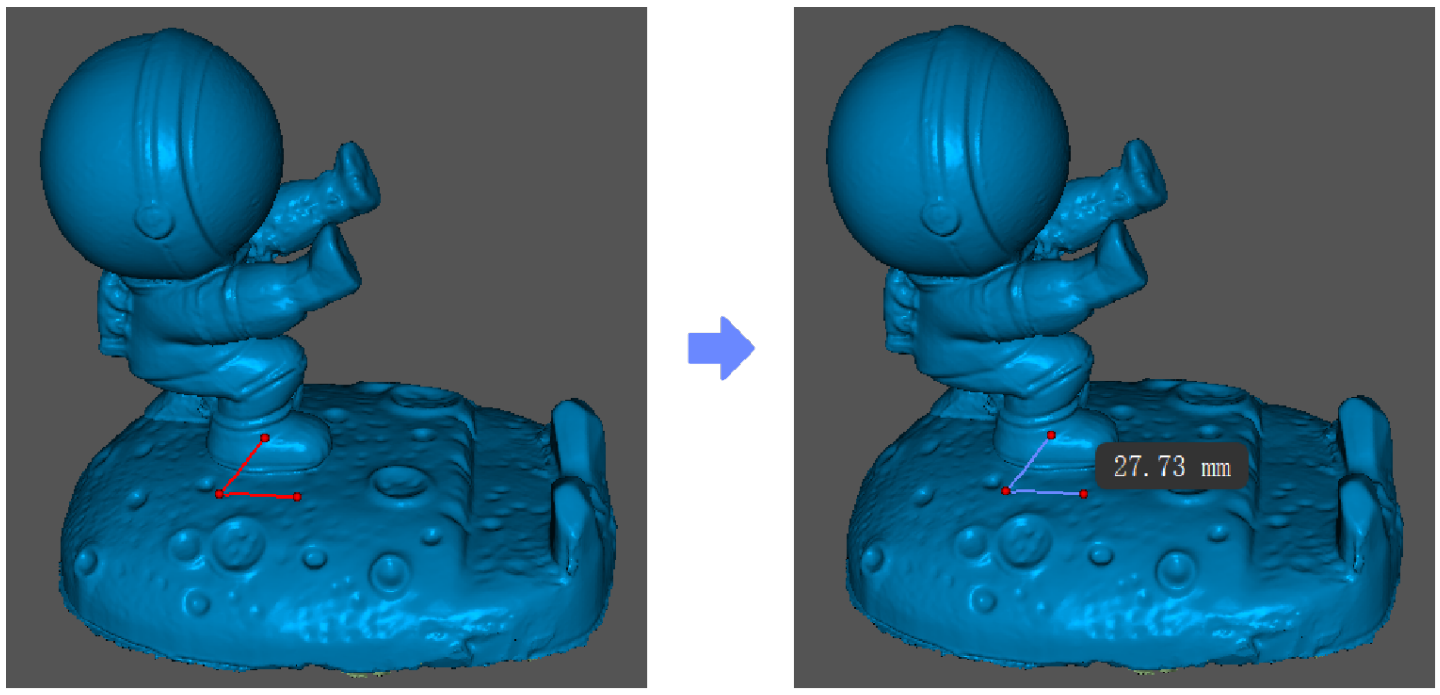
3 Clip Plane

Ctrl left-click to add two points to draw a cut plane with the current two points as the level.

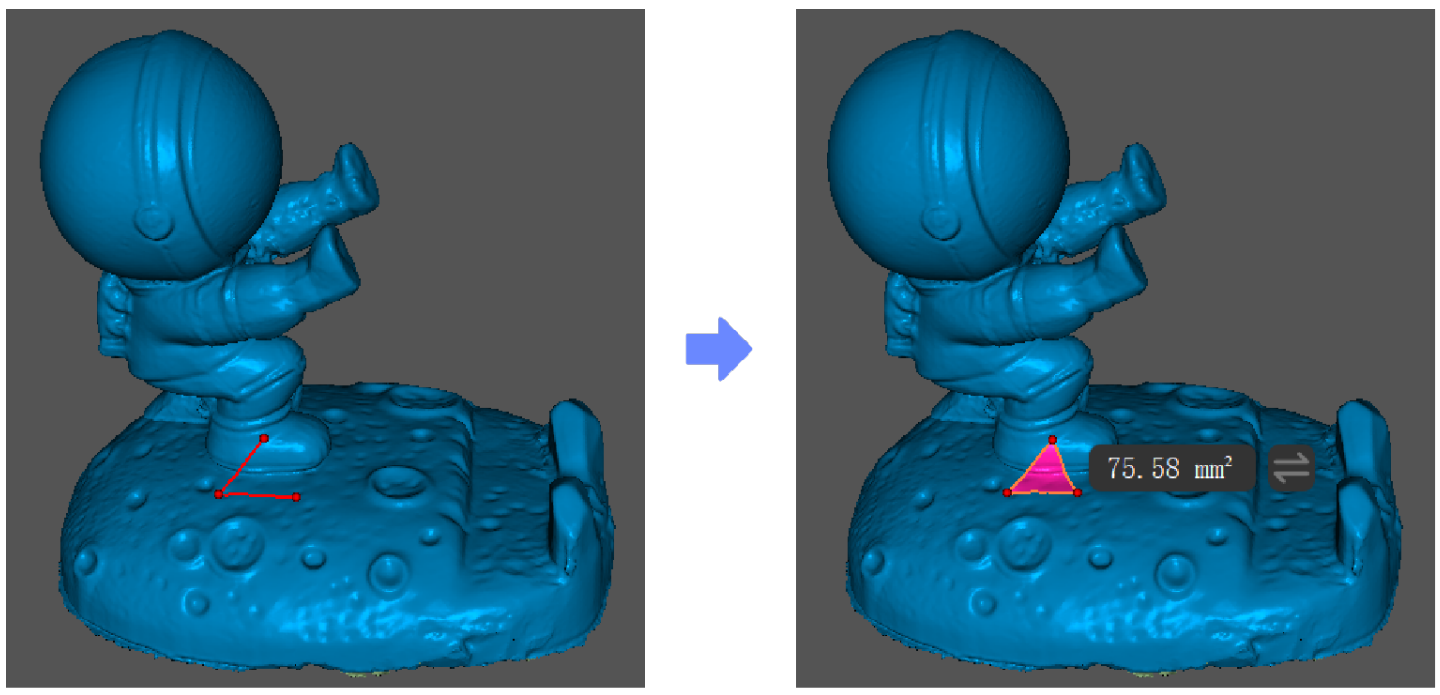
Drag the marker point with the left mouse button to rotate the plane ; Drag the arrow with the left mouse button to pan the plane ; Shift: Left-click the arrow to flip the direction.



4	**Delete**	Delete the selected area.
5	**Enable transform operator/ Disable transform operator**	When there are multiple sets of data in the scan, enable data separation for the aligned model and change the coordinate position of the selected object. Click Alt+Mouse wheel to move the selected data. 
6		Used to measure the length/area/volume of an object. If the point selection is wrong, you need to Ctrl+Right mouse button to end the current measurement, and then select the point again.
	Measure line	Penetrating measures the straight-line distance between selected points, allowing multiple points to be connected. Ctrl+left-click to add multiple measurement points, Ctrl+right-click to display the measurement distance. 
	Measure ground line	Fit surfaces measure the shortest distance between selected points and connect multiple points. Ctrl+left-click to add multiple measurement points, Ctrl+right-click to display the measurement distance.



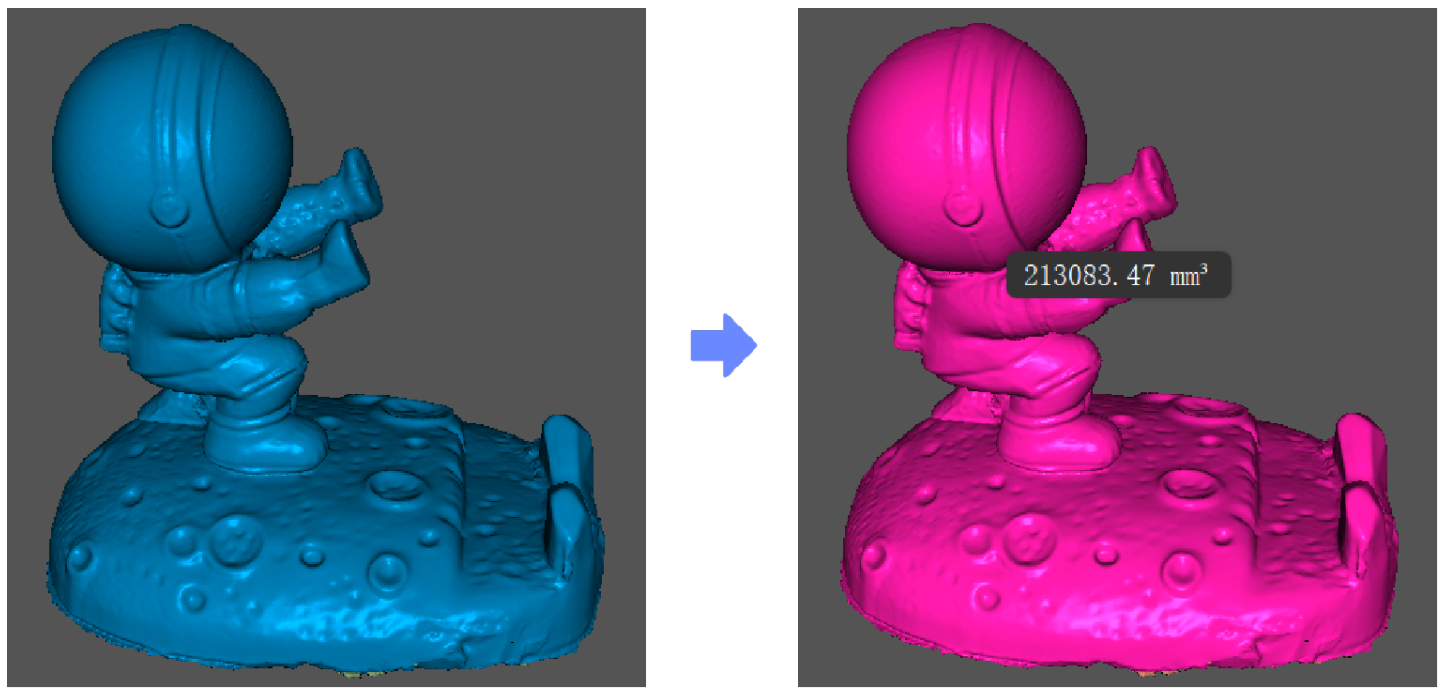
Measure Area Measure the area of the selected area. Ctrl+left-click to add multiple measurement points, Ctrl+right-click to display the measurement area. You can click ⇄ to change the area of the selected area and the area of other areas.



Measure volume Select a region and measure the volume of the selected area. Ctrl+Left-click to automatically select all and measure the volume of objects.

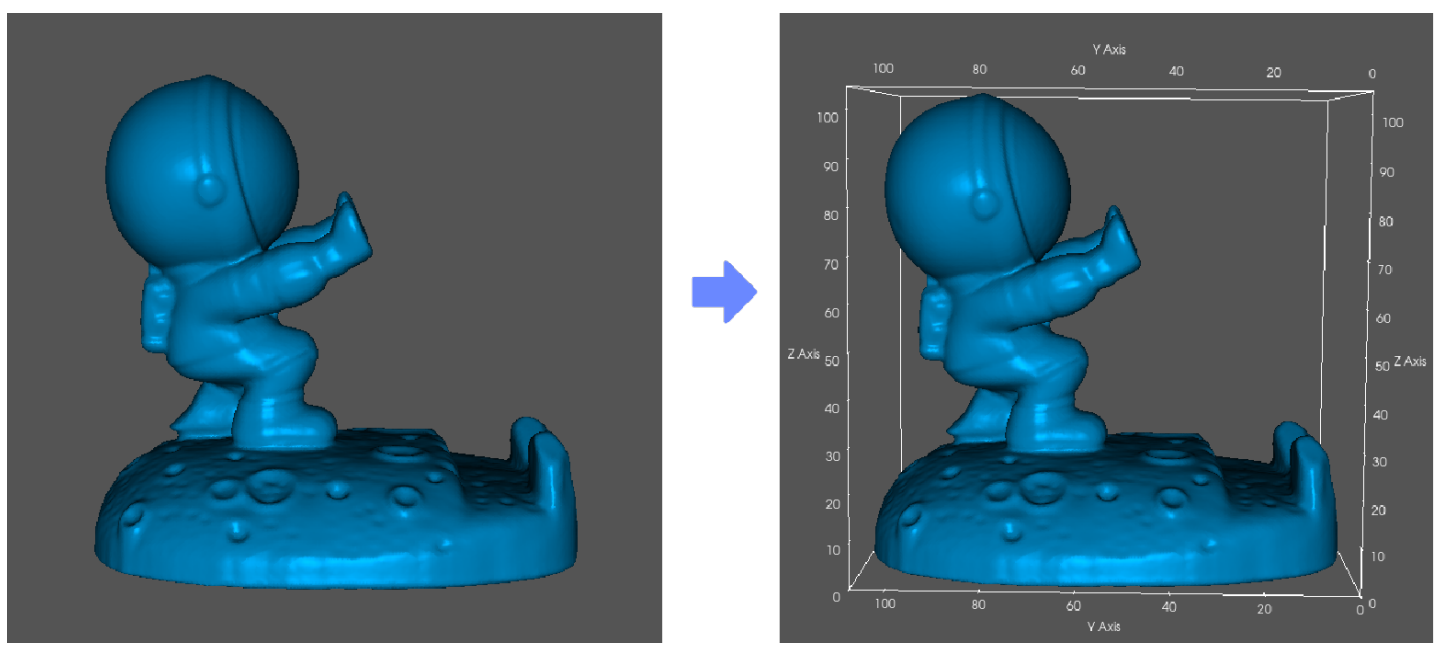
Measure volume

Select a region and measure the volume of the selected area. Ctrl+Left-click to automatically select all and measure the volume of objects.



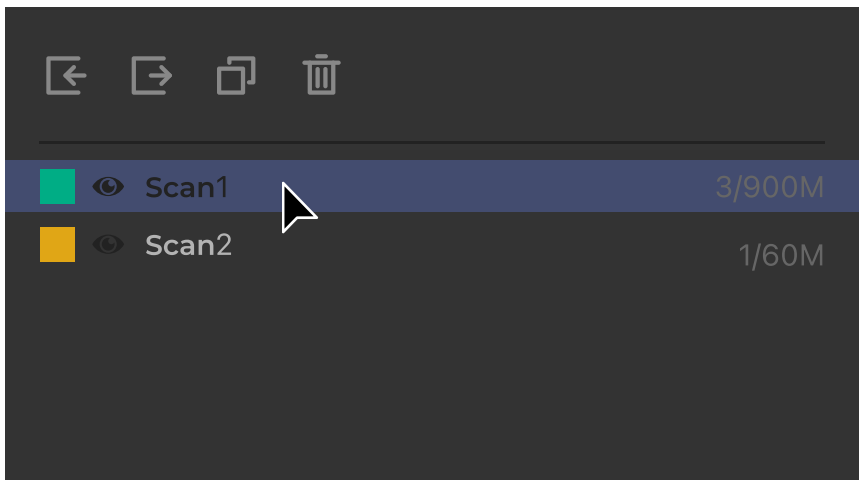
7 **Show / Hide Ruler**

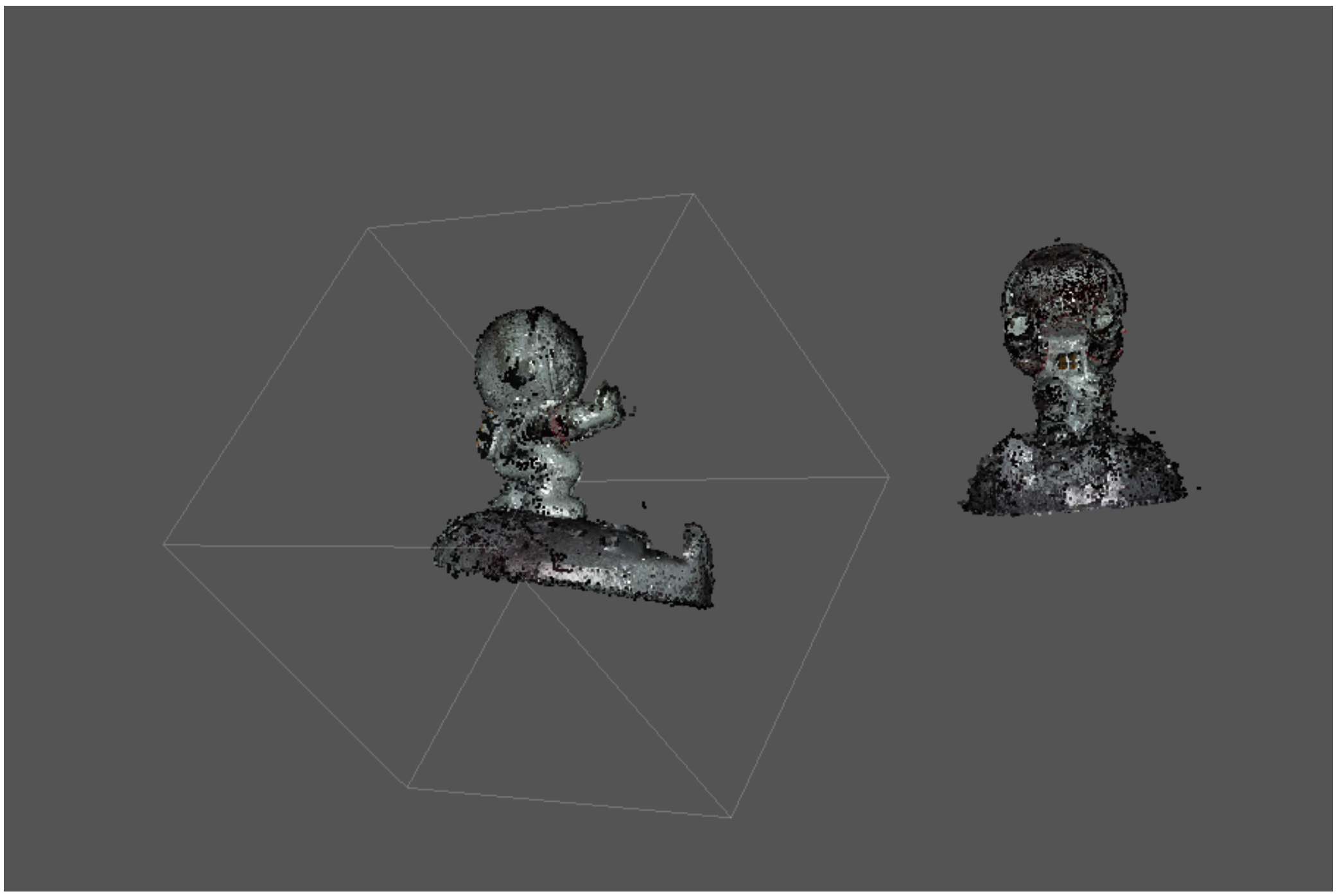
For the selected data, show/hide the rulers. It can be used to automatically calculate the smallest outer envelope box for an object.



①Select the object

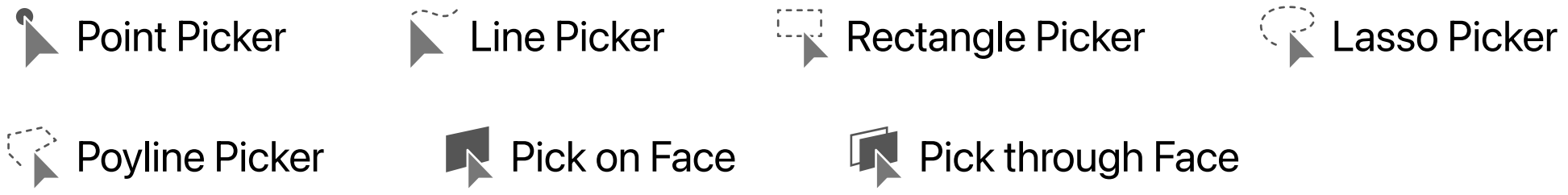
Click the object you want to process in the Data Layer List and the selected object appears in the three-digit viewport:





②Select Tools

Hover your mouse over the Tool Bar on the left side of the interface, here are a few selection tools available.



③Select the Data

Hold Ctrl and press left mouse button in the 3D Viewer to select an area, the selected place will turn red.

④Process the Data

Hover your mouse in the 3D Viewer and right click or click on “Edit” in the Title Bar to show the menu then edit your data.

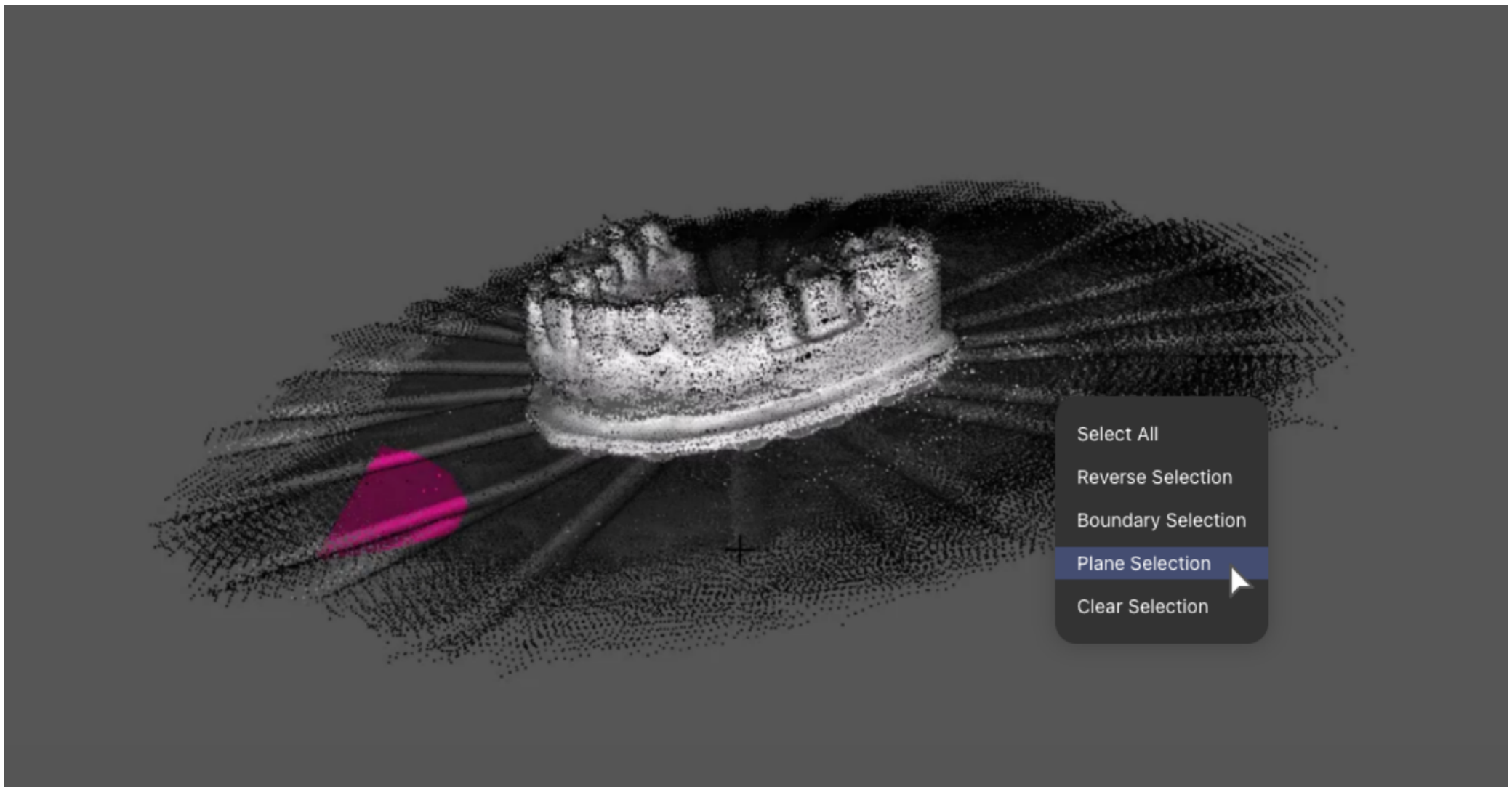
Number	Operate	Illustrate
1	Select All	Select all visible data.
2	Reverse Selection	Select the data outside the selected area.
3	Boundary Selection	Select all the connected geometry within a certain boundary
4	Plane Selection*:	select all the data on one fitting plane.
5	Clear Selection	Deselect the data
6	Delete Selection	Deletes the selection area.

***Plane Selection**

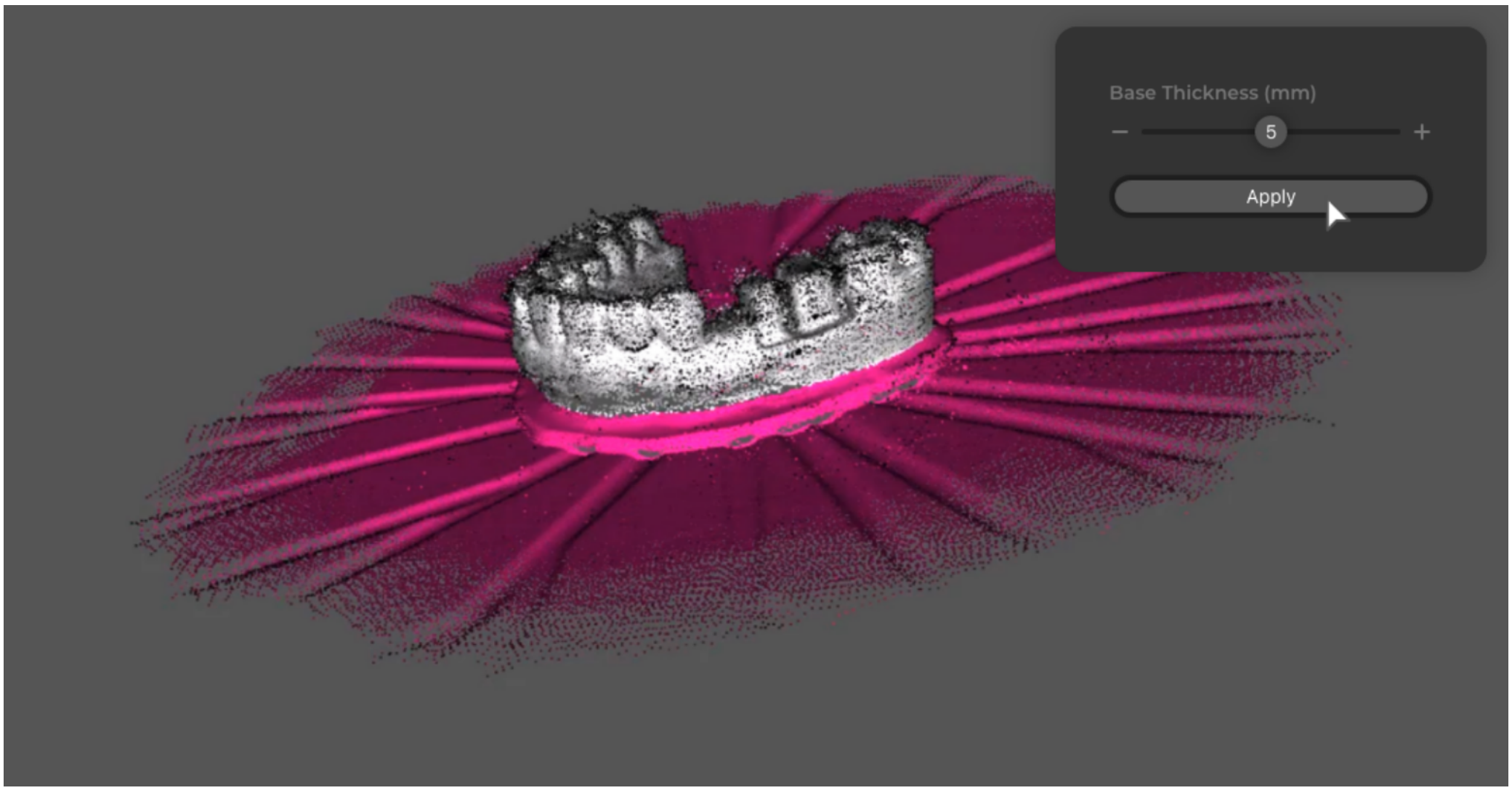
Plane Selection is for selecting and deleting the turntable top, floor, wall and other flat surfaces.

Watch the tutorials below to learn more:
https://youtu.be/ad_Sch4v54M

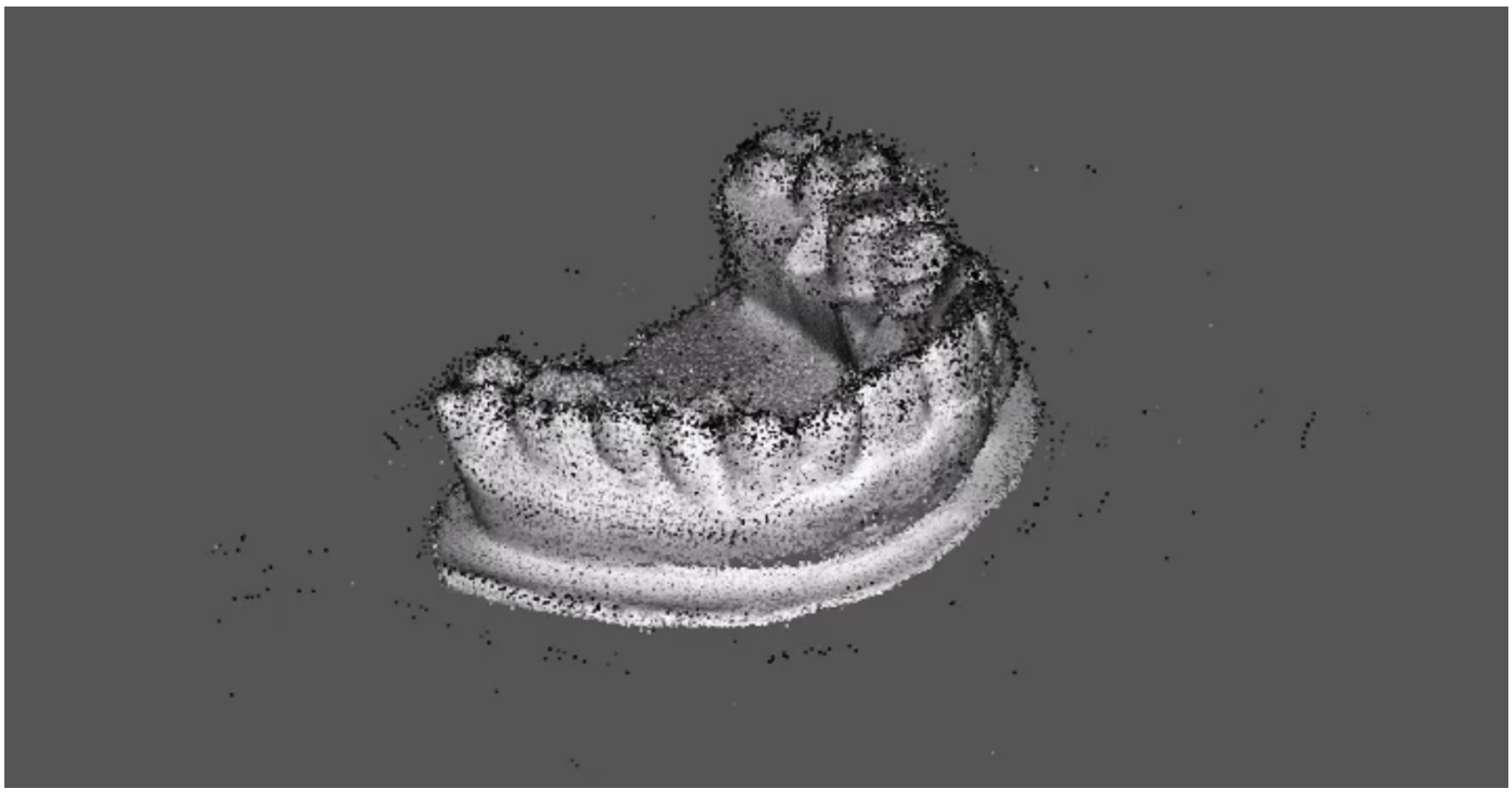
Firstly, use the **Select Tools** to select part of the plane (no need to select the entire plane); right click your mouse and select “Plane Selection” in the menu to automatically recognize the entire plane.



The top right pop-up window allows you to adjust the plane thickness.



Press Del on the keyboard to delete the selected base.

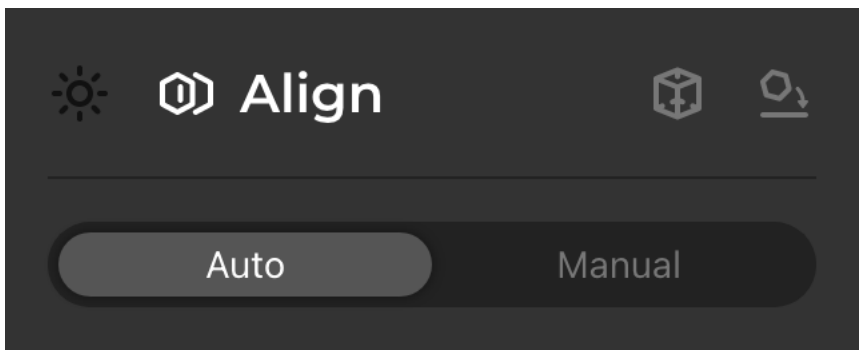


Align

Watch the tutorial below to learn more about Align:

https://forum.jimumeta.com/home/tutorial/a911d93894004ba7a618ac0e7b309d04.html

Go into “Align” in the Work Panel and select the align mode.

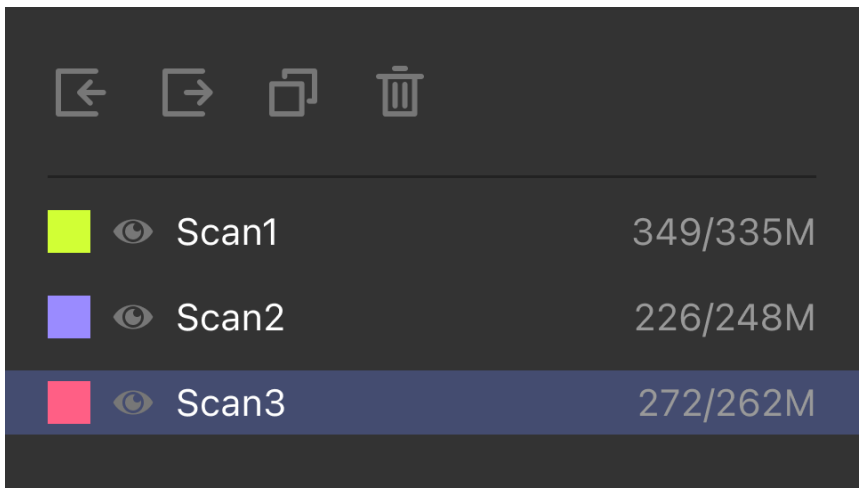


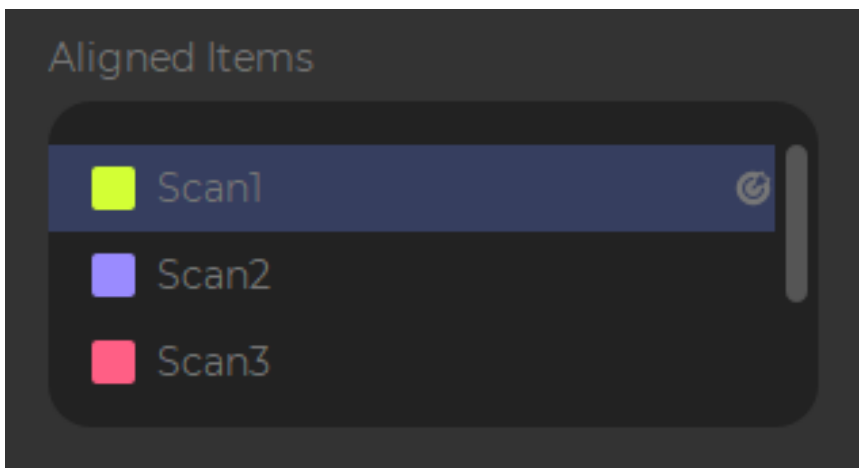
If the data is not needed, it is recommended to delete the data that is marked in red.

Auto Align

Select the scans that need to be aligned to in the “Work Panel”. Click the display icon of the data layer list, and the icon will be displayed as , and the checked data will be automatically added to the aligned data. It is recommended to remove the substrate before automatic alignment.

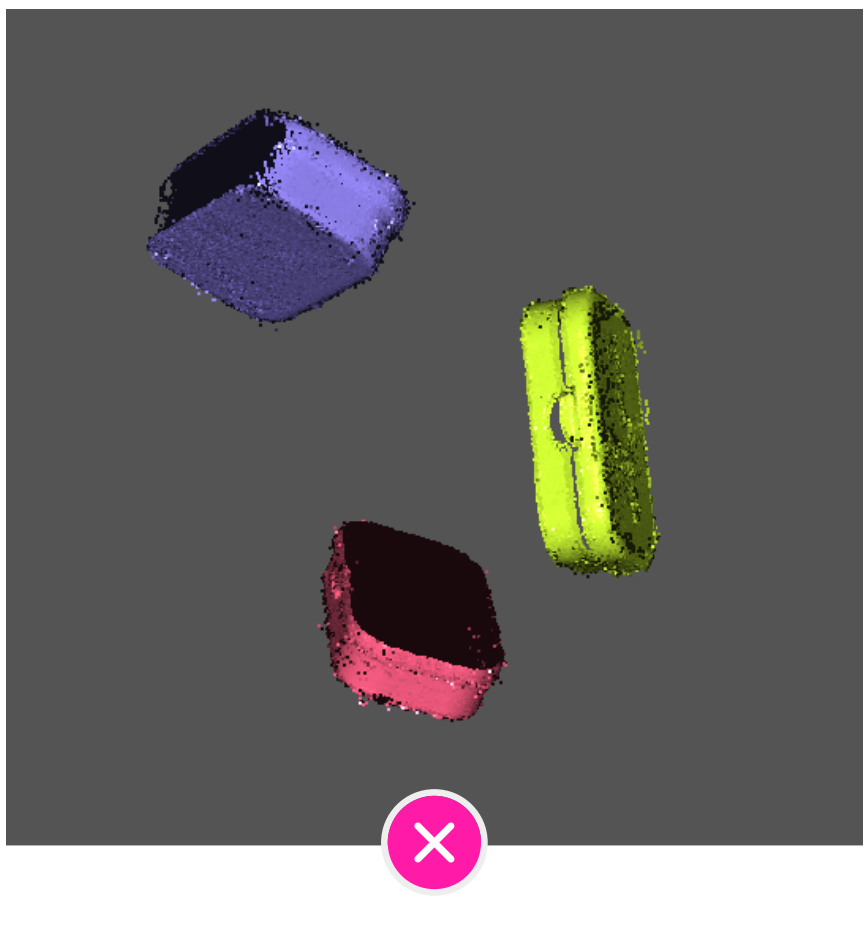
In Align Data, double-click the mouse to select a fixed layer, and the icon will be displayed on the right side of the fixed layer, and select the more scanned data as the fixed layer for easier alignment.

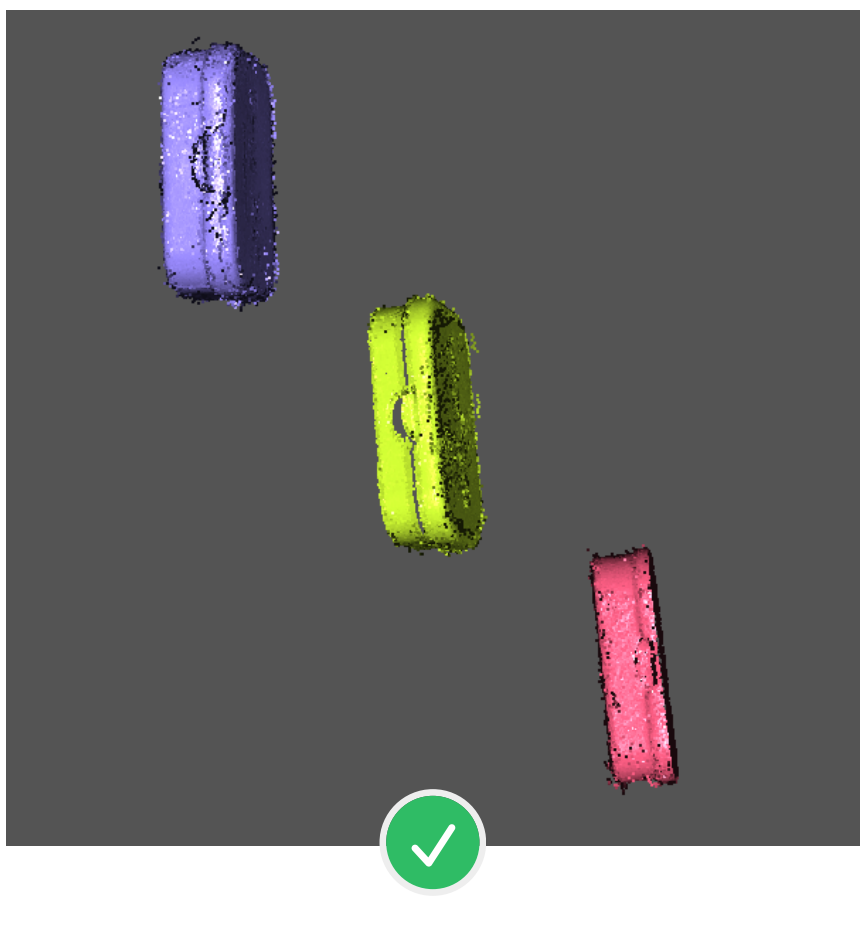




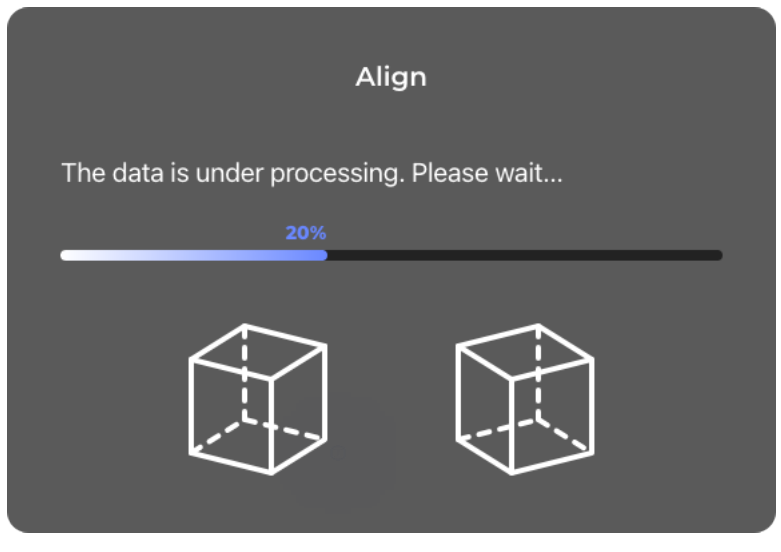
Before alignment, it is recommended to manually turn the aligned layer to the same angle.

Click "Align" to automate the alignment:





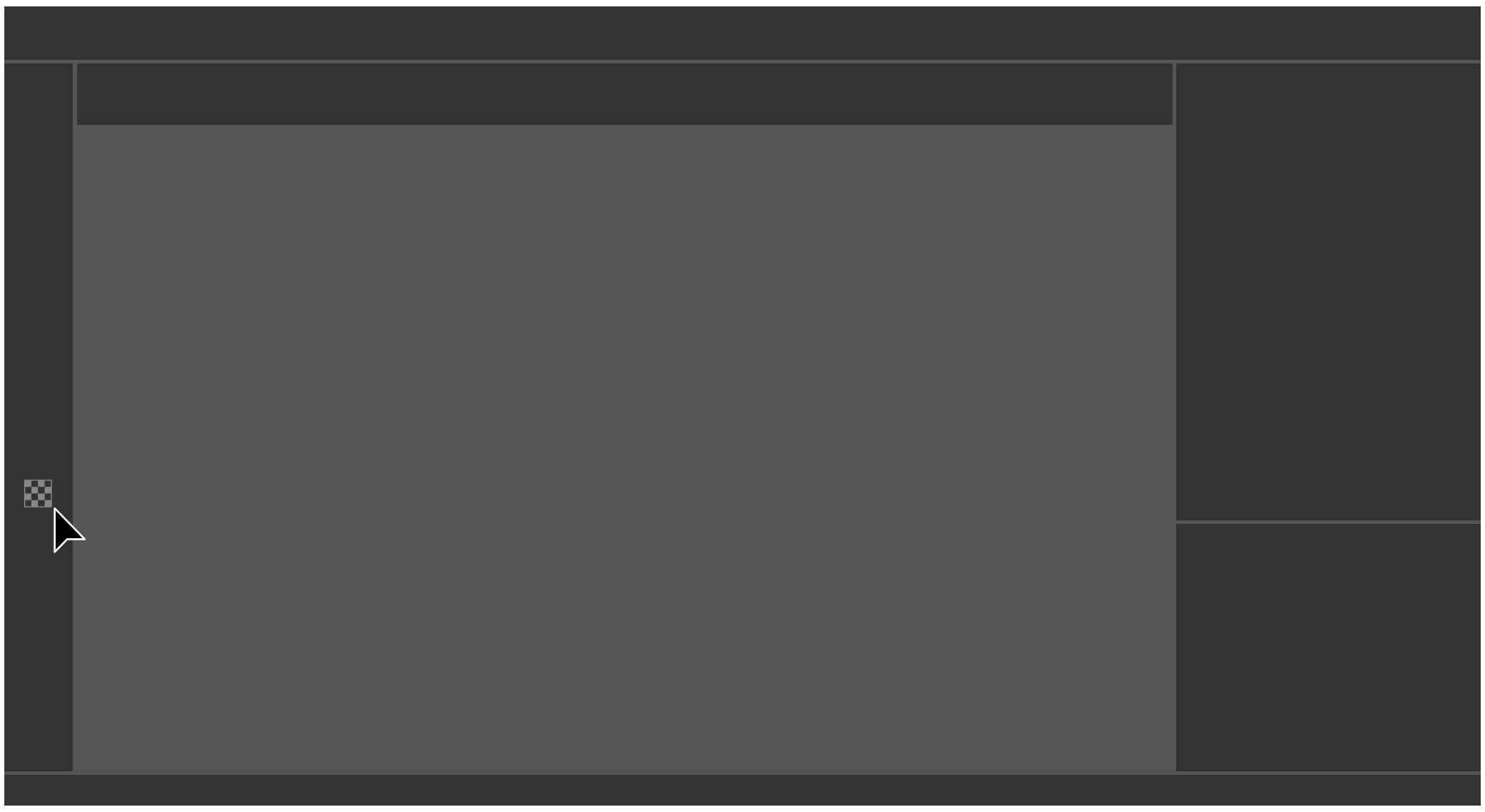
Align



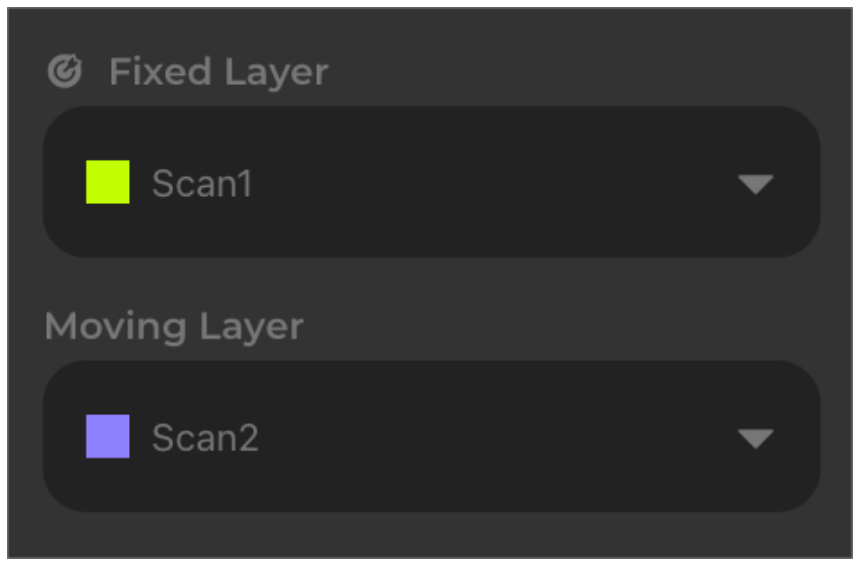
Manual Align

Please note that the model substrate is manually deleted before alignment, and for substrate deletion, please refer to ***Plane Selection**.

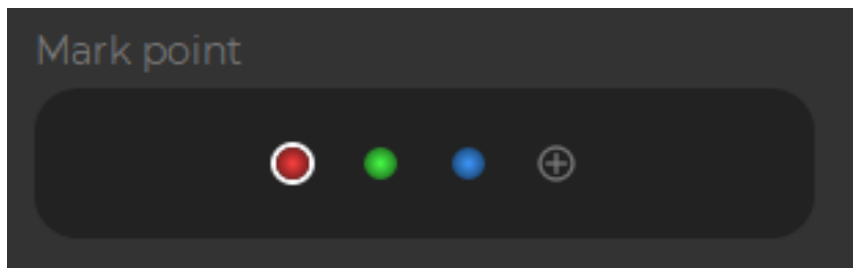
* Manual alignment will automatically turn off the texture display, so that you can observe the alignment status of the model, if you need to turn on the texture display, you can click the icon in the "Tool bar" to turn it on.



Select the scans that need to be aligned to in the “Work Panel”. In the Fixed Layer drop-down list, select the target data aligned to the target, and in the Moving Layer drop-down list, select the movement data aligned to the target.

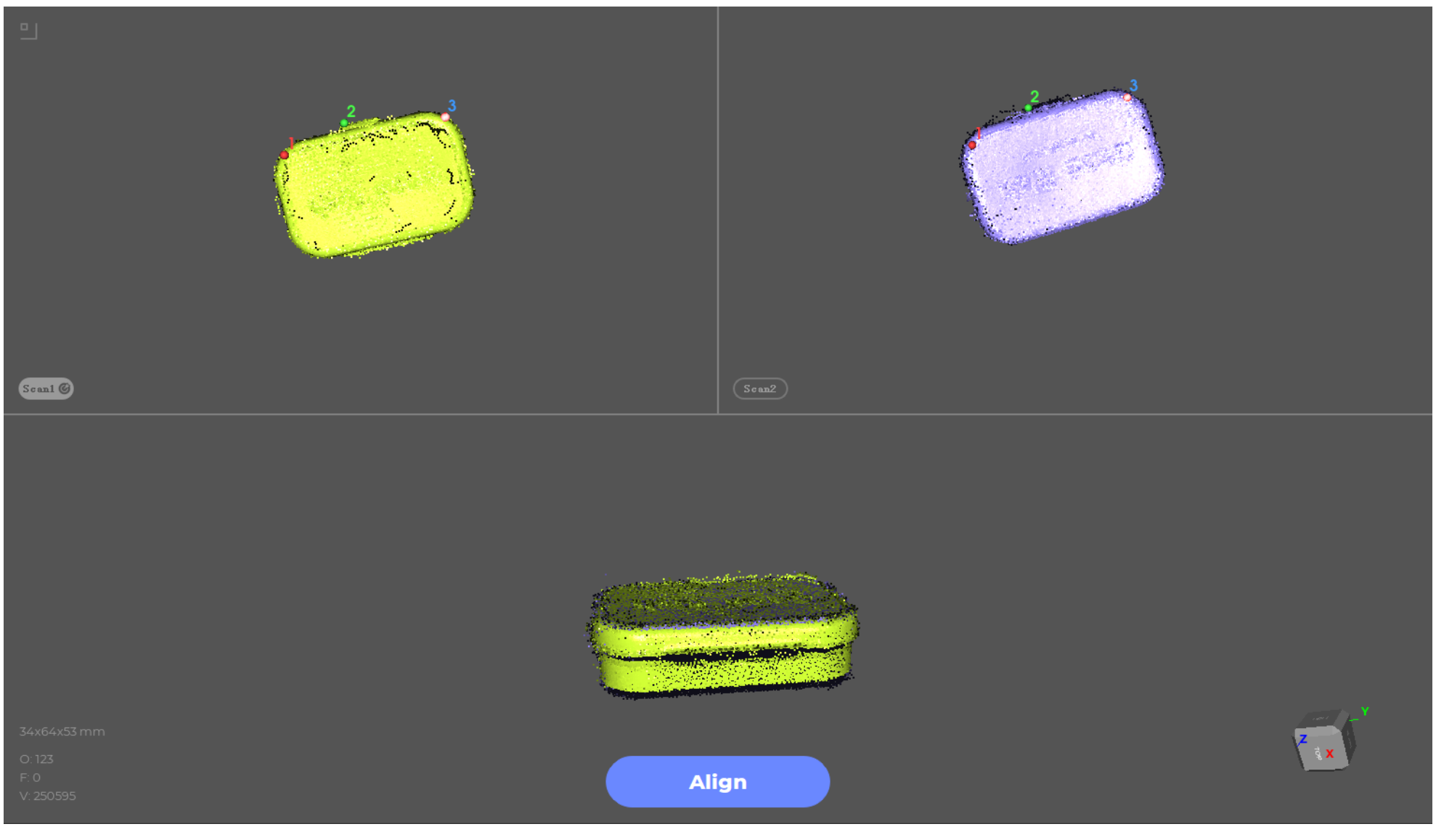


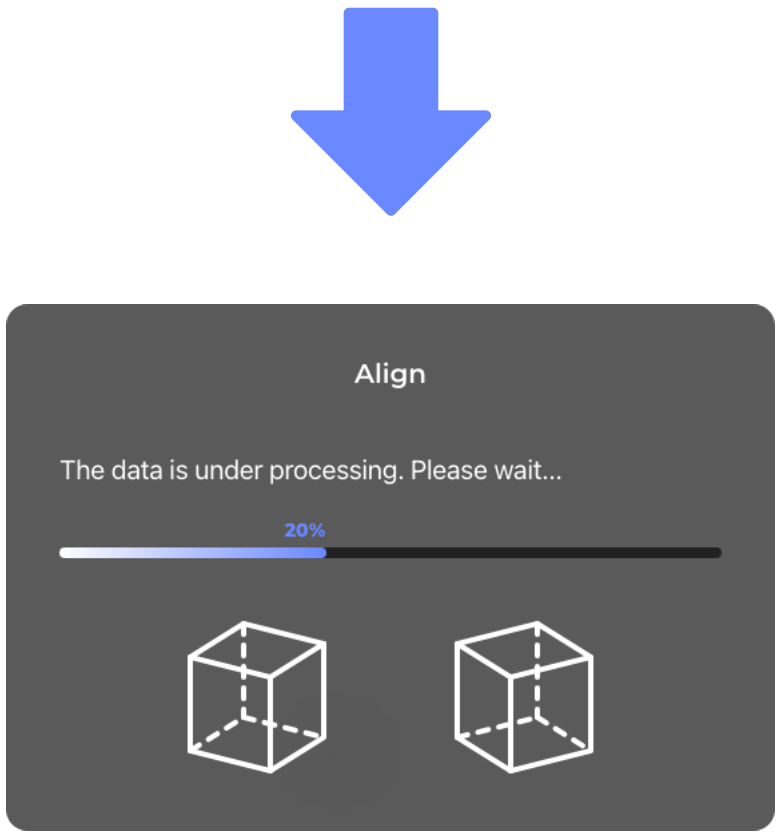
Three sets of marker pairs are automatically generated in the "Mark Point" information bar , and you can click ⊕ to add marker pairs, but up to five sets of marker pairs can be added. Right-click the selected marker point in the 3D Viewer, there is a white highlight around the selected marke point, and right-click again to modify the position of the selected marker point.



In the 3D Viewer, the upper-left view is a fixed layer, the upper-right view is a moving layer, and the bottom view is aligned to the result.

Drag and drop the left mouse button to rotate the model that needs to be aligned in the left and right views to the same viewing angle. Adjust the marker points of the corresponding numbers in the two views to the same position on the model, and click "Align".

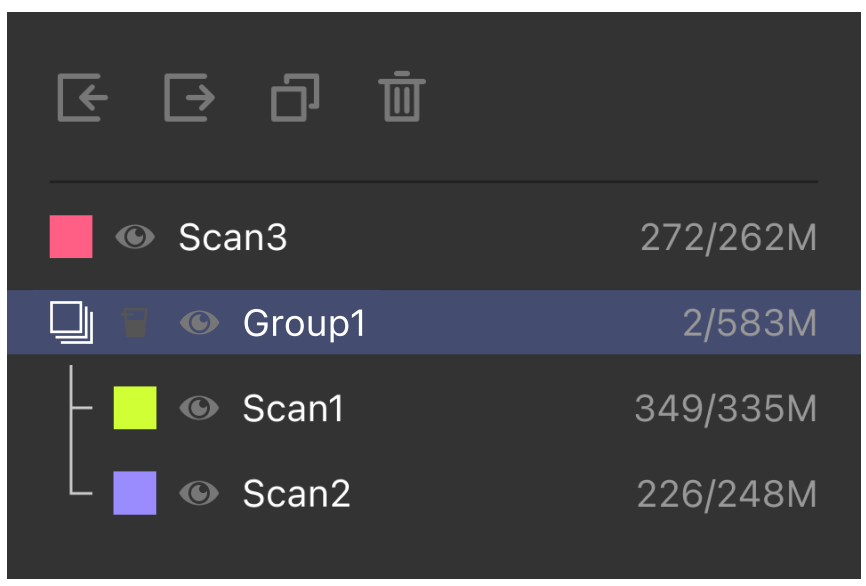




After the alignment is completed, you can check the alignment result in the bottom view, and if you are satisfied with the alignment result, click "OK"; If you're not satisfied, tap "Return" to adjust the position of the marker points and redo the alignment.

Return OK

After the alignment is completed, the data participating in the alignment will be automatically grouped, and the can be clicked to display it as a fixed layer color. Manual alignment can only align two layers of data at a time, and if you need to align three or more layers of data, you need to align the other layers of data with the group data.



Process

The redundant noises arround the point cloud can be removed through Statistical Noise Removal. Then, the point cloud data can be converted into mesh data through fusion, and finally the mesh data can be deisolated, repaired, simplified, texture-mapped, and other operations.

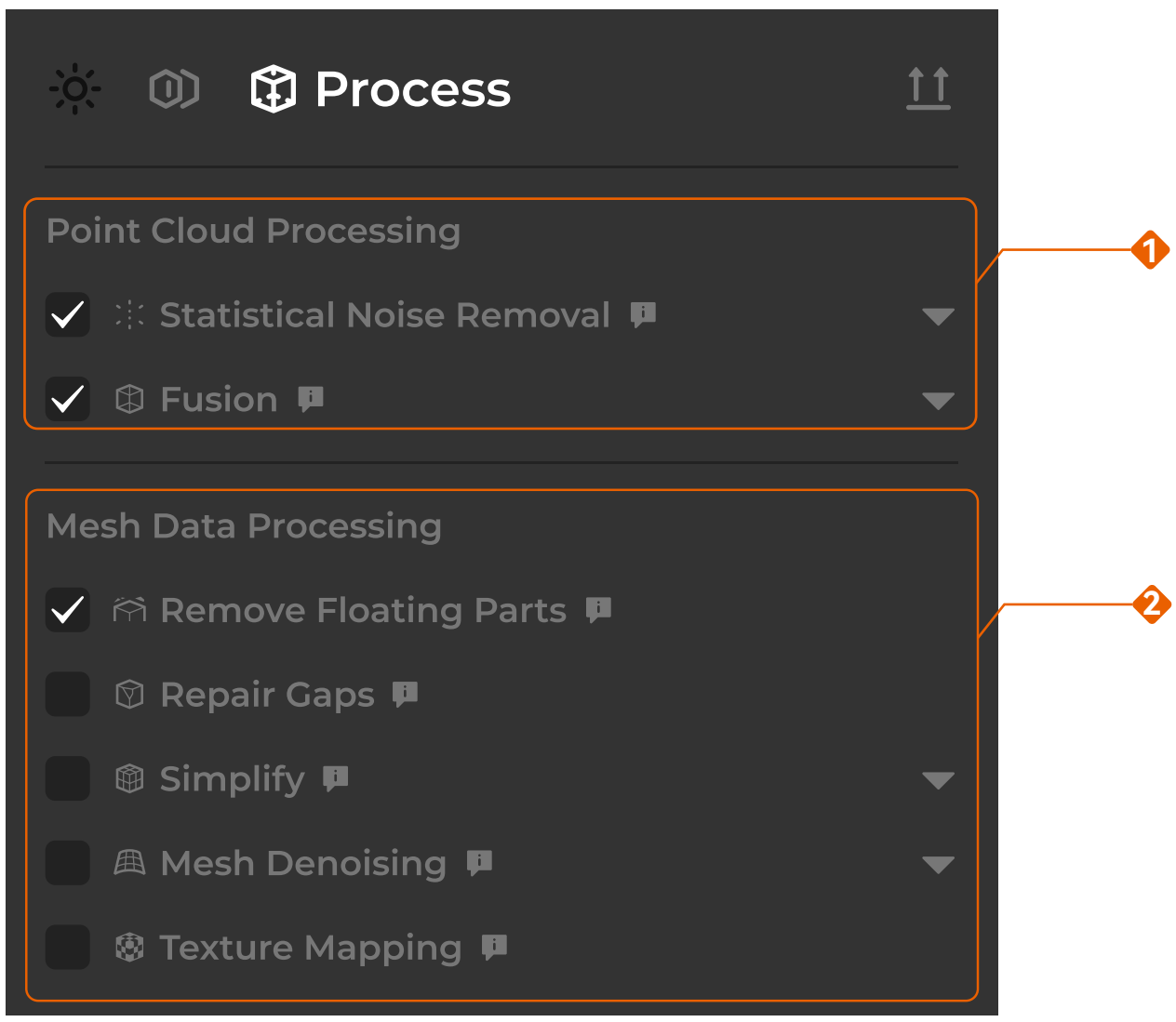
Point Cloud: A dataset of a series of 3D points plotted on x, y, and z coordinates, recording the surface bumps and color information of the scanned object. Point clouds can be divided into single-frame and multi-frame data (frame: the unit of measurement of a photograph).

- Single frame: A complete still image and picture
- Multi-frame: A series of sequential images and pictures arranged in chronological order

*F: Frame, the unit of measurement of the photograph. The larger the number of frames, the larger the amount of data and the more complete the collected data, but when processing data, the higher the requirements for computer performance and the longer it takes to process.

Mesh: Combines massive 3D point cloud data into a single mesh to form a polygon collection connected by polyhedral vertices.

① In the Edit Panel_Compositing section on the right side of the main interface, select the steps you want to take



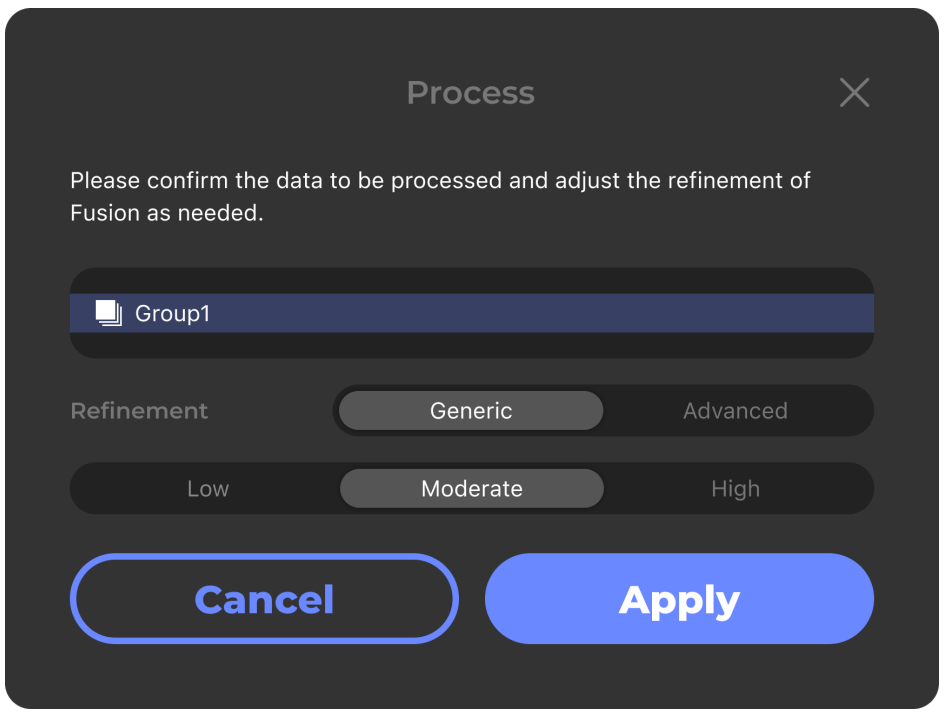
Number	Operate	Illustrate
1	Point cloud processing	Statistical Noise Removal —— Clean up the isolated points in the cloud. Fusion —— mesh the point cloud data by connecting the dots to produce a complete model.
2	Mesh pro-cessing	Remove Floating Parts —— clean up the mesh by removing the floating noises from the scans. Repair gaps —— fill the holes on the mesh to produce a water-tight model. Simplify —— narrow down the amount of mesh faces to reduce the data size. Mesh Denoising —— This tool smooths the mesh by flattening the surface. The larger thevalue is, the smoother the mesh will be. Texture Mapping —— apply the texture or color information onto the mesh surface.(Colors only available for some of 3DMakerpro models.) Note: here “Texture Mapping” refers to the texture cap-turing by the scanner itself. If you need to do “External Texture Mapping”, please uncheck this step.

② Click "Process":

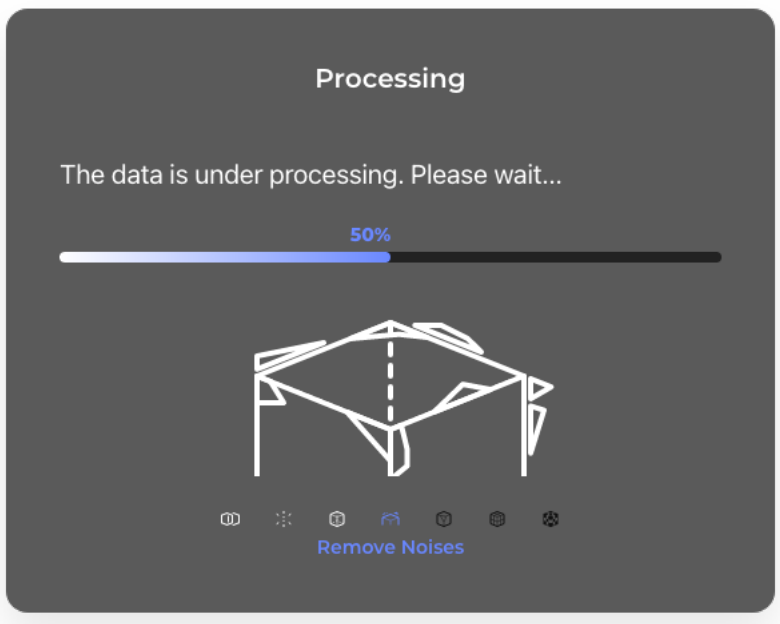
③ Select the data you want to synthesize and adjust the granularity of the fusion as needed.

There are two types of refinement: "General" and "Advanced". For "Advanced" configurations, please refer to Advanced Configurations

The general configuration is divided into three levels, and the default selection is "Moderate". If you select "High", the higher the fineness, the higher the number of faces in the model; If you select "Low", vice versa.



It is recommended to use the default configuration, and click "Apply" after adjustment. The data processing time is long, please be patient:



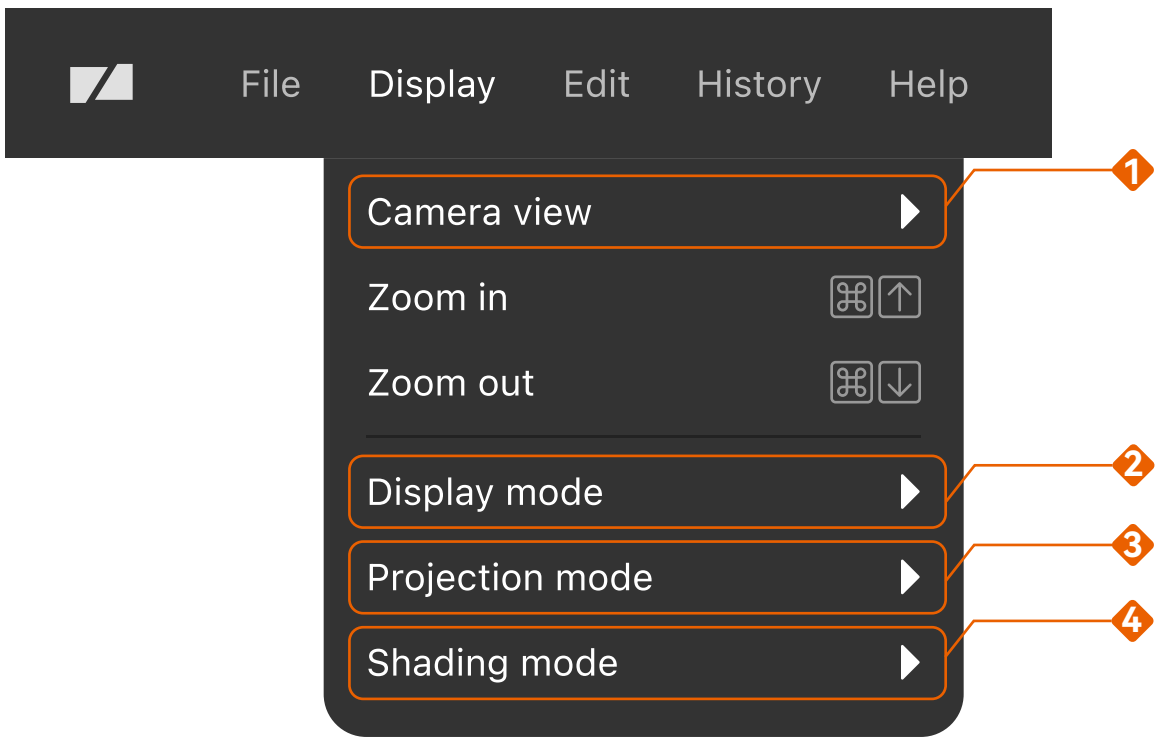
④ You can further edit on the mesh model to delete excess data with the selection tools available. For more information: Data Editing

Watch the tutorial below to learn more:

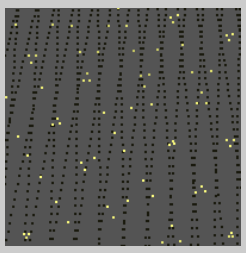
https://forum.jimumeta.com/home/tutorial/fee6bfaad70e41a1b251ed0c555a8496.html

⑤ According to the requirements of the model, you can modify the display form of the model in the "Tool bar" at the top of the main interface.

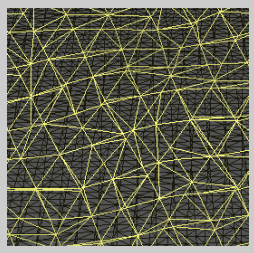
The detailed functions are as follows:



Number	Operate	Illustrate
1	Camera View	the current scene when you look at the object from different directions. It's suggested to reorientate the model to XYZ axis first then reset the camera view. **ISO View** : present the three-dimensional structure of the object **Top View** : the current scene when you look at the object from the top **Bottom View** : the current scene when you look at the object from the bottom **Left View** : the current scene when you look at the object from the left **Right View** : the current scene when you look at the object from the right **Front View** : the current scene when you look at the object from the front **Back View** : the current scene when you look at the object from the back
2	Display Mode	the appearance of how the model is displayed

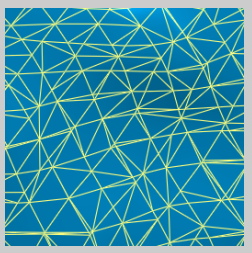


Point



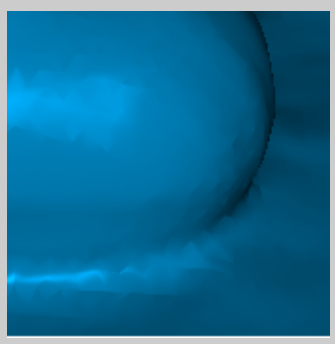
Wireframe

Face

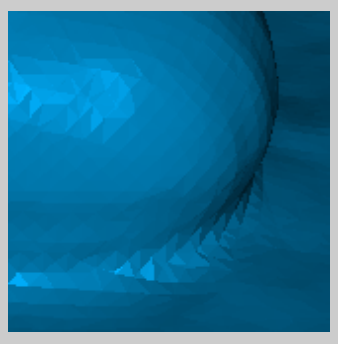


Face with edge

3	Projections	two major types of projectors in graphic rendering **Perspective** : rendering with perspective projection. It generates a very realistic view of the world and the objects present in it. **Parallel** : rendering with parallel projection. Keep the size and shape of the object on the projection surface consistent with its size and shape in three-dimensional space. It will not change the proportional relationship of the object, so it is more suitable for scenes that need to accurately display the shape and size of the object.
4	Shading	this tool is used to control the color interpolation method of 3D objects when rendering, affecting the realism and performance of the rendering effect. **Smooth** : simulate the change of light on the polygon surface and produce smooth color transition. The rendering effect is more realistic and suitable for scenes that need to show light and high realism. The amount of calculation is relatively large, and the rendering speed may be slightly slower. **Flat** : the entire polygon is given the same color as the vertex, without considering the lighting changes or color gradients inside the polygon, so the rendered effect may appear rigid and flat. The calculation is simple and rendering speed is fast.



Smooth

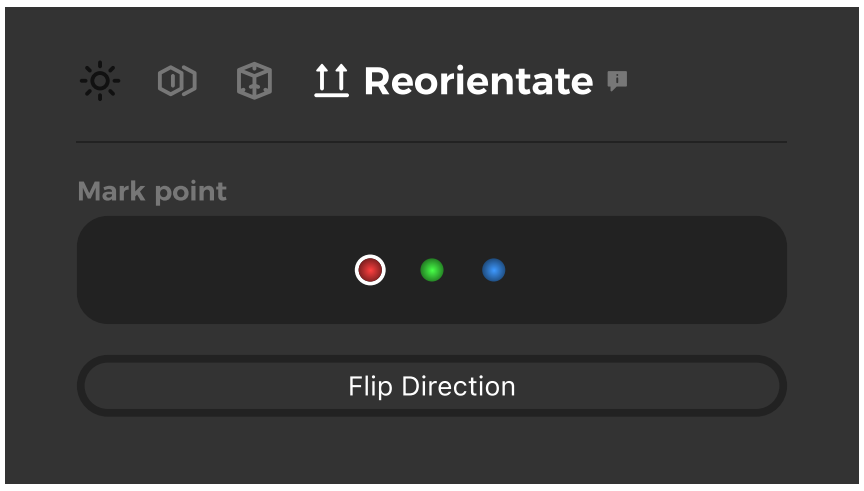


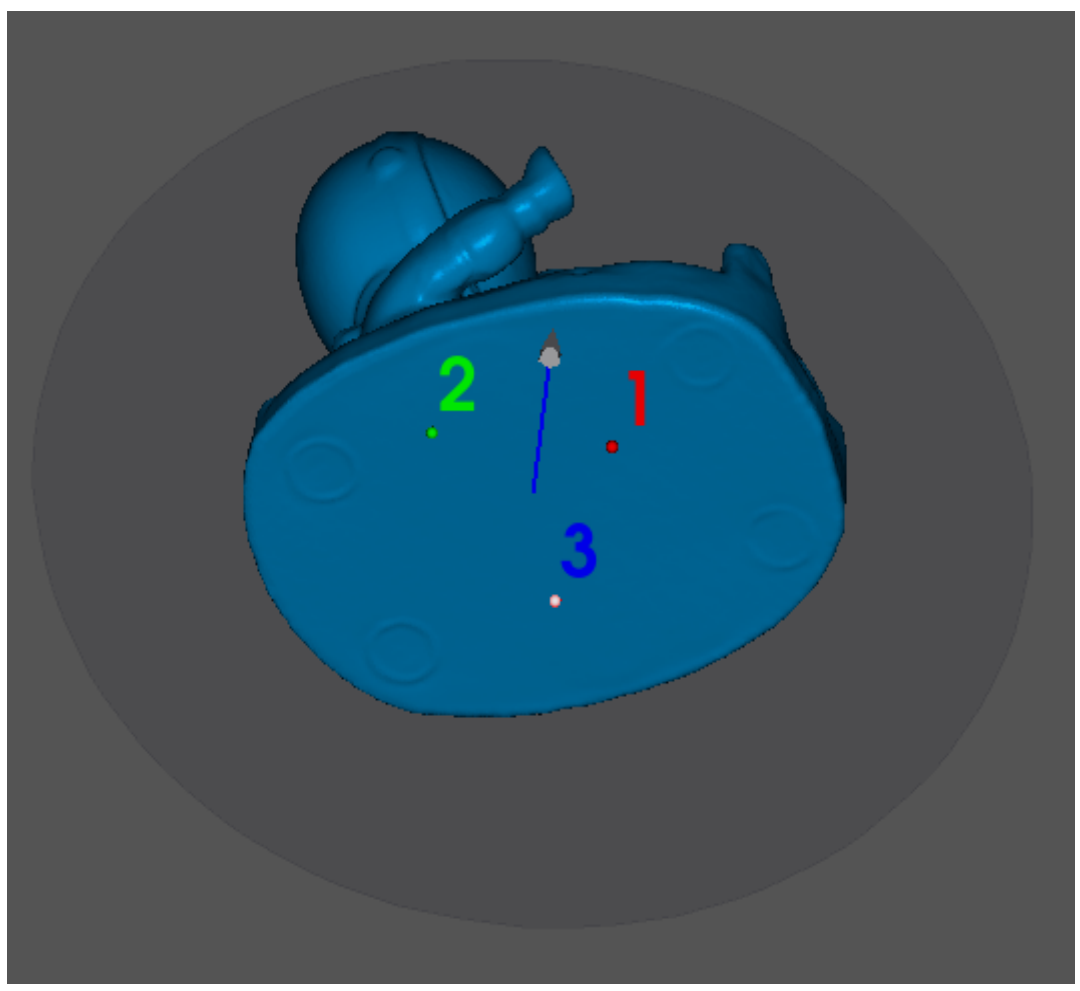
Flat

Reorientate

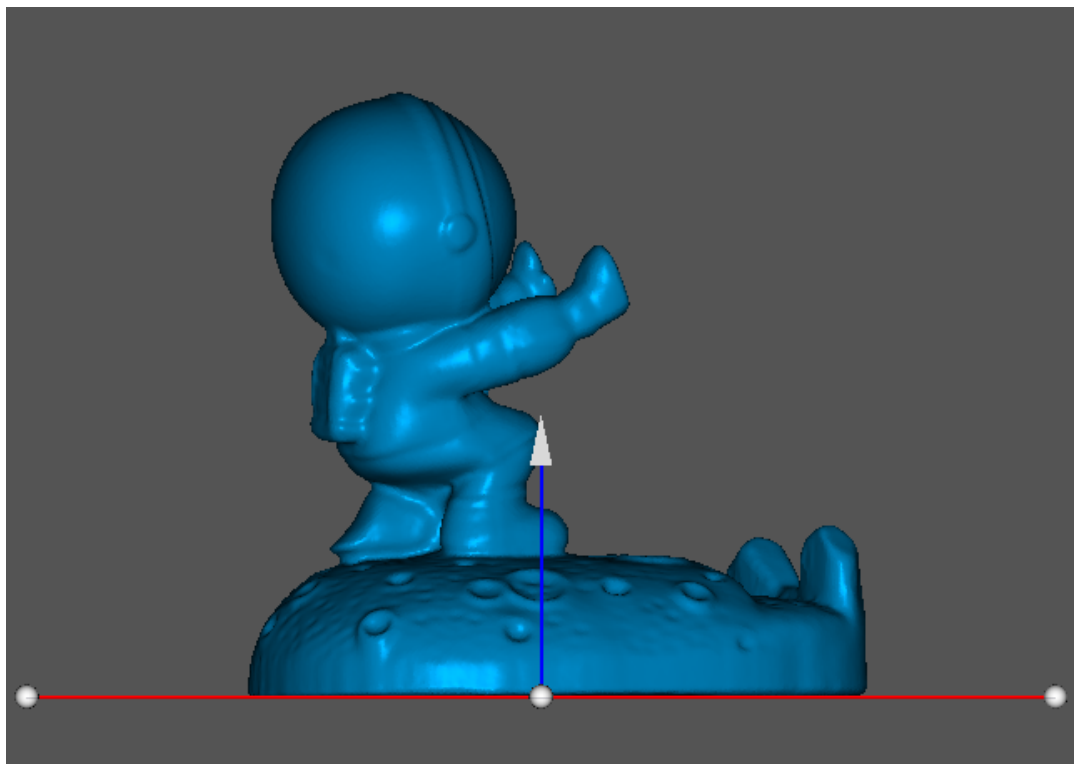
Adjust the model's posture, align its base to XY axis of the coordinate system for further model editing and 3D printing.

Reorientate your 3D model by going into the Work Panel_Reorientate. Three mark points will be automatically created to generate a plane; right-click to reposition them but not make them in a line; flip directions of the normal line in the Work Panel_Reorientate; click "Reorientate"to execute it.



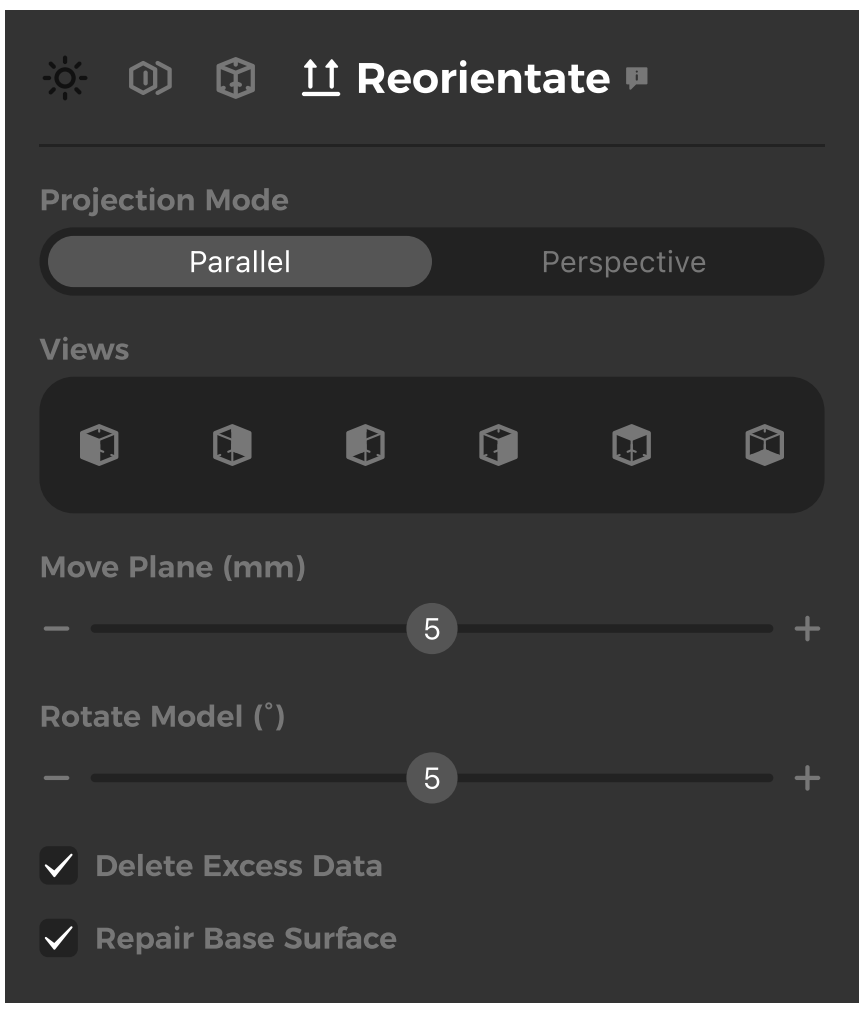


Reorientate

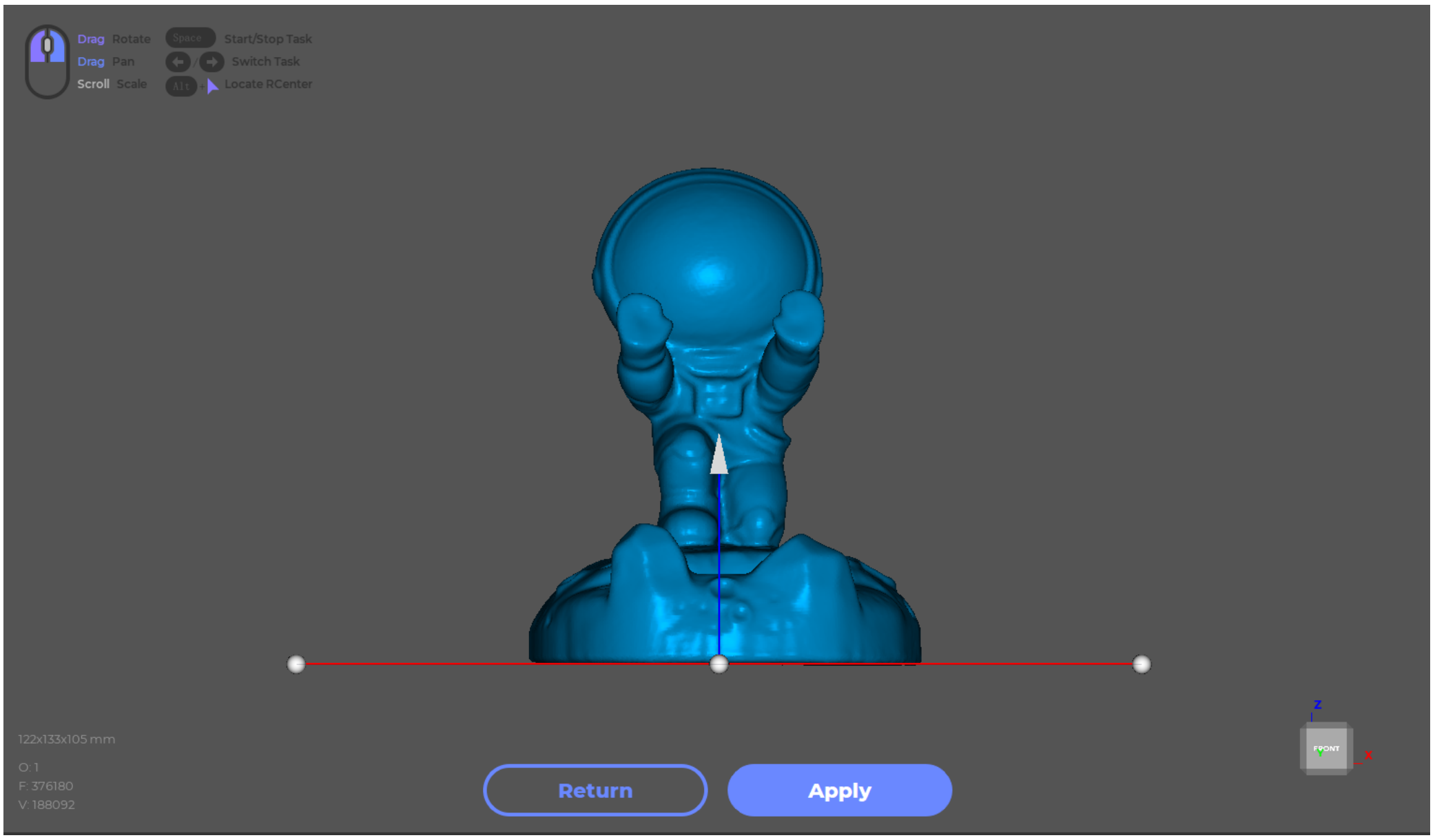


In the work panel_Reorientate, there are other settings such as changing the view types, moving the plane, rotating the model and deleting the highlighted excess data below the plane.

If you select Delete datum, the model may be damaged, so the repair base will be checked by default, or you can manually uncheck it.

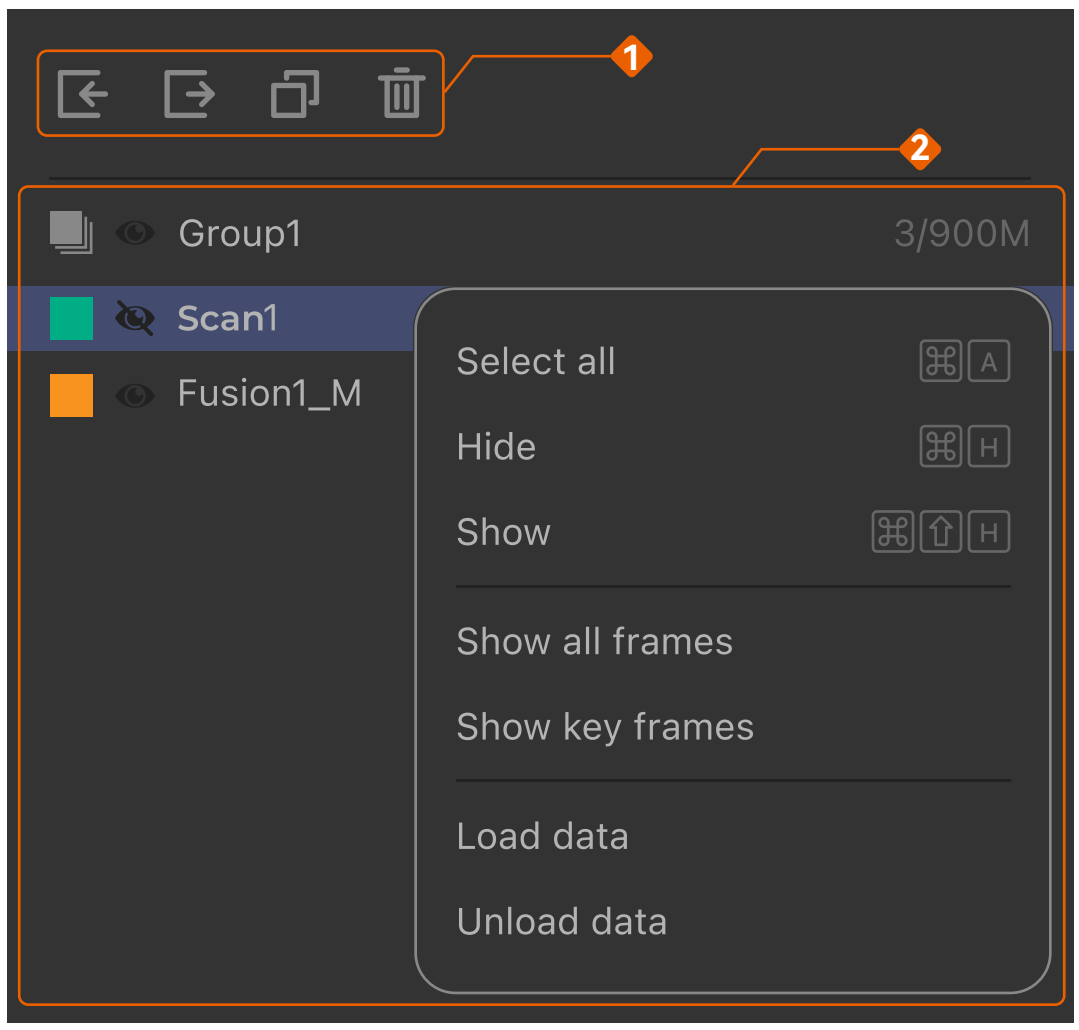


Drag four anchor points to reposition the plane, and drag the arrow in the middle to move the plane vertically; click “Apply” if you are satisfied.

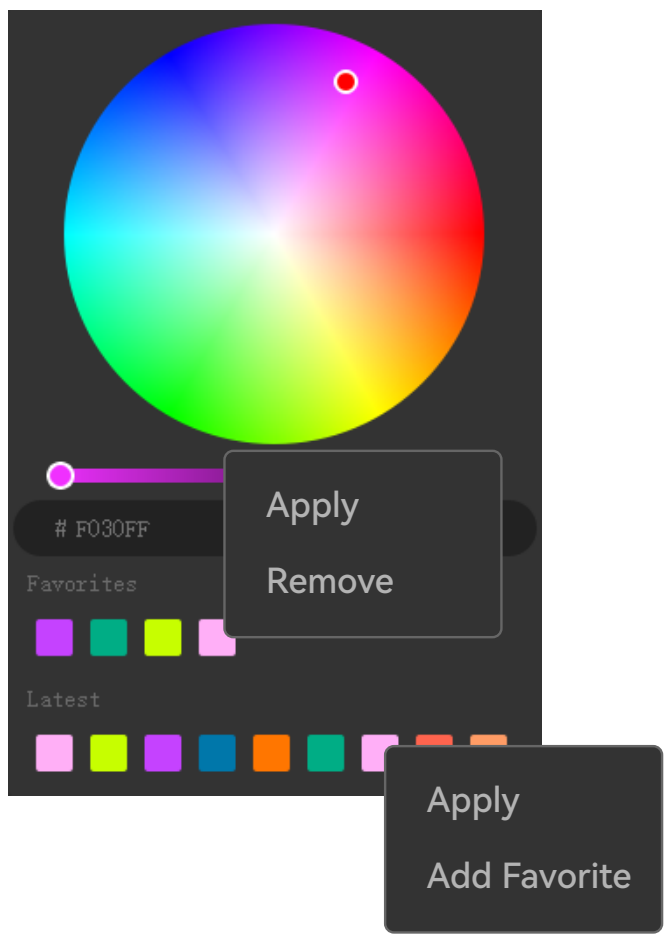

Drag Rotate
Drag Pan
Scroll Scale
Space Start/Stop Task
Switch Task
Alt + Locate RCenter
122x133x105 mm
O: 1
F: 376180
V: 188092
Return
Apply
Z
FRONT
X

*Scan file management

In the date panel at the bottom right of the main interface, you can manage the point cloud or mesh data, and the detailed operation instructions are as follows:



Number	Operate	Illustrate
1	Data manipulation	The scanned model can be imported, exported, copied, and deleted. Import Objects - Select the model from your local location for import Export Objects - Export the scanned model, either locally or to Geomagic for subsequent texturing operations. For details, see Exporting a Model. Copy Object—Copies the scanned model. You can click Ctrl to select multiple models for batch copying. Delete Object—Deletes the scanned model. You can click Ctrl to select multiple models for batch deletion.

2	Hide / Show	One-click control to display all data in the 3D Viewer.
3	Scan information	Information about point cloud data or mesh data. a. Click the color block in front of the clickable object to customize the model's display color. Up to 9 colors can be displayed in favorites and recent items. • Favorites Apply - Apply the current color to the currently selected Remove - Delete the collection of the current color • Latest Apply - Apply the current color to the selected object Add Favorite — Add the current color to the favorites.  b. You can click the eye icon in front of the object to control whether the object is rendered in the 3D viewer. c. Right-click the selected object to perform operations on the data • Manipulate the display of objects in 3D viewer Show All - All objects are displayed in the 3D viewer Invert Selection - Displayed objects are hidden, and undis-

played objects are displayed

Show/Hide - The selected object is shown/hidden in the 3D viewer

- Operate on objects

Rename - Customize the name of the object

Delete - Delete the object

- For the frame count information when scanning the point cloud data, you can choose to display all frames or keyframes. Double-click an object to view the details of the object's frames.

Show All Frames - Display all frames of the point cloud data

Show Key frames - Display the keyframes of the point cloud data, removing redundant data

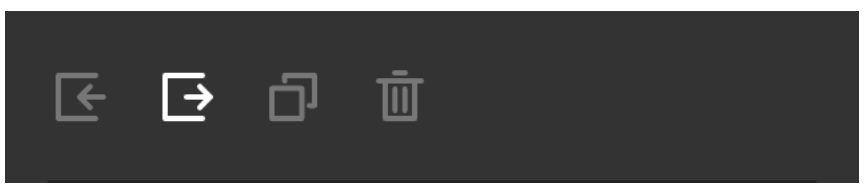
- For objects that need to be scanned multiple times, it is recommended to unload other scanned point cloud data and reload it when it is needed. For details, see "Uninstall" and "Mount" sections of the scan

Load Data - Reload the number of point clouds that have been unloaded

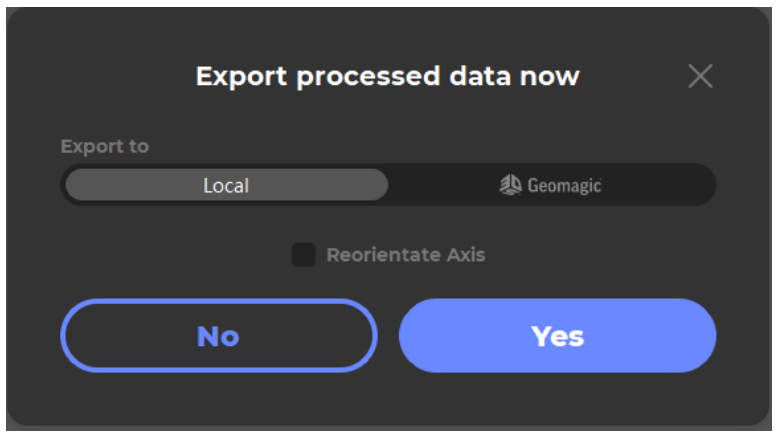
Unload Data - Unload the number of point clouds

Export the Model

Click “Export” in the Title bar_File or the export icon in the data panel to export the model.



Click “Yes” in the pop-up, will go to reorientate the model if checking “Reorientate Axis”. For more information: **Reorientate**

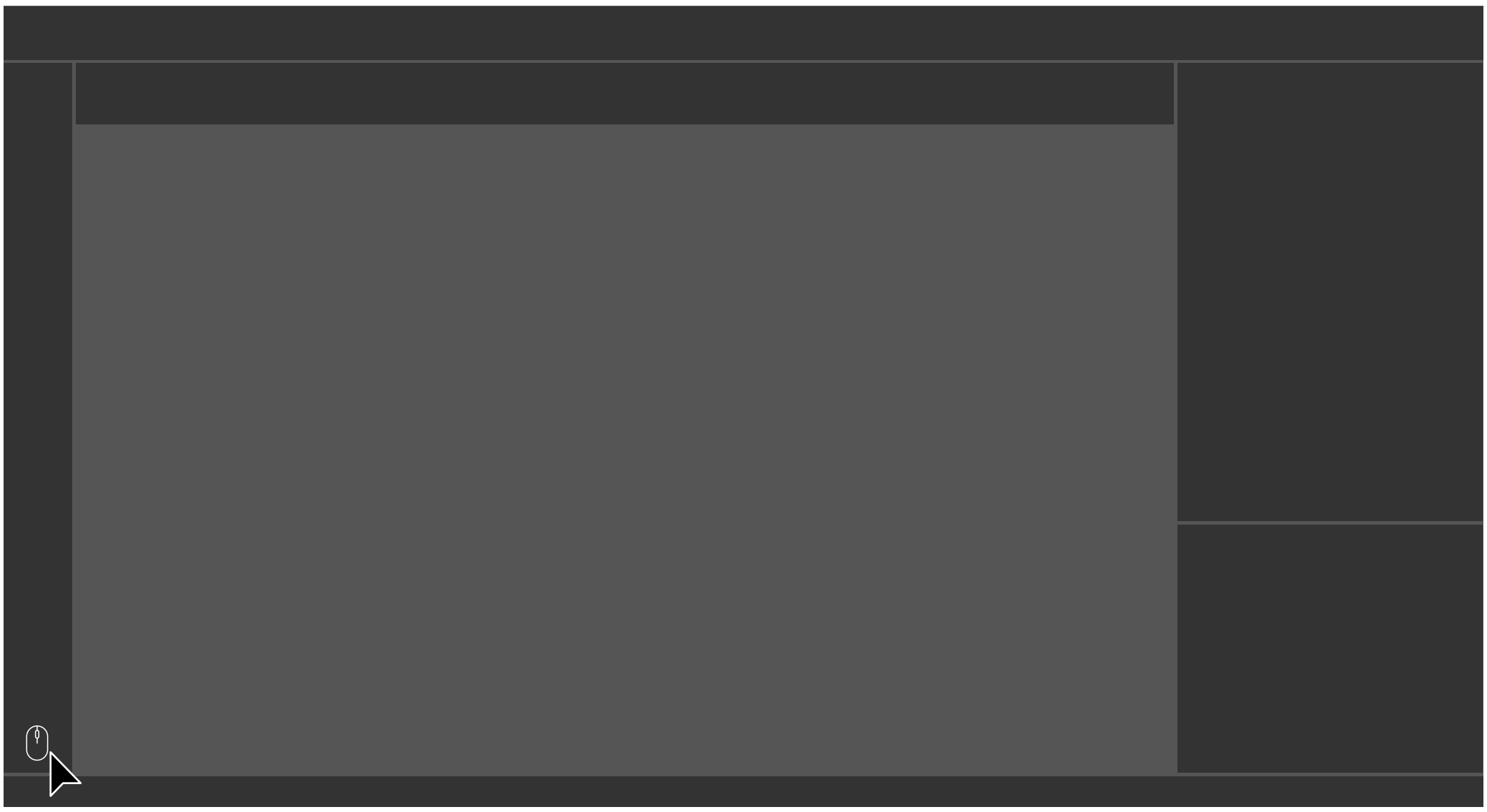


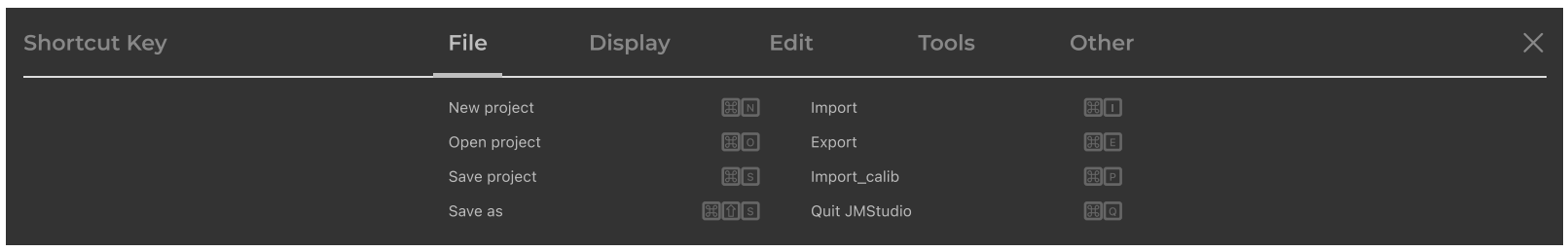
JMStudio now supports model exported in obj, stl, ply and rscan format, stay tuned for more available formats. Thank you for your time!

*Other

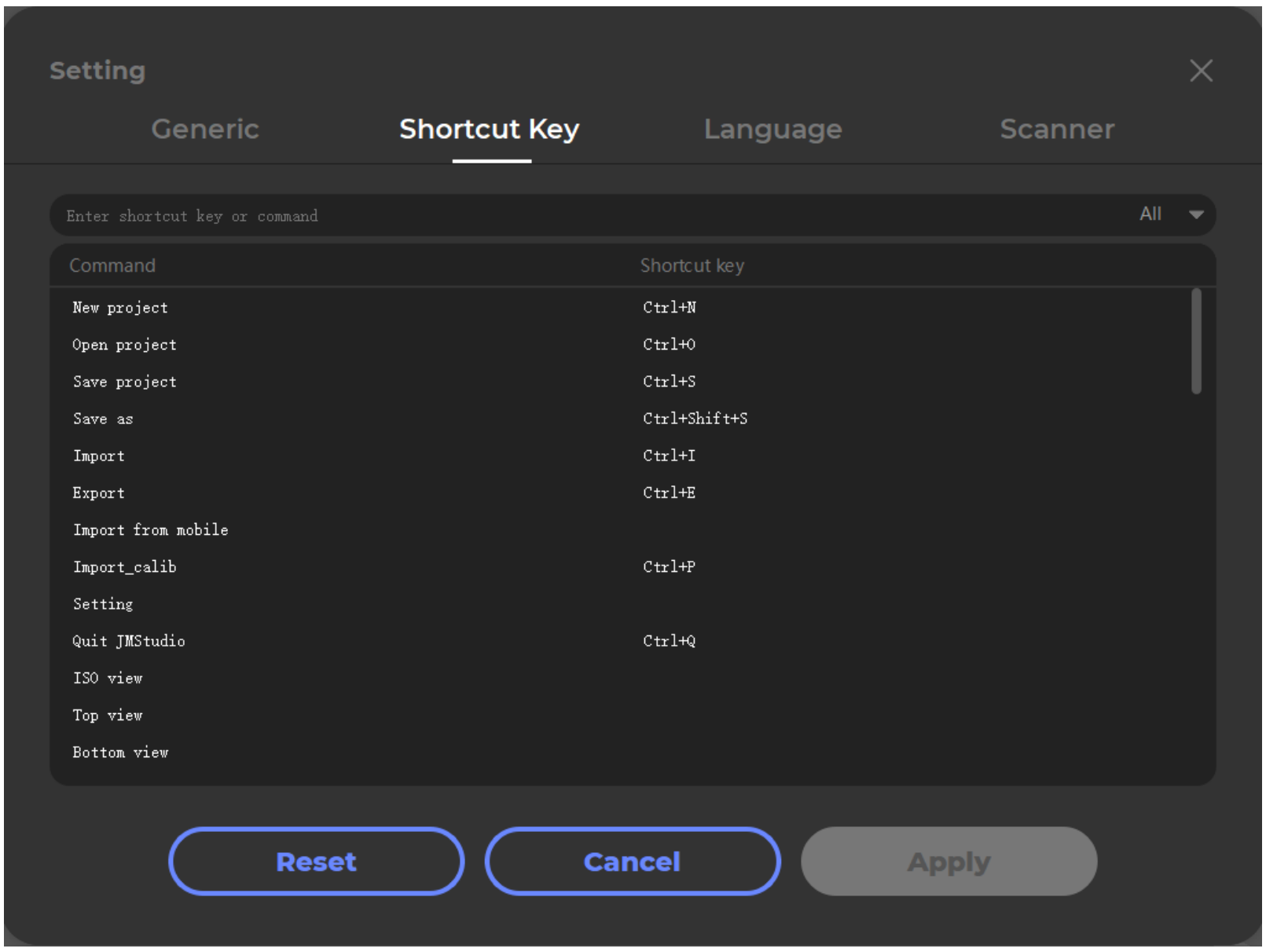
Shortcut Key

Click in the lower-left corner of the toolbar to expand and view all commonly used shortcut actions.

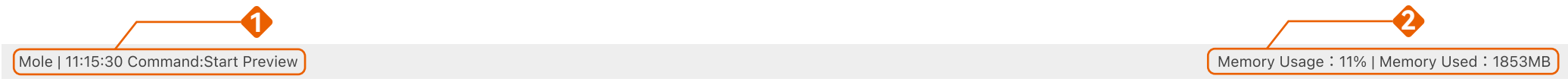




You can also view or modify more shortcuts in Settings > Shortcuts.

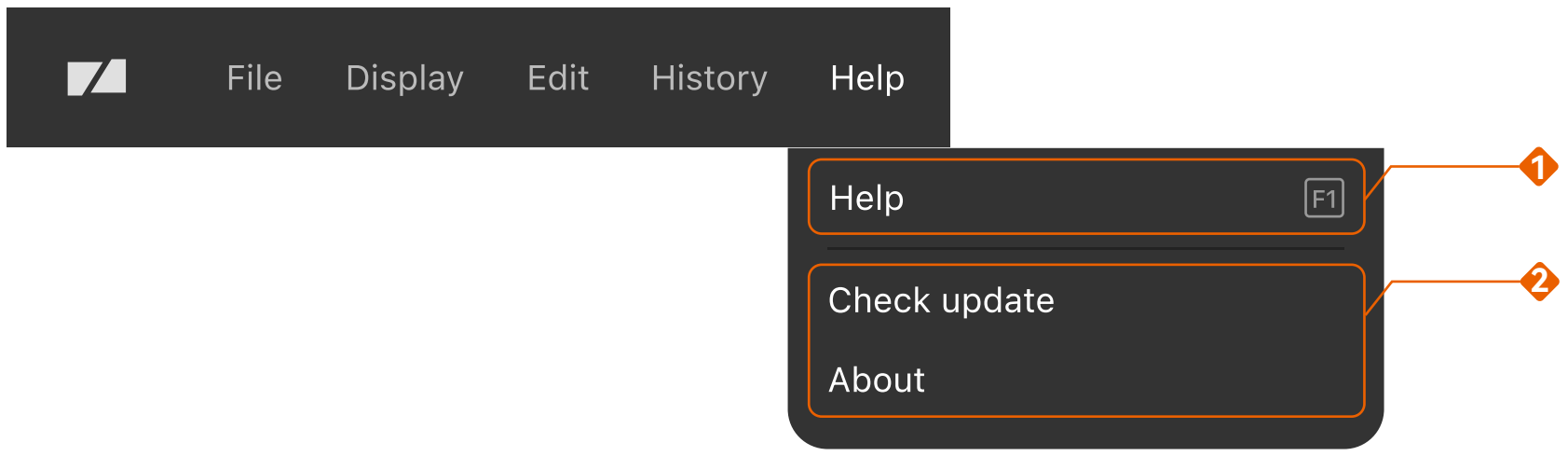


Info bar



Number	Operate	Illustrate
1	Connection	Device model, record of the most recent operation
2	Hardware	Memory Usage —— Real-time display of the memory usage of the device occupied by the software Memory Used —— Displays in real time how much memory the software has occupied on your device Version Information —— Displays the current software version information

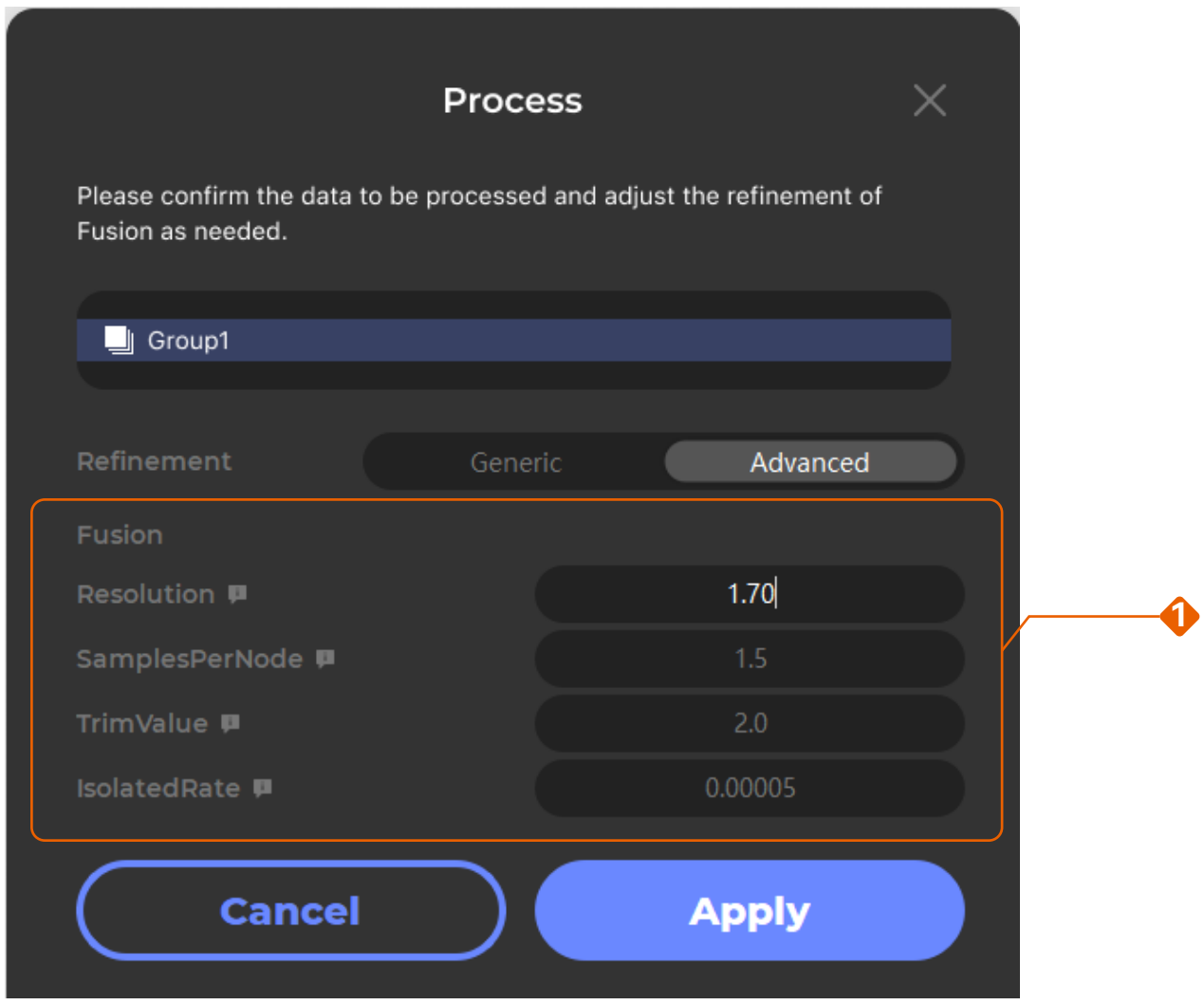
Help



Number	Operate	Illustrate
1	help	Jump to the official website community, you can view the device information through the community or contact us from the community.
2	Information	Check update —— View feature updates for various versions of the software. About —— Find information about software versions, copyrights, official websites, etc.

Advanced configuration

During the Process operation, you can perform custom advanced configurations for point cloud denoising and synthesis (you can click the small explanation icon after the operation to view the corresponding graphic explanation). The specific configuration information is as follows:



Number	Operate	Illustrate
1	Fusion	Resolution —— The smaller the value of the grid resolution,the finer the model, andthe longer the grid construction time. SamplesPerNode —— The minimum number of sample points that should fall within anoctree node as the octree construction is adapted to samplingdensity.For noise-free samples ,small values in the range[1.0 -5.0]can be used. For more noisy samples ,larger values in the range[15.0 -20.0] may be needed. TrimValue —— The smaller the value, the more triangular surfaces are clipped,andmore holes may appear. IsolatedRate —— Remove isolated items as a percentage of total area.

Manual binding

When the following pop-up window is prompted when binding the device, you can click "OK" to directly open the upload interface, upload your device information, and the human customer service will help you manually bind it in time after receiving your application.