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RayStudio

Windows

MANUAL

Download latest **RayStudio** from

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



Get latest **Manual** from

<https://forum.jimumeta.com/home/help/support/manual/89ce7b9fff54351bd89dc31c66253f4.html>



Software Installation

Operating System Requirement

Recommended Computer Configurations

Intel Core i7 , 64GB RAM , NVIDIA4060 GPU 16G

Minimum Computer Configurations

Intel Core i7 , 32GB RAM , NVIDIA3060 GPU 12G

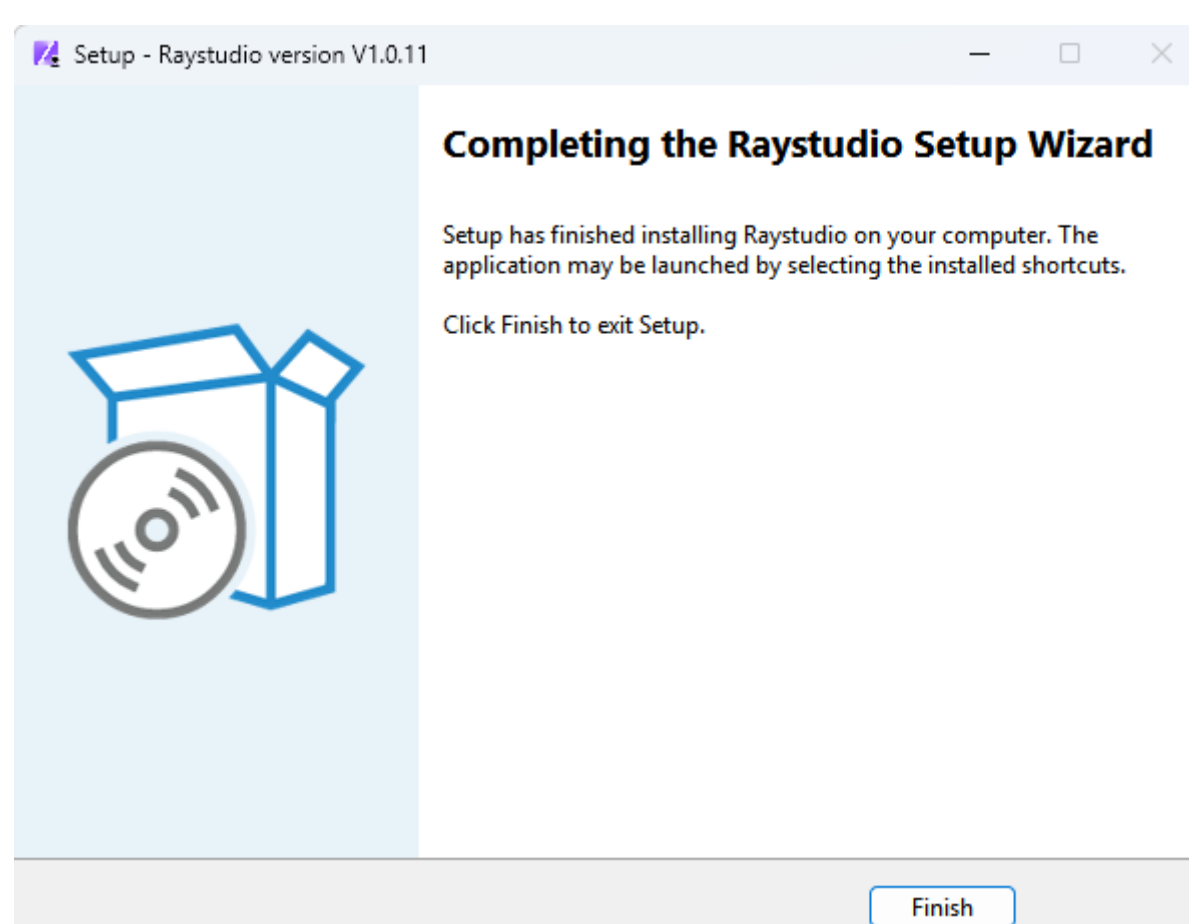
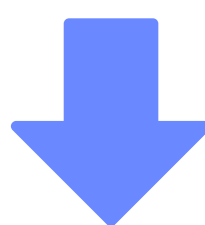
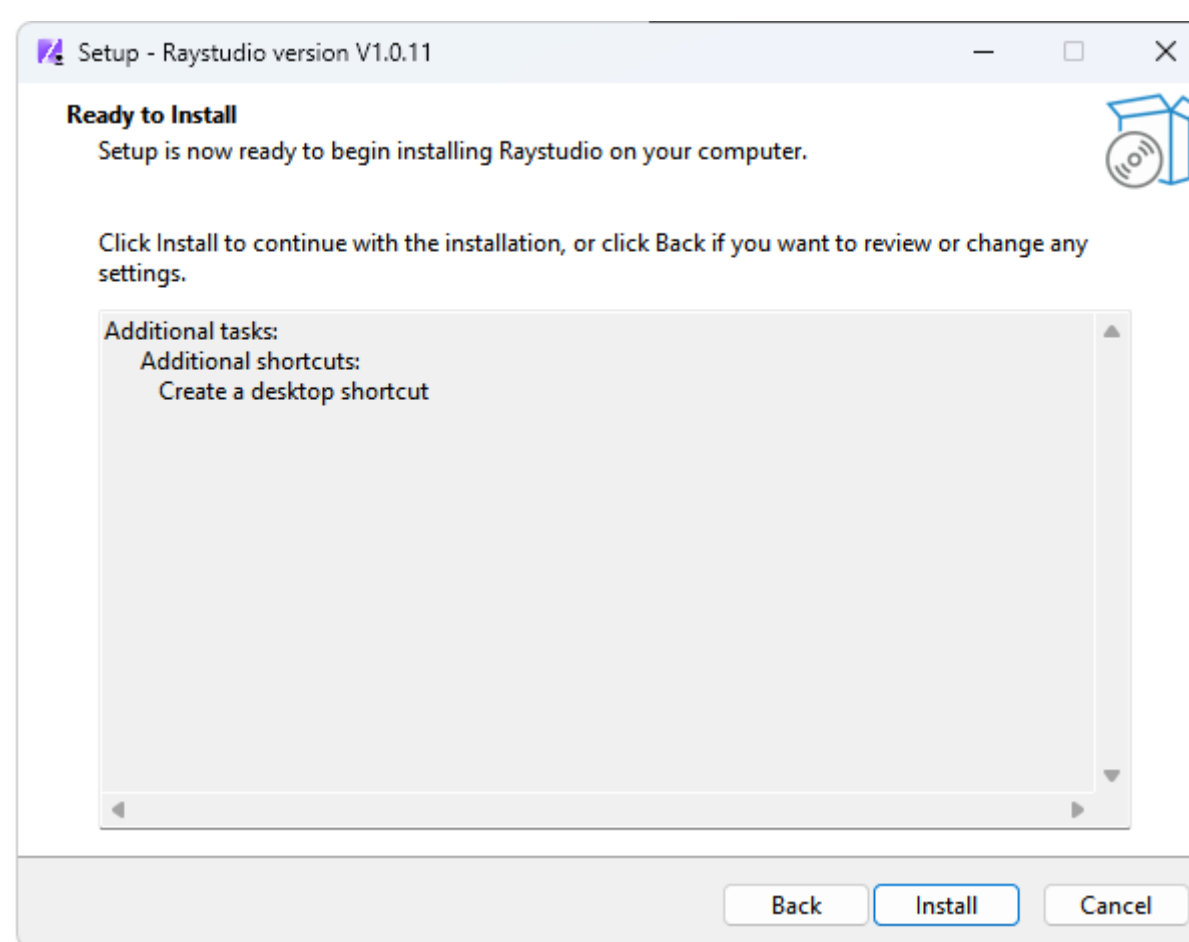
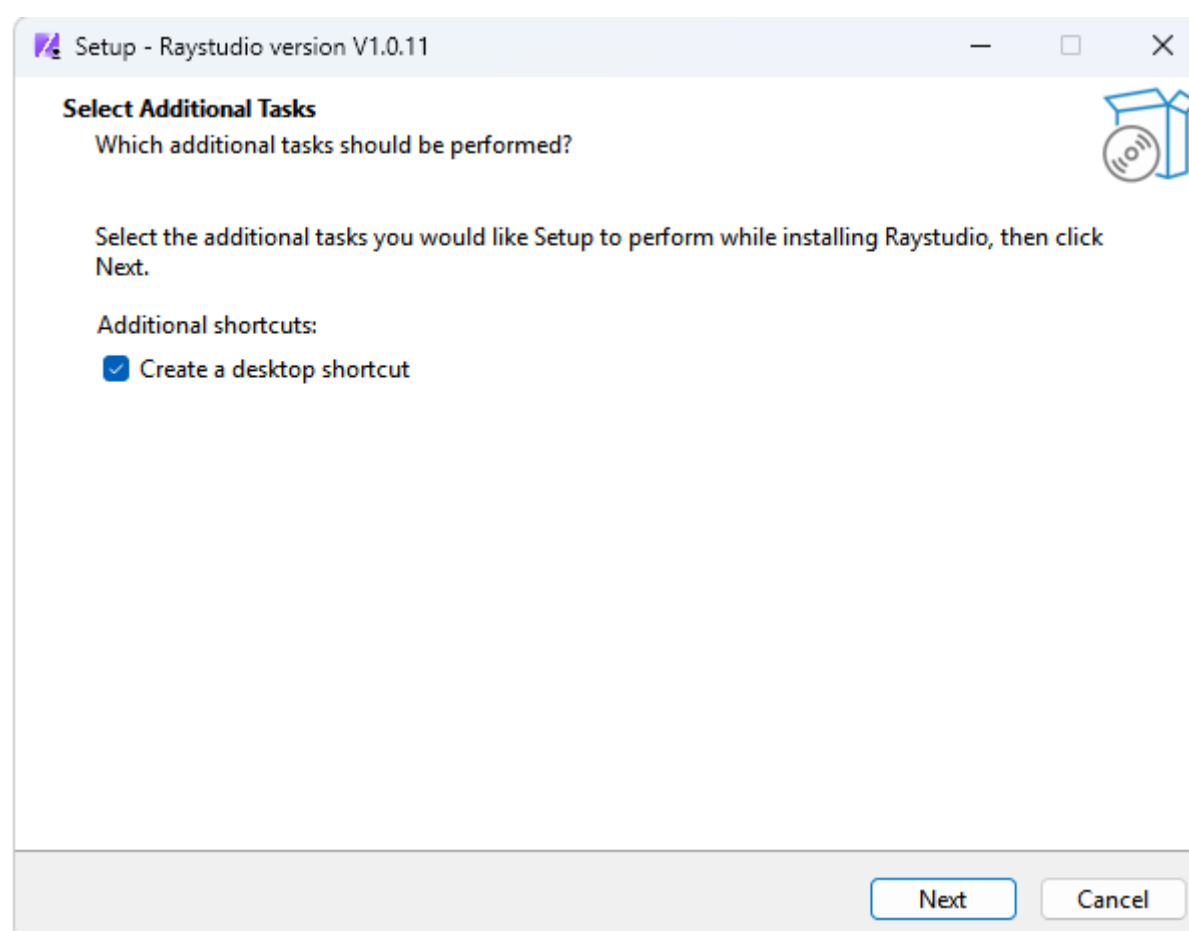
How to download

You can acquire the application file by visiting our website.

How to Install

For Windows

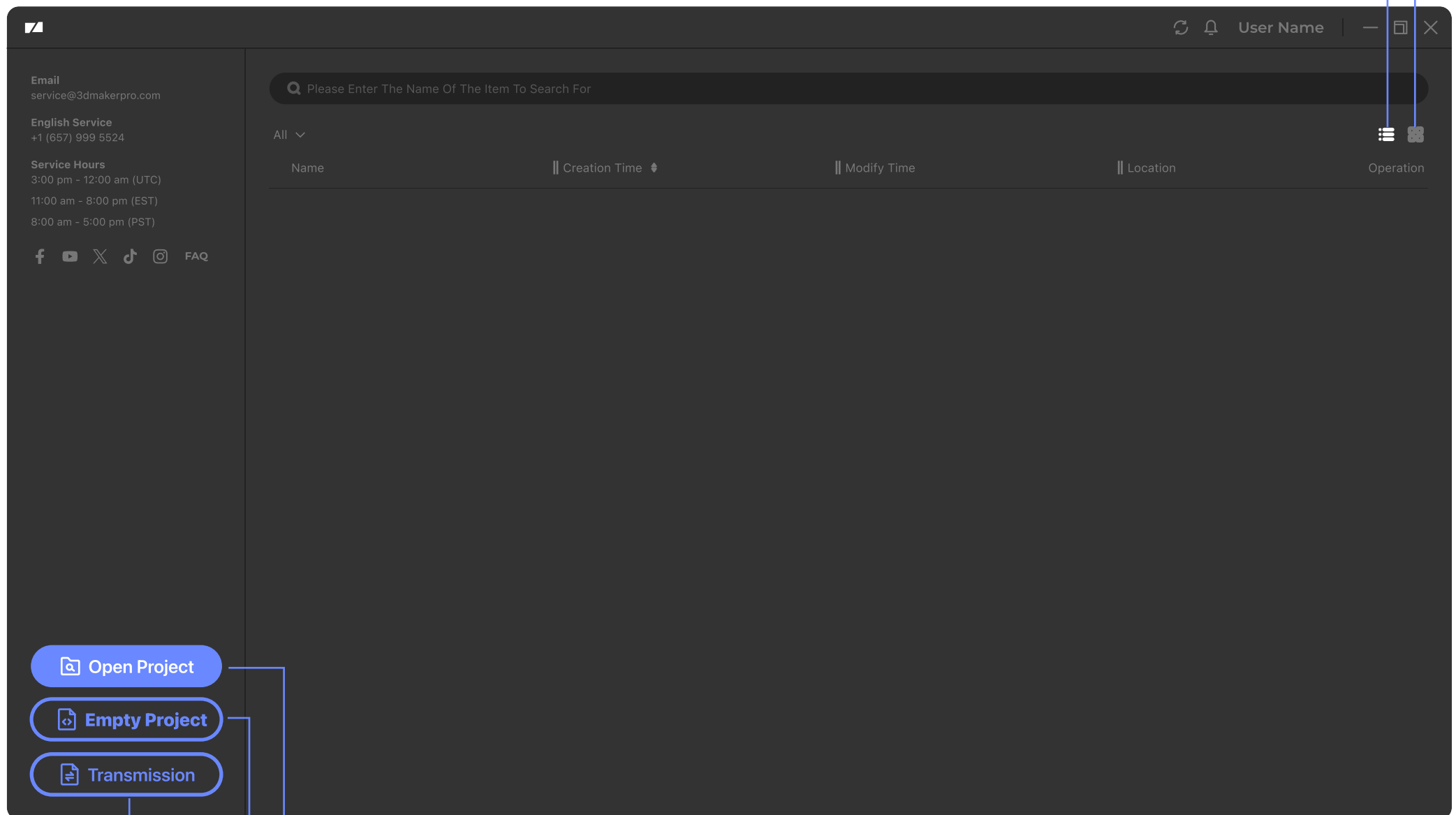
Click on the application file, follow the intallation wizard and click Next to install the software.



Start page

View Mode: Display thumbnails on the homepage.

List Mode: Display more detailed data information.



Open related project files

Create a new empty project

Data Transmission

Download the project

Three download methods are currently supported.

1. Use a USB flash drive and adapter to export files from the device to the USB drive, then download the files from the USB drive to the PC.
2. Directly remove the memory card from the device and use a card reader to download the files to the PC.
3. Connect the PC to the device's hotspot to download files directly.

USB Flash Drive Download

Insert the USB flash drive into the PC, then directly copy the files from the USB drive to the local computer.

Card Reader Download

Operating methods vary by device model and version. Please carefully confirm your device model and version information before operation to prevent scan file damage or loss.

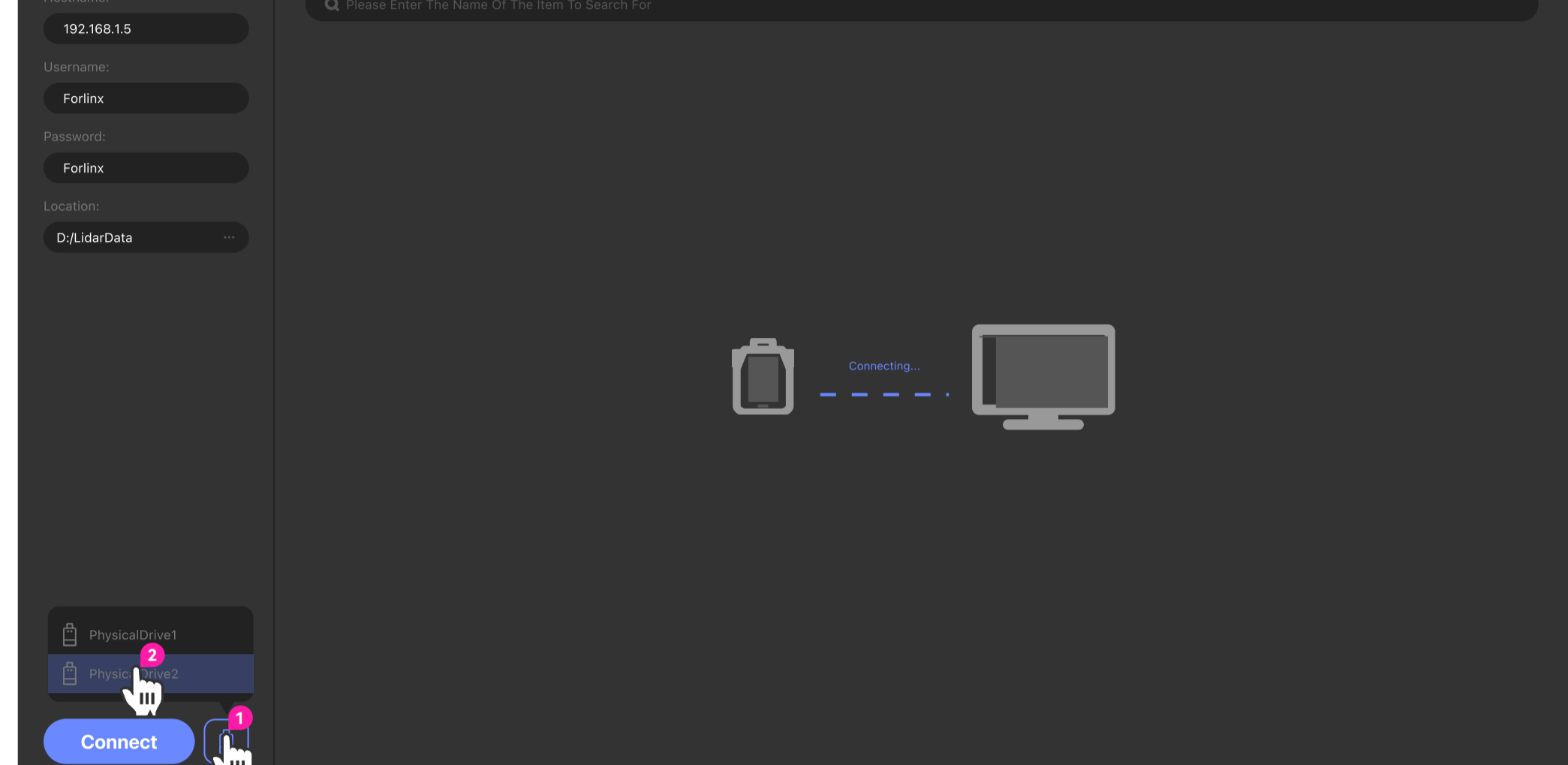
•Hawk (versions before 5.0.6) & Eagle

Insert the card reader (with memory card) into the PC, then directly copy the files from the memory card to the local computer.

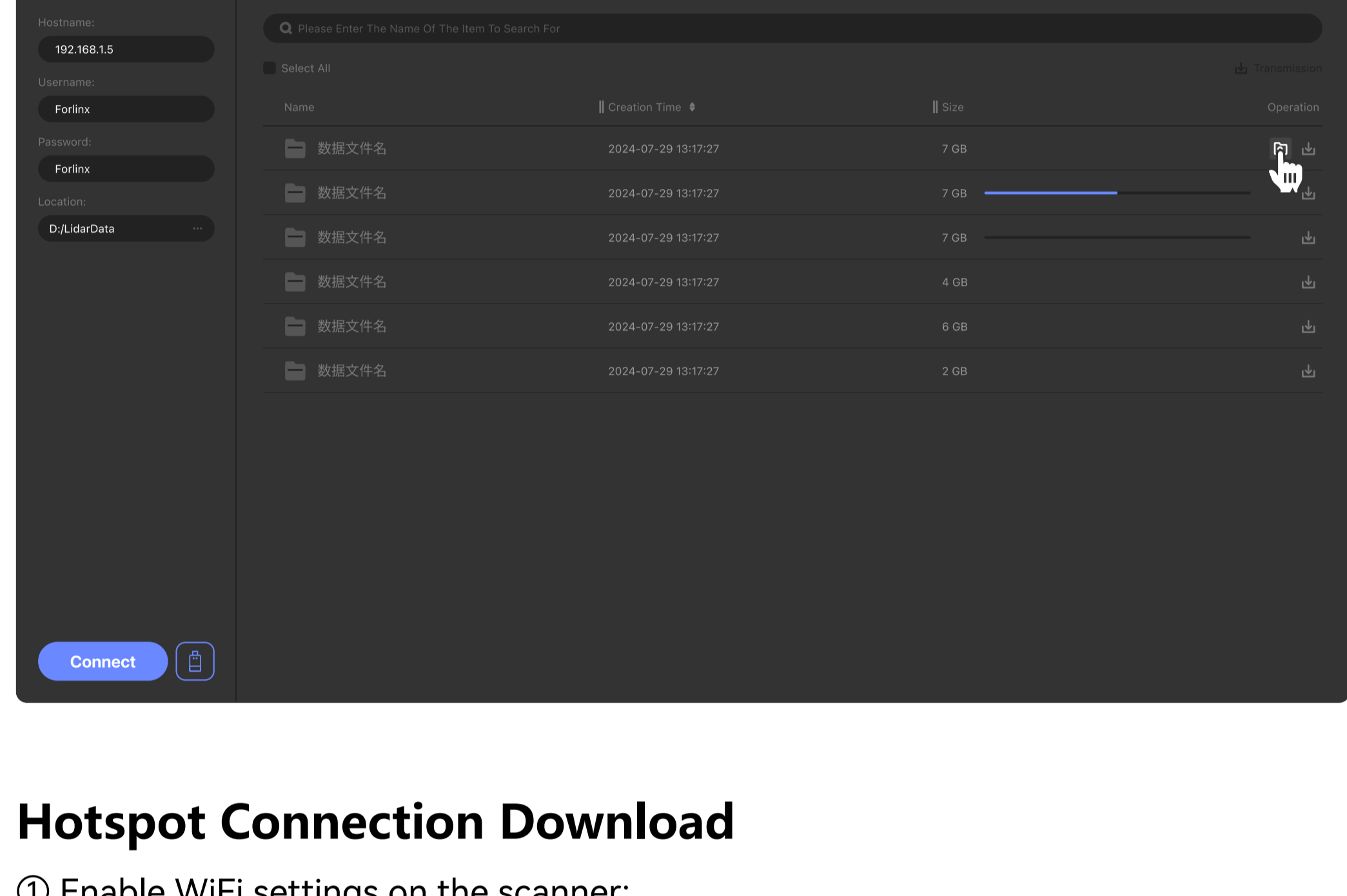
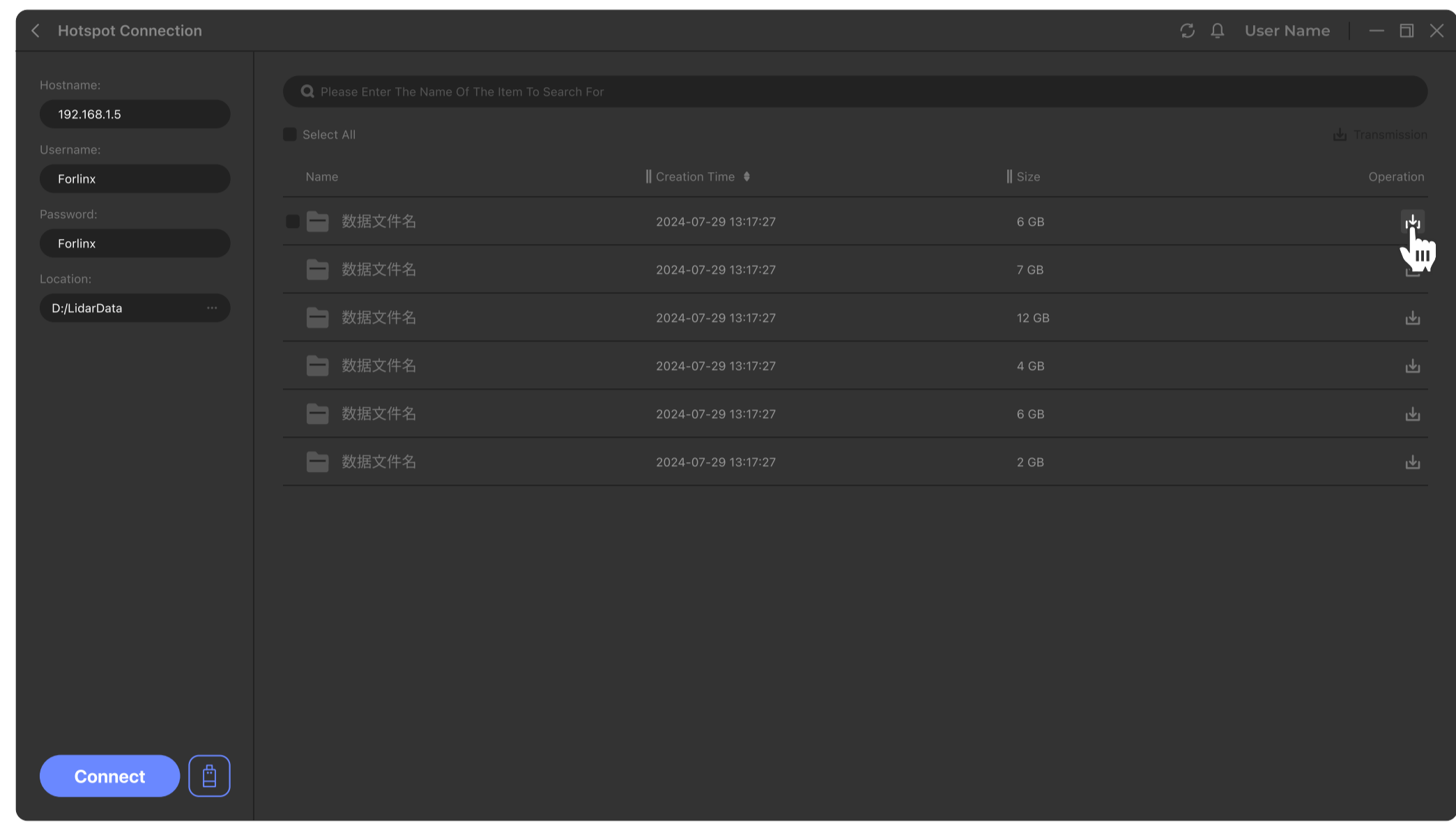
•Hawk (versions 5.0.6 and later) & Raven

Insert the card reader (with memory card) into the PC, then you need to use Ray-Studio to download the files.

① On the software homepage, enter the Data Transmission page. After the card reader (with memory card) is detected, the scan files in the device will be displayed.

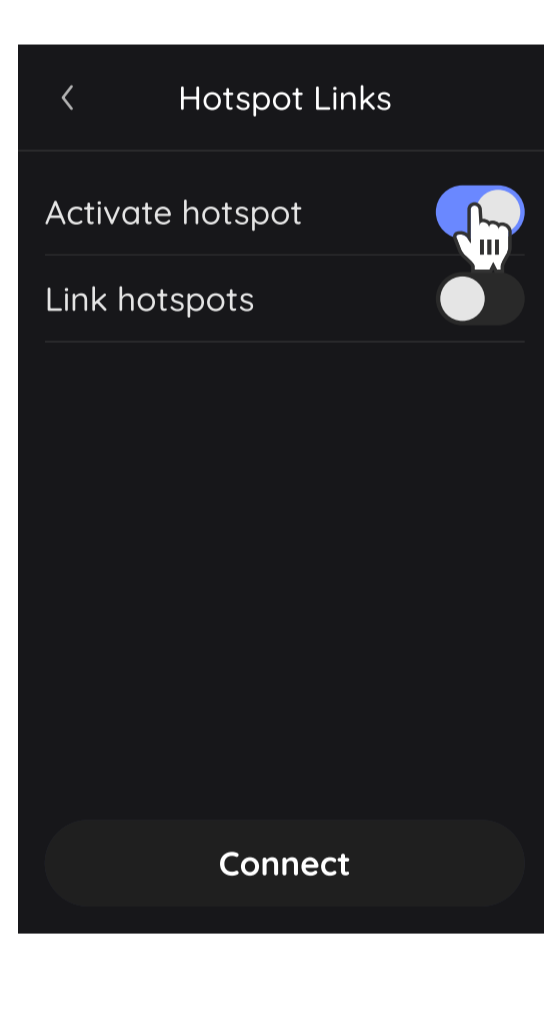
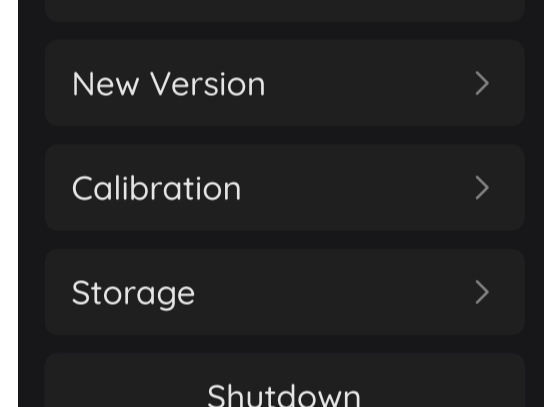


② You can click the download icon on the right side of the file to download it. After the download is complete, click the folder icon to open the containing directory.



Hotspot Connection Download

① Enable WiFi settings on the scanner:

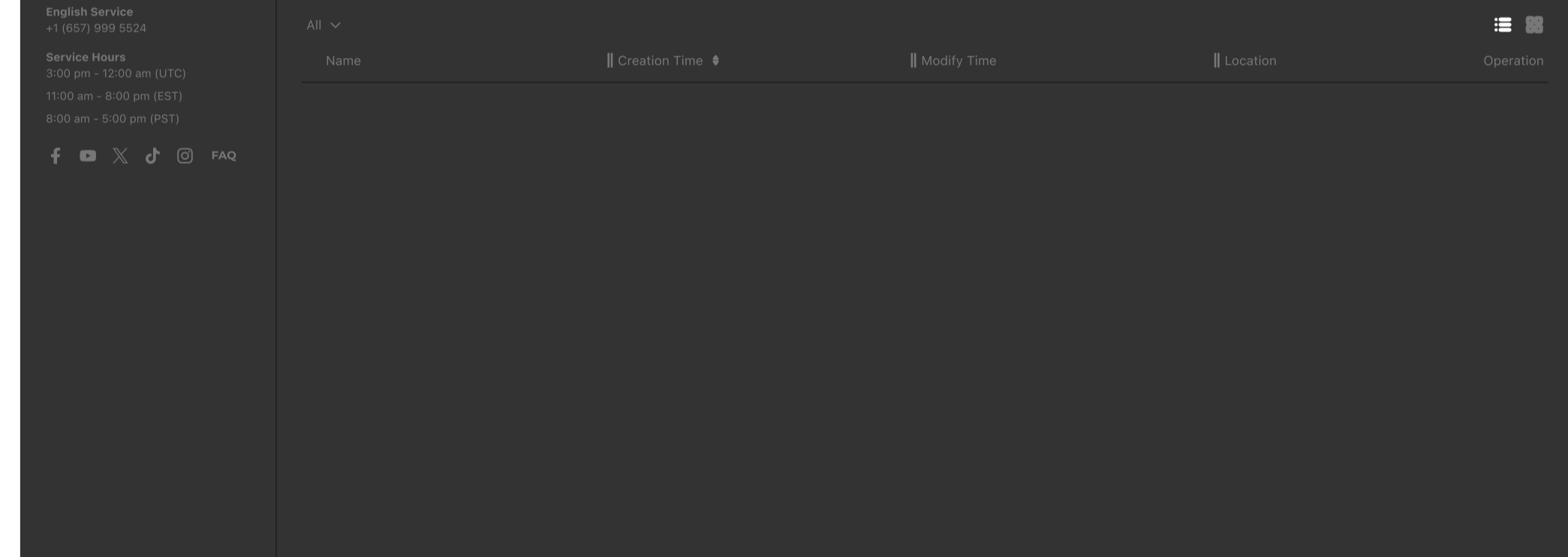


② Open the network connection on the PC, find the device WiFi, and connect to it.

	Eagle	Hawk	Raven
WiFi Name	Rayzoom G100	Rayzoom G200	JMK6XXXXXX JMK7XXXXXX
Password	12345678	12345678	12345678

*Note: The WiFi name for Raven is the device serial number.

③ On the software homepage, enter the Data Transmission page, and click Connect. After the connection is successful, the scan files in the device will be displayed.

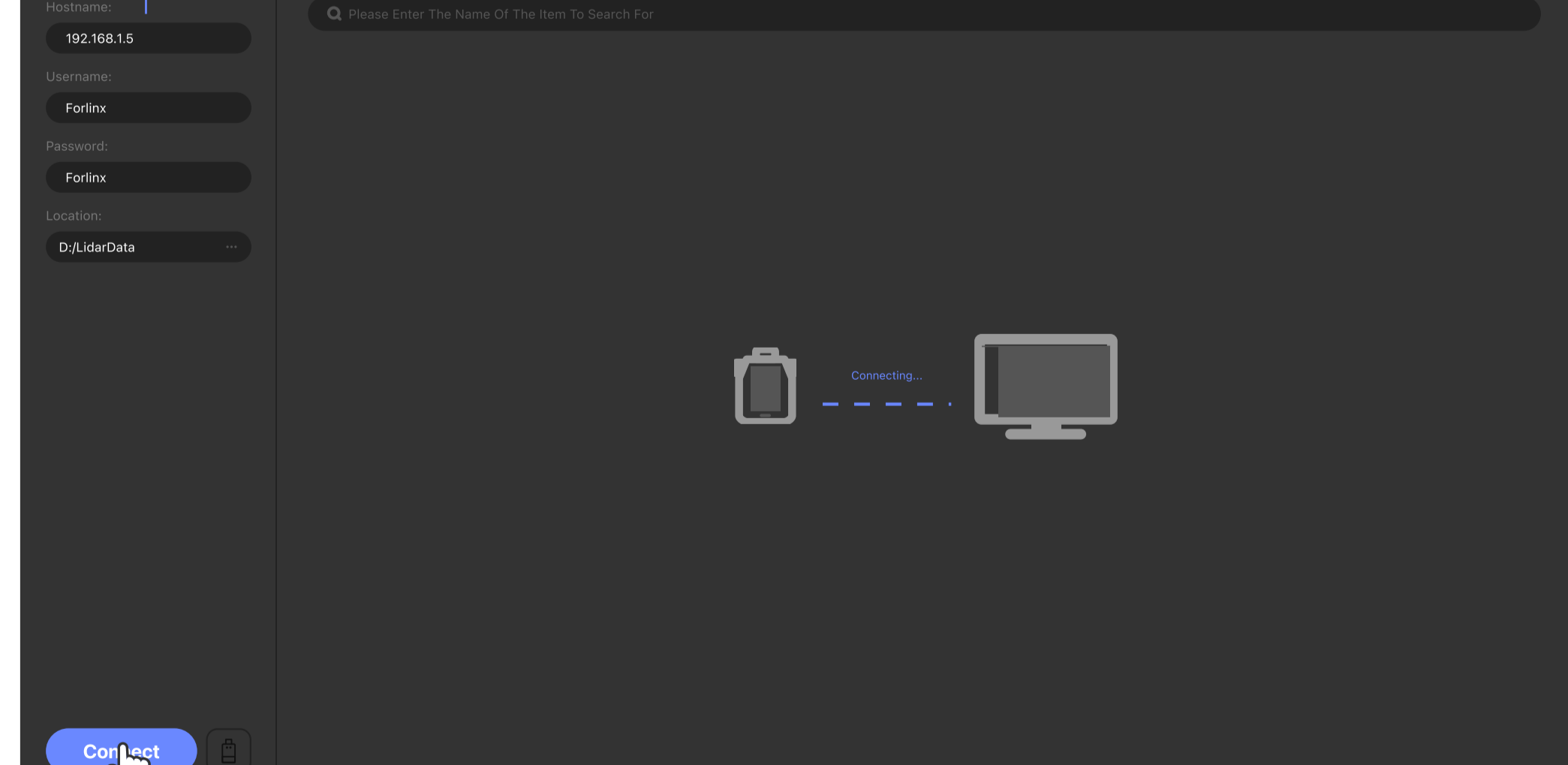


The host IP information to select when exporting by device model is as follows:

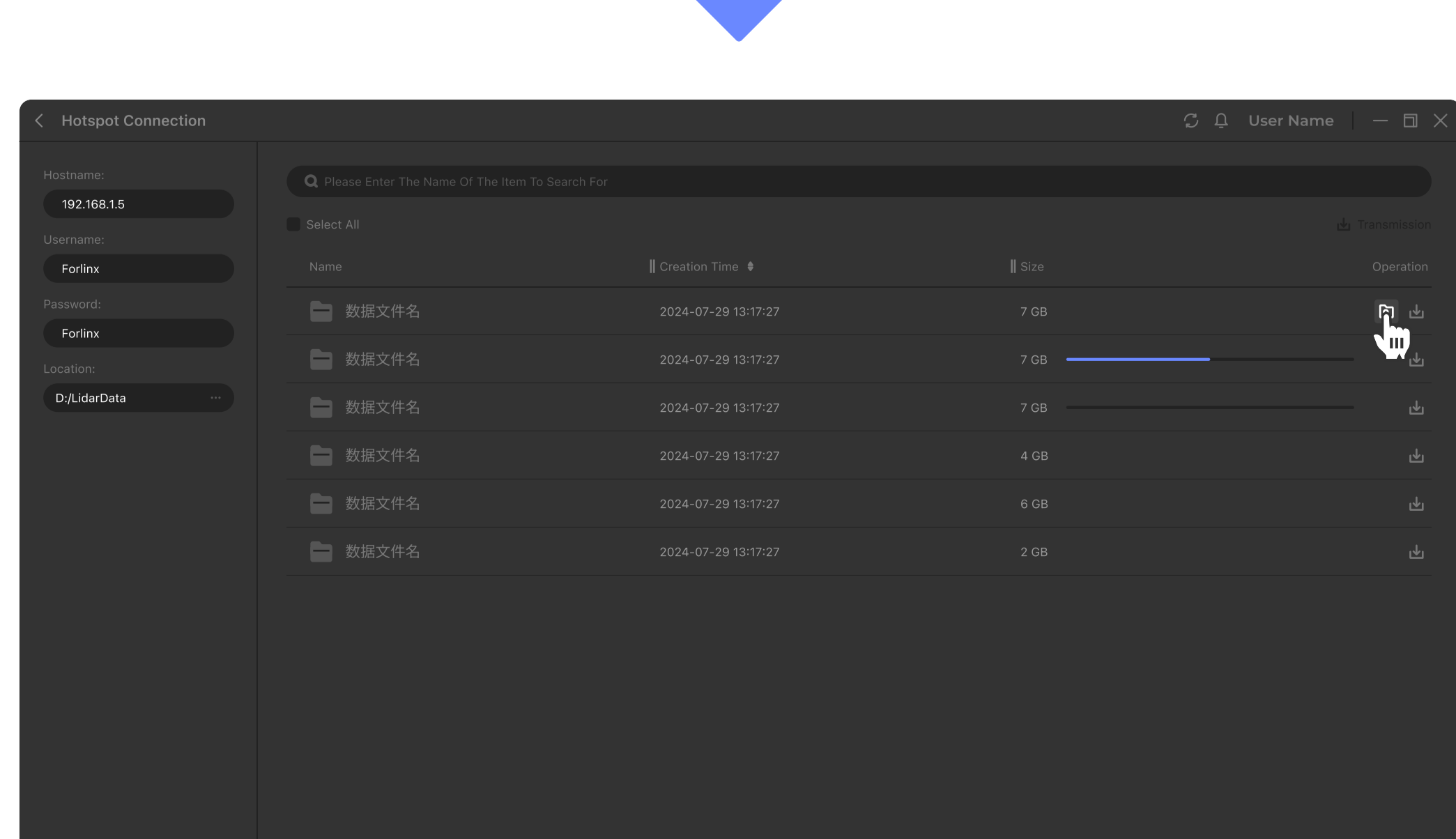
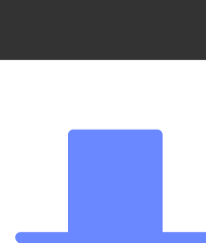
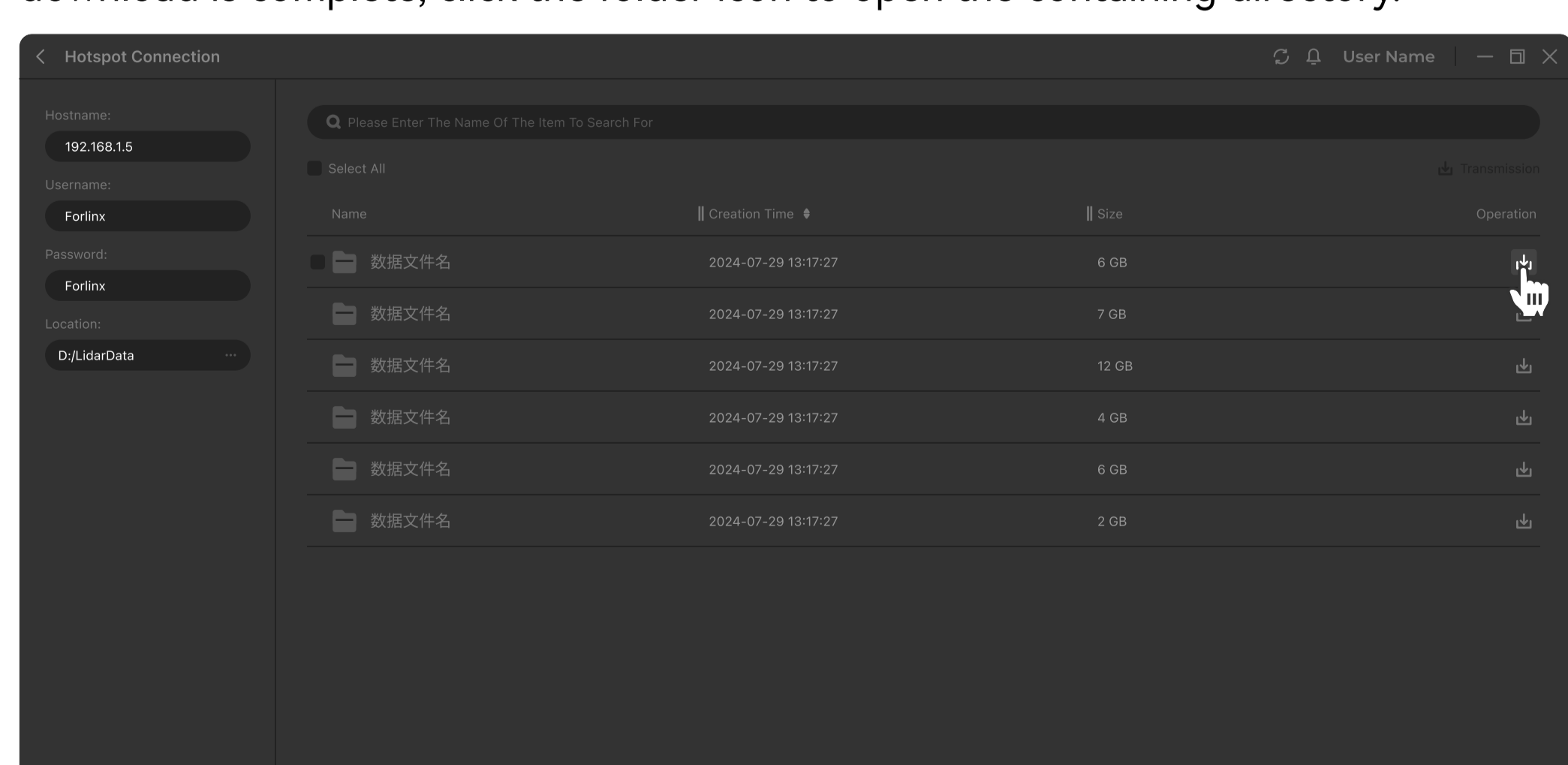
Eagle: 192.168.1.5

Hawk: 192.168.2.88

Raven: 192.168.20.110



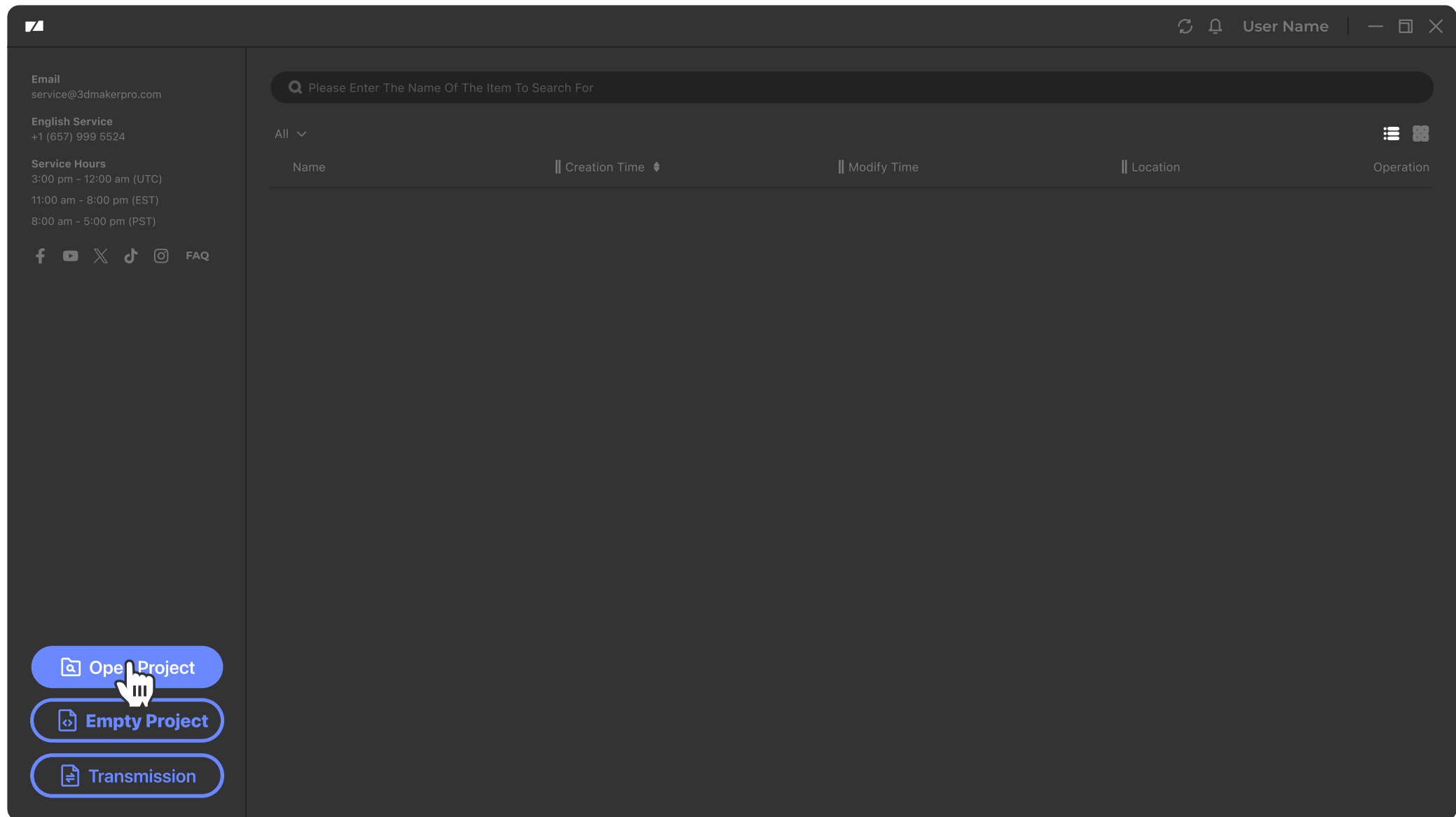
④ You can click the download icon on the right side of the file to download it. After the download is complete, click the folder icon to open the containing directory.



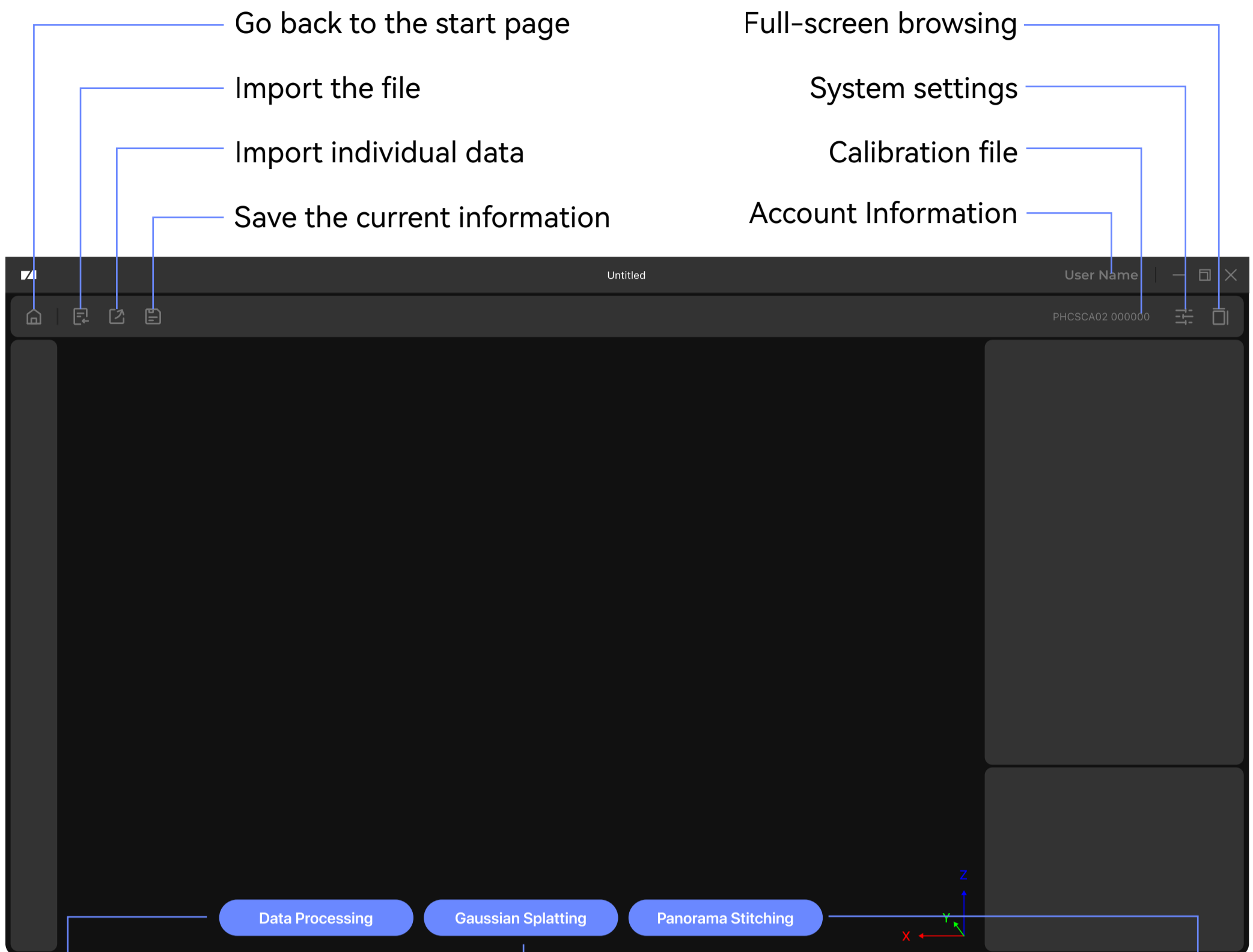
*Note: If data transmission fails after clicking Connect, try enabling the location service on the local PC and reconnecting.

Import the project

You need to open the local scanned file before you can process the file.



Main interface



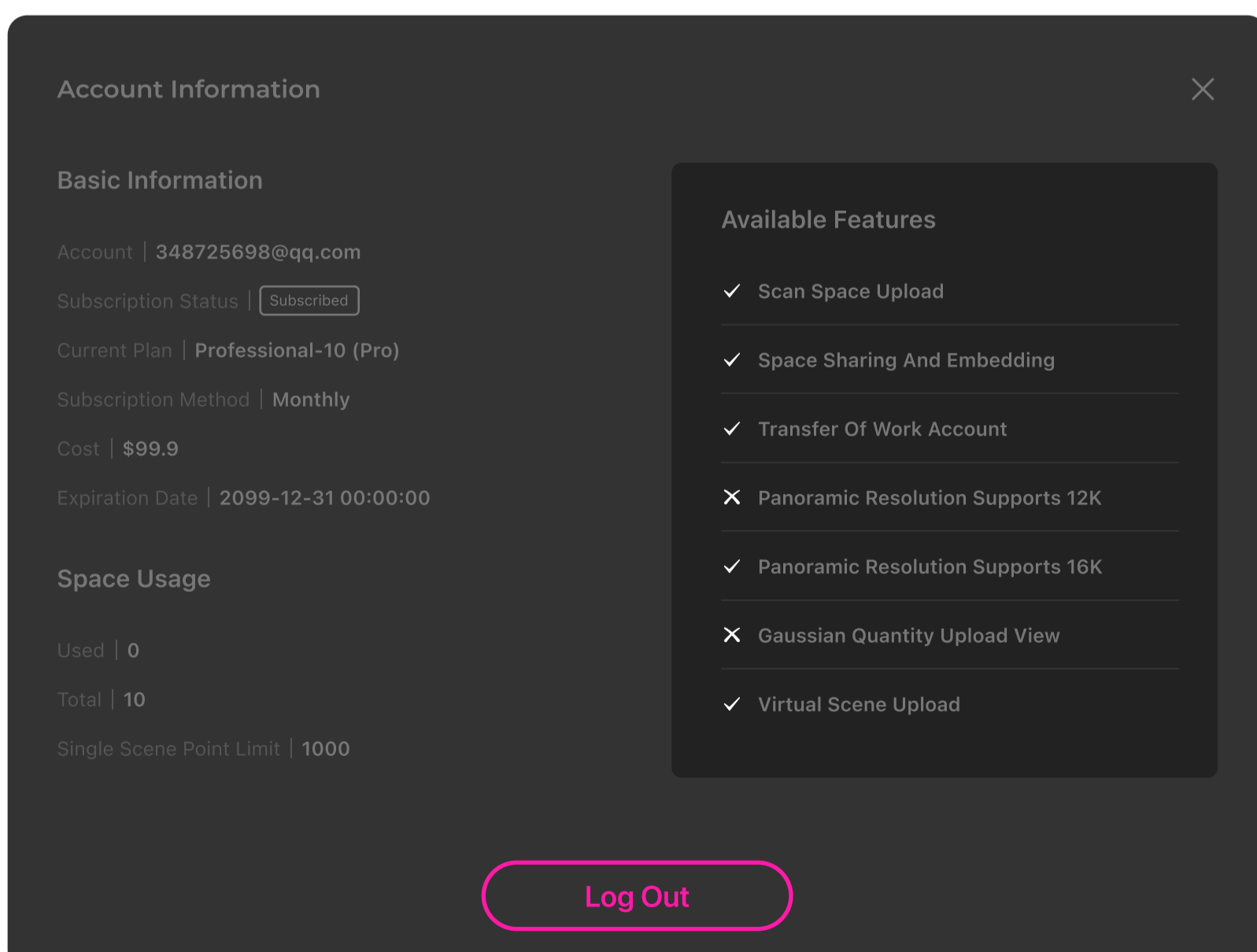
Gaussian Splatting 3D reconstruction module, which generates photorealistic 3D models.

Point cloud data post-processing module, which performs basic operations including point cloud calculation, coloring, thinning, and filtering.

Panorama stitching and 3D meshing module, which generates panoramic images and mesh models.

Account Information

In the account information, you can view the basic information of the current account and the related services you have purchased.

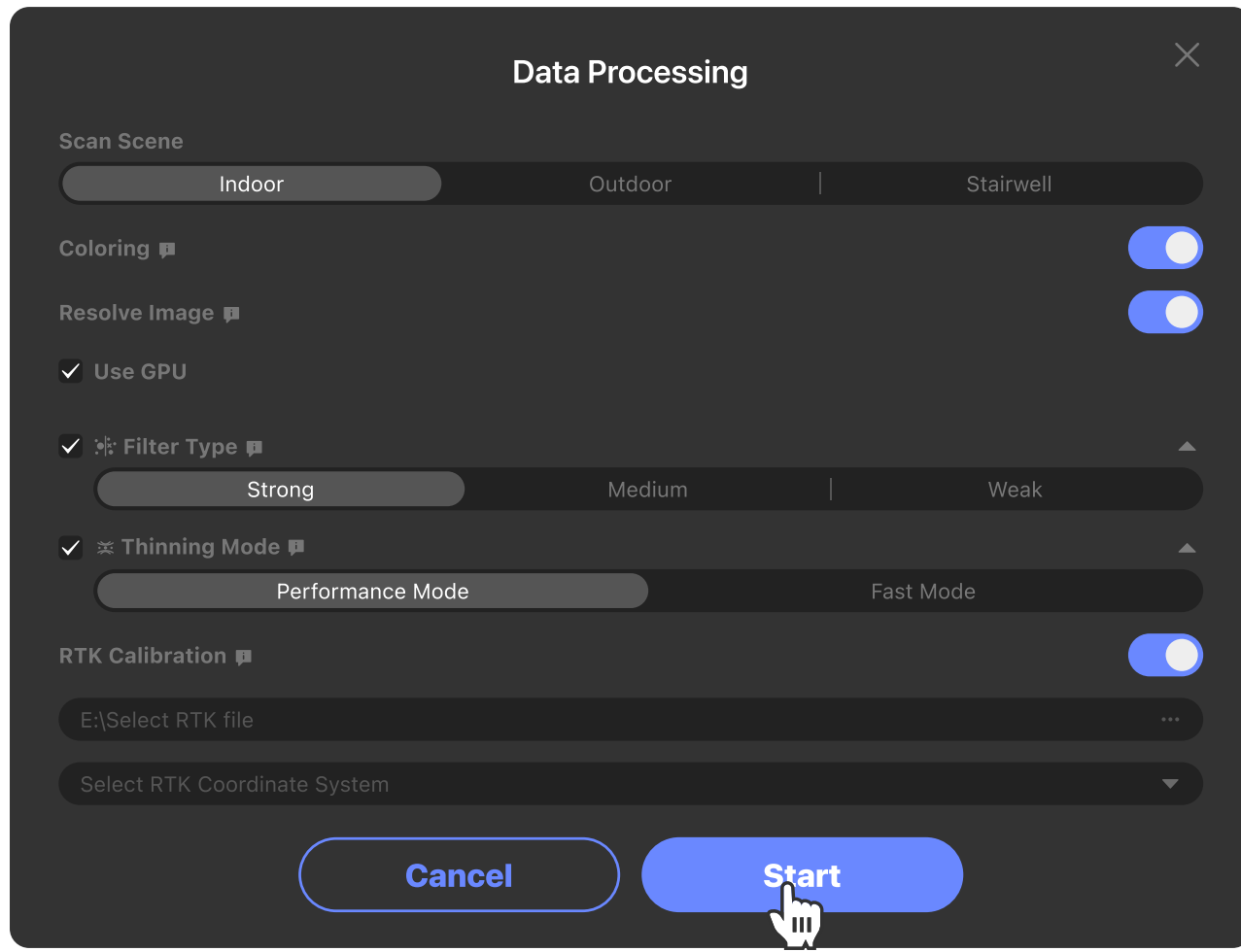


Data Processing

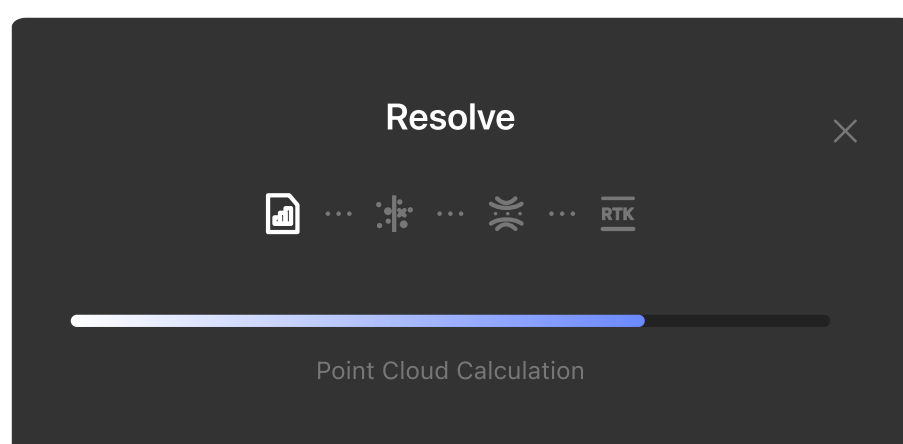
①Click the Data Processing button at the bottom of the interface to open the configuration window.



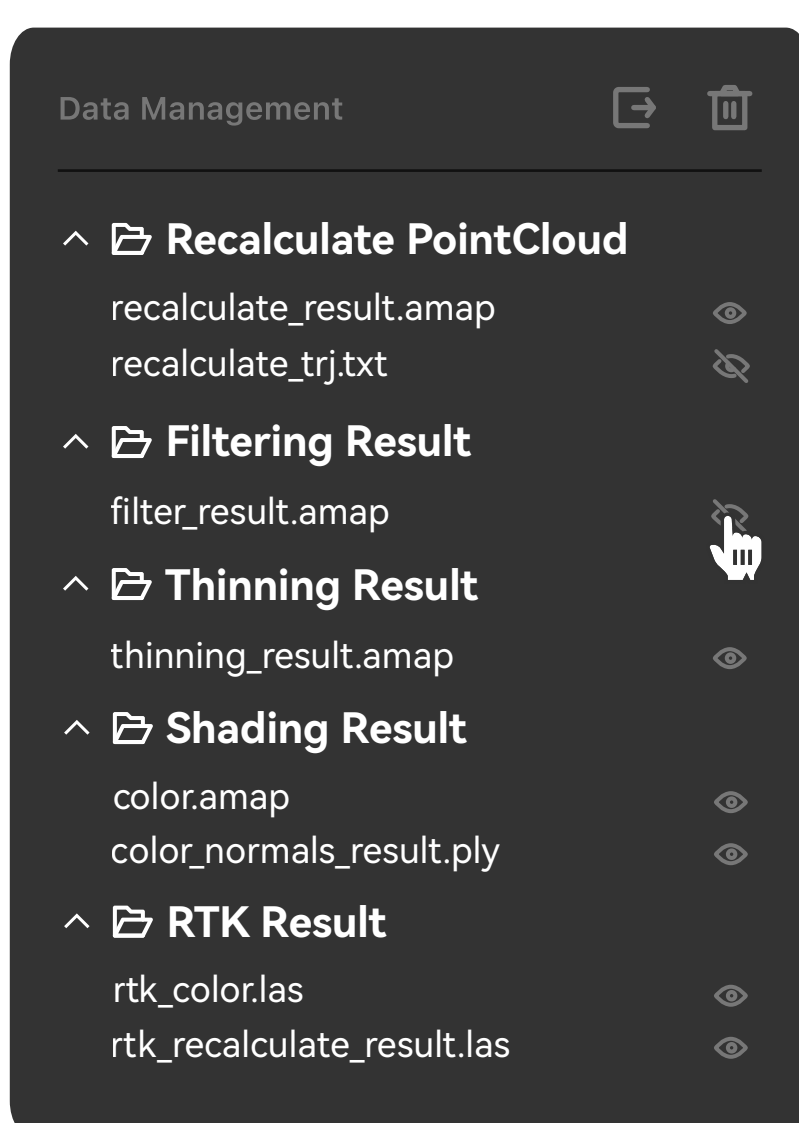
②Select the operations you wish to perform:



Configuration	Description
Scan Scene	<p>Automatically matches the optimal point cloud processing algorithm parameters based on the environmental characteristics of the scanned scene.</p> <ul style="list-style-type: none"> ● Indoor: Optimized for enclosed spaces and close-range scanning to improve detail accuracy and suppress noise. ● Outdoor: Optimized for open spaces and long-range scanning to improve point cloud integrity and anti-interference capabilities for large scenes. ● Stairwell: Optimized for vertical structures such as staircases and elevator shafts to solve point cloud misalignment and missing scan issues in multi-level structures.
Point Cloud Coloring	<p>Applies the true color captured by the camera to each point, transforming the point cloud from monochrome to color, thus restoring the real appearance, texture, and color of the scanned object/scene.</p> <ul style="list-style-type: none"> ● When enabled: The point cloud appears in color, allowing for intuitive object distinction, modeling assistance, and result presentation. ● When disabled: The point cloud is monochrome, processing is faster, suitable for scenarios requiring only geometric data. <p>* Generate Depth Map: Only displayed for data scanned by Eagle devices. Generates spatial depth information corresponding to each pixel.</p> <p>* Use GPU: Only displayed for data scanned by Hawk devices.</p> <ul style="list-style-type: none"> ● When enabled: Uses a new coloring algorithm that leverages the GPU's parallel computing power to significantly speed up coloring. ● When disabled: Uses the old coloring algorithm that only uses the CPU for calculation, resulting in slower speeds.
Resolve Image	<p>Parses images captured by the camera.</p> <ul style="list-style-type: none"> ● When enabled: Parses images captured during scanning, which can be viewed in local project files. ● When disabled: Does not parse captured images, resulting in faster processing speeds.
Filtering	<p>Reduces or eliminates unwanted noise points in the signal. Select Medium for common scenarios; Strong for severe noise; Weak for high-precision detail retention.</p> <ul style="list-style-type: none"> ●Strong: Maximum filtering strength, thoroughly removes noise but may filter out some details. Suitable for high-noise, complex environments. ●Medium: Balances noise removal and detail retention, the default optimal choice for most scenarios. ●Weak: Minimum filtering strength, retains maximum detail. Suitable for high-precision, low-noise scanning scenarios.
Thinning	<p>Reduces point cloud density while preserving the shape and geometric features of the original point cloud.</p> <ul style="list-style-type: none"> ●Fast Mode: Fast thinning speed, suitable for rapid processing of large-scene data, prioritizing efficiency. ●Performance Mode: More intelligent thinning algorithm, maximizing the retention of geometric details and features while reducing the number of point clouds. Suitable for high-precision modeling scenarios.
RTK	<p>For scanning devices with RTK functionality, fuses and calibrates high-precision positioning data collected by RTK with point cloud data to improve the absolute geographic coordinate accuracy of the point cloud and achieve precise georeferencing.</p> <ul style="list-style-type: none"> ●When disabled: The point cloud only retains relative coordinates, suitable for indoor or no-RTK-signal scenarios. ●When enabled: The point cloud has real geodetic coordinates, which can be directly used for surveying, GIS, engineering stakeout, etc.



③Some data is hidden by default after processing. Click the  icon in the data list to change it to  to show the data.



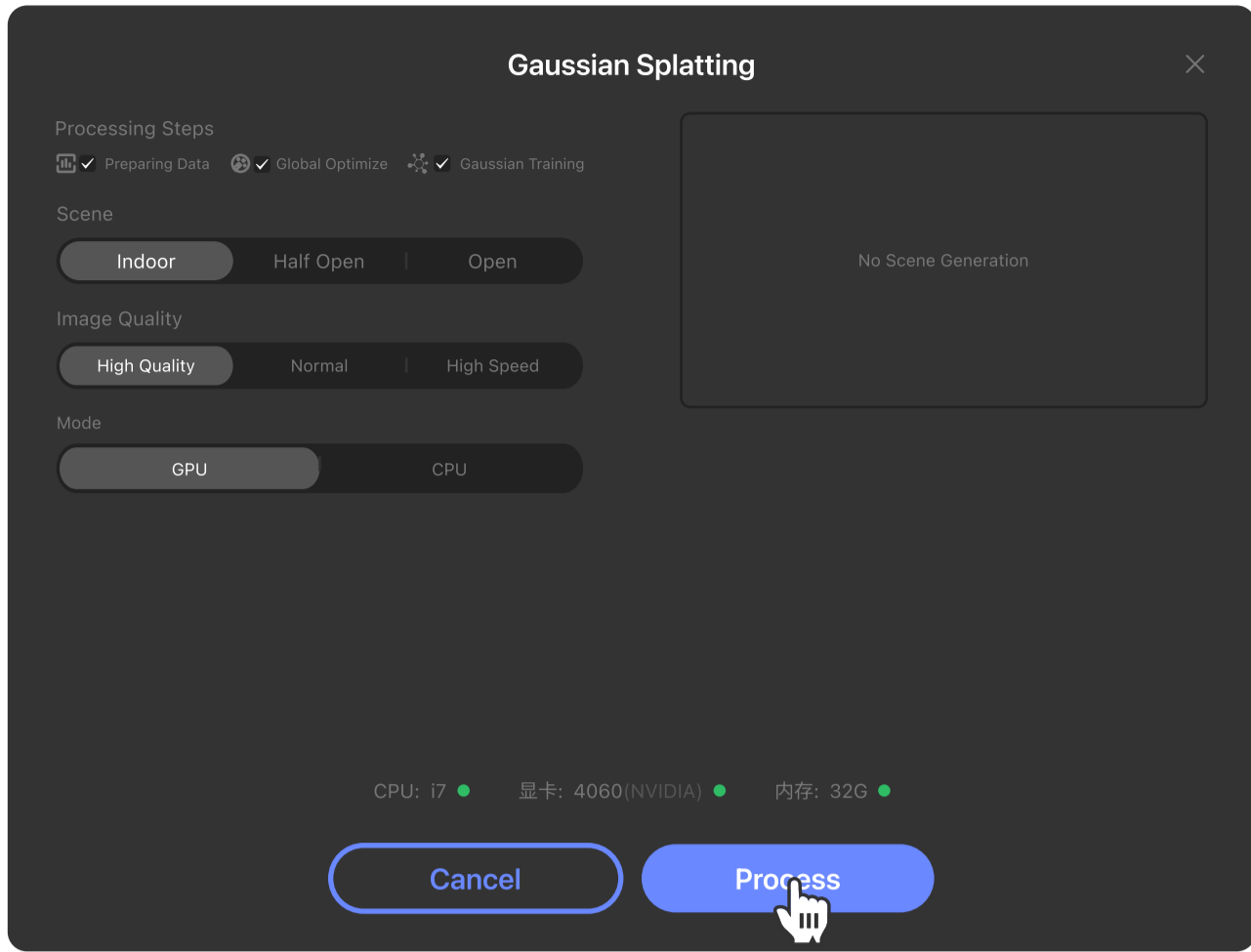
Folder	Generated Result Data
Recalculate PointCloud	<p>recalculate_result: Processed point cloud data</p> <p>recalculate_trj: Camera trajectory path</p>
Filtering Result	<p>filter_result: Filtered data generated when "Filtering" is selected during processing.</p> <p>Generated when "Filtering" is checked without point cloud coloring. If coloring is enabled, filtering is applied directly to the colored data without generating a separate filtered file.</p>
Thinning Result	<p>thinning_result: Thinned data generated when "Thinning" is selected during processing.</p> <p>Generated when "Thinning" is checked without point cloud coloring. If coloring is enabled, thinning is applied directly to the colored data without generating a separate thinned file.</p>
Shading Result	<p>color: Colored point cloud data</p> <p>color_normals_result: Colored point cloud data with normal vector information</p>
RTK	<p>rtk_color: Point cloud data after RTK recalibration on the original colored point cloud (not thinned or filtered; may contain noise).</p> <p>Generated when "RTK" is checked with point cloud coloring enabled.</p> <p>rtk_recalculate_result: Point cloud data after RTK recalibration on the original point cloud.</p> <p>Generated when "RTK" is checked without point cloud coloring.</p>

Gaussian Splatting

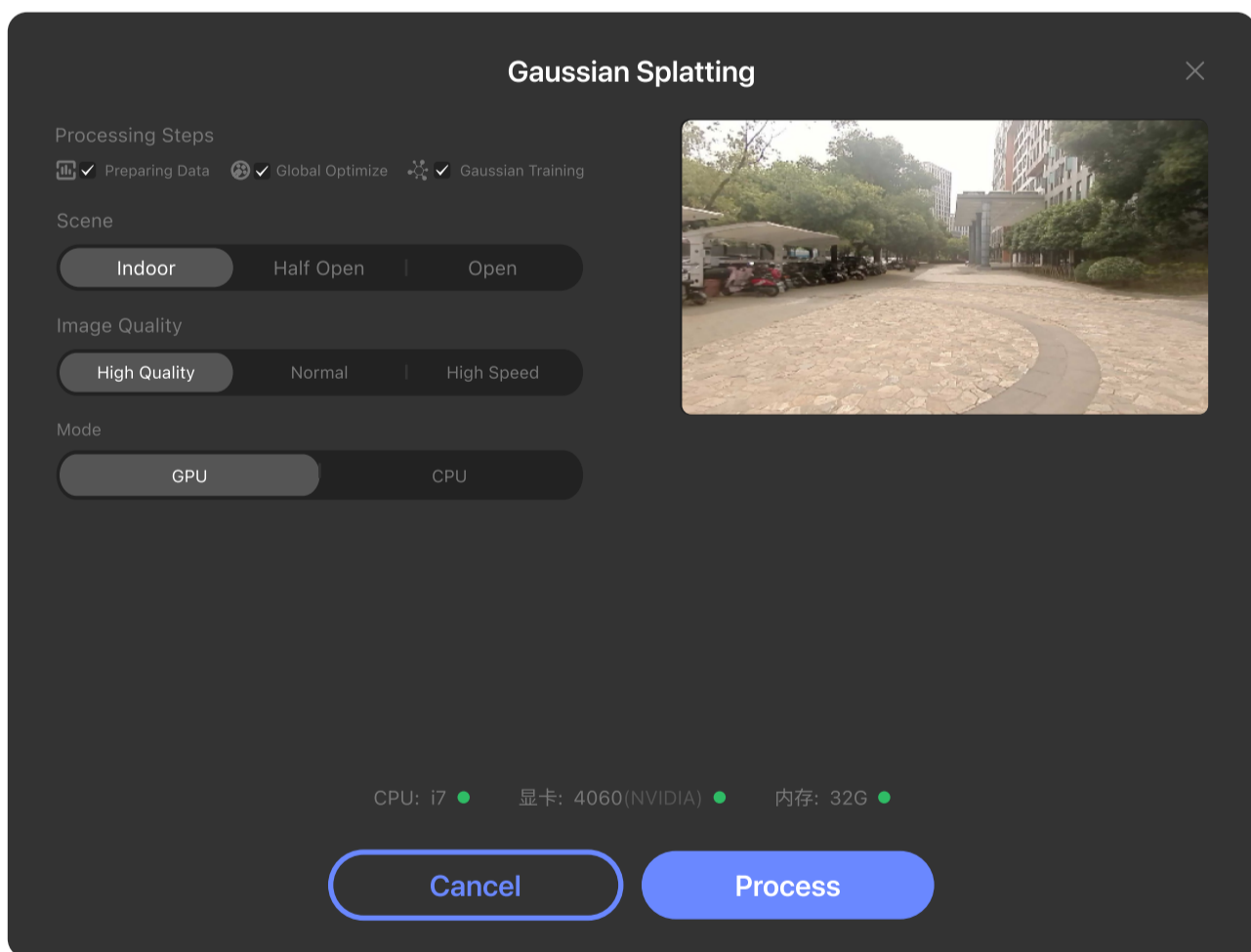
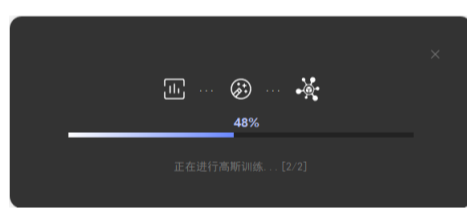
① Click the Gaussian Splatting button at the bottom of the interface to open the configuration window.



② Select the processing scene (this may take some time, please be patient):

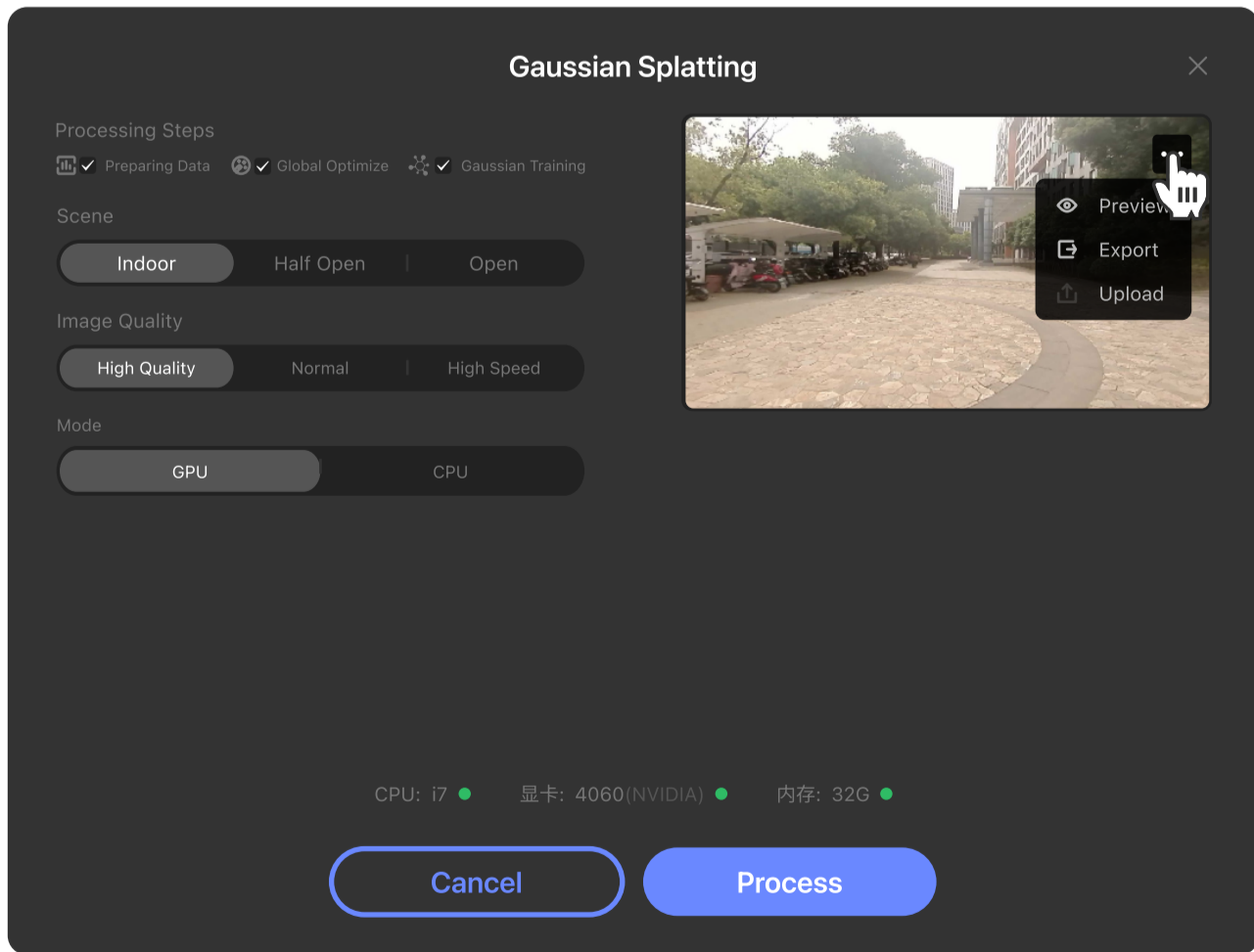


Configuration	Description
Processing Steps	<p>Select the steps to perform:</p> <ul style="list-style-type: none"> ● Data Preprocessing: Parses data, removes portraits captured by left/right cameras, and generates undistorted images. ● Global Optimization: Determines positions and outputs pose data for photos and point clouds. ● Gaussian Training: After processing, view in Raystudio or upload to Jimumeta for viewing/sharing; supports exporting Gaussian data in .ply format.
Scene Type	<p>Automatically matches optimal Gaussian reconstruction algorithm parameters and strategies based on the scanned environment characteristics.</p> <ul style="list-style-type: none"> ● Indoor: Optimized for enclosed or small-scale spaces (rooms, exhibition halls, interior renovations), focusing on detail, occlusion relationships, and spatial scale to ensure accurate indoor structures. ● Open: Optimized for large-scale open spaces with complex lighting changes (building exteriors, campuses, streets), enhancing large-scene stitching stability, mitigating glare/shadow interference, and preventing distant point cloud drift. ● Half open: Compatible with scan data from specific semi-open or transitional scenes, providing an intermediate reconstruction strategy.
Image Quality	<p>Select 3D model reconstruction detail precision and processing time based on requirements.</p> <ul style="list-style-type: none"> ● High Quality: Higher sampling rate, increased Gaussian point cloud density, and more training iterations. Clearer model edges, richer details, and enhanced realism. ● Normal: Default choice balancing quality and efficiency, suitable for most common scenarios. ● High Speed: Reduced computational complexity and fewer point clouds. Accurate overall model outline but relatively coarse details, suitable for quick previews or large-scene rapid output.
Mode	<p>Select the processing mode assigned by the system to the software. GPU mode is recommended.</p> <ul style="list-style-type: none"> ● GPU: Uses the parallel computing power of NVIDIA dedicated graphics cards for point cloud rendering and optimization, resulting in faster processing speeds. ● CPU: Uses the central processing unit (CPU) for calculations, resulting in slower speeds but allowing other device operations to continue.



③ You can select Preview, Export, or Upload from the top-right corner of the preview image:

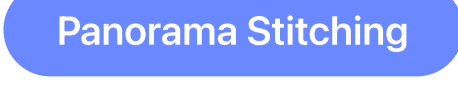
After processing is complete, first use Preview to confirm the effect. For local data backup, use Export; for long-term storage or cloud access, use the Upload function.



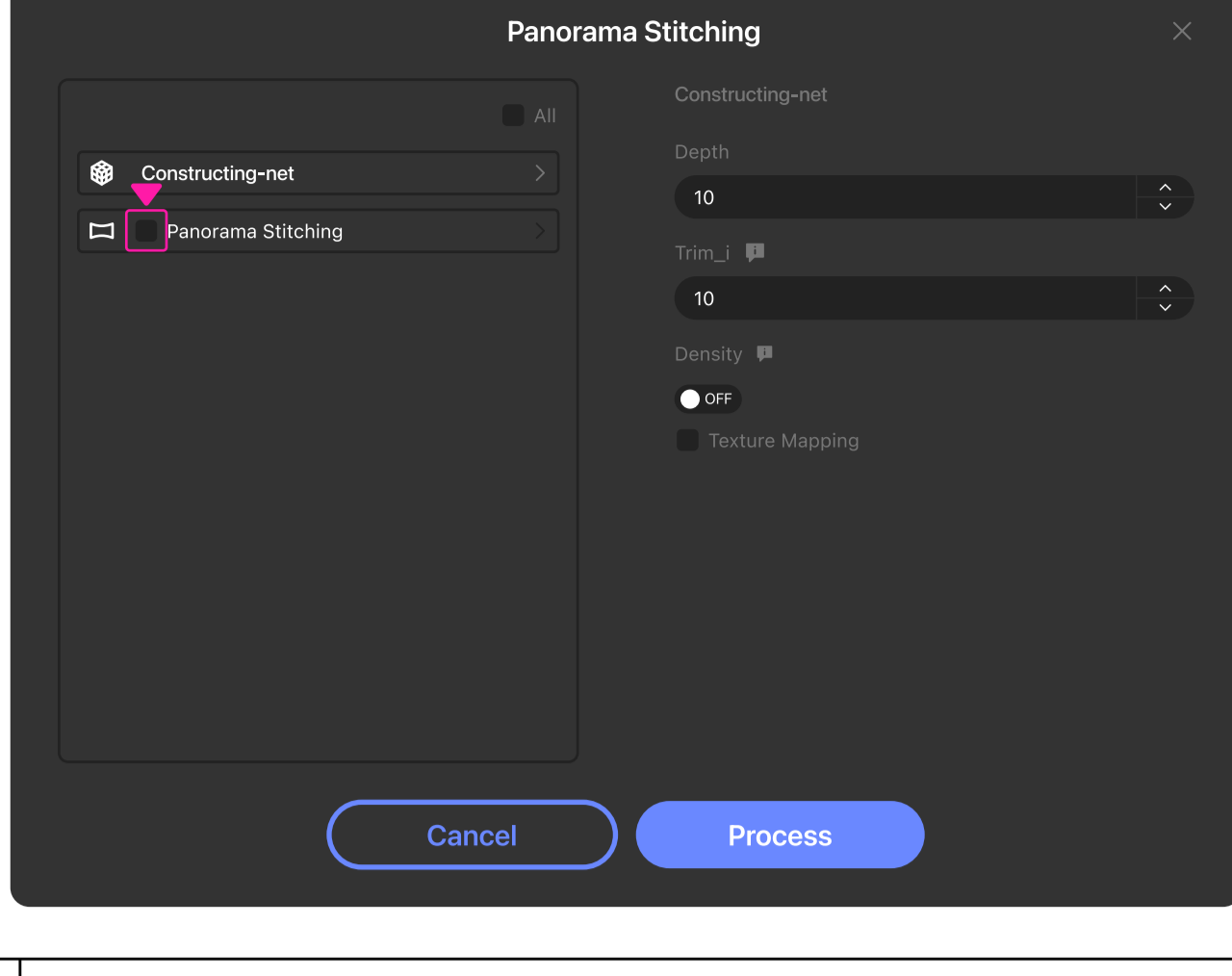
Operation	Description
Preview	Enter the preview interface to view the current Gaussian Splatting processing results and confirm if the model effect meets expectations.
Export	<p>Export current Gaussian Splatting data.</p> <ul style="list-style-type: none"> ● Tourist/Free users: Can download data with watermarks. ● Basic/Enterprise subscribers: Can download original watermark-free data.
Upload	<p>To prevent data loss or for better storage, it is recommended to upload the current Gaussian Splatting data to the cloud space. The number of uploadable files varies by user plan; purchase as needed.</p> <ul style="list-style-type: none"> ● Free: Can upload up to 2 files. ● Basic: Can upload up to 100 files. ● Enterprise: Unlimited uploads.

Panorama Stitching

① Click the Panorama Stitching button at the bottom of the interface to open the configuration window.

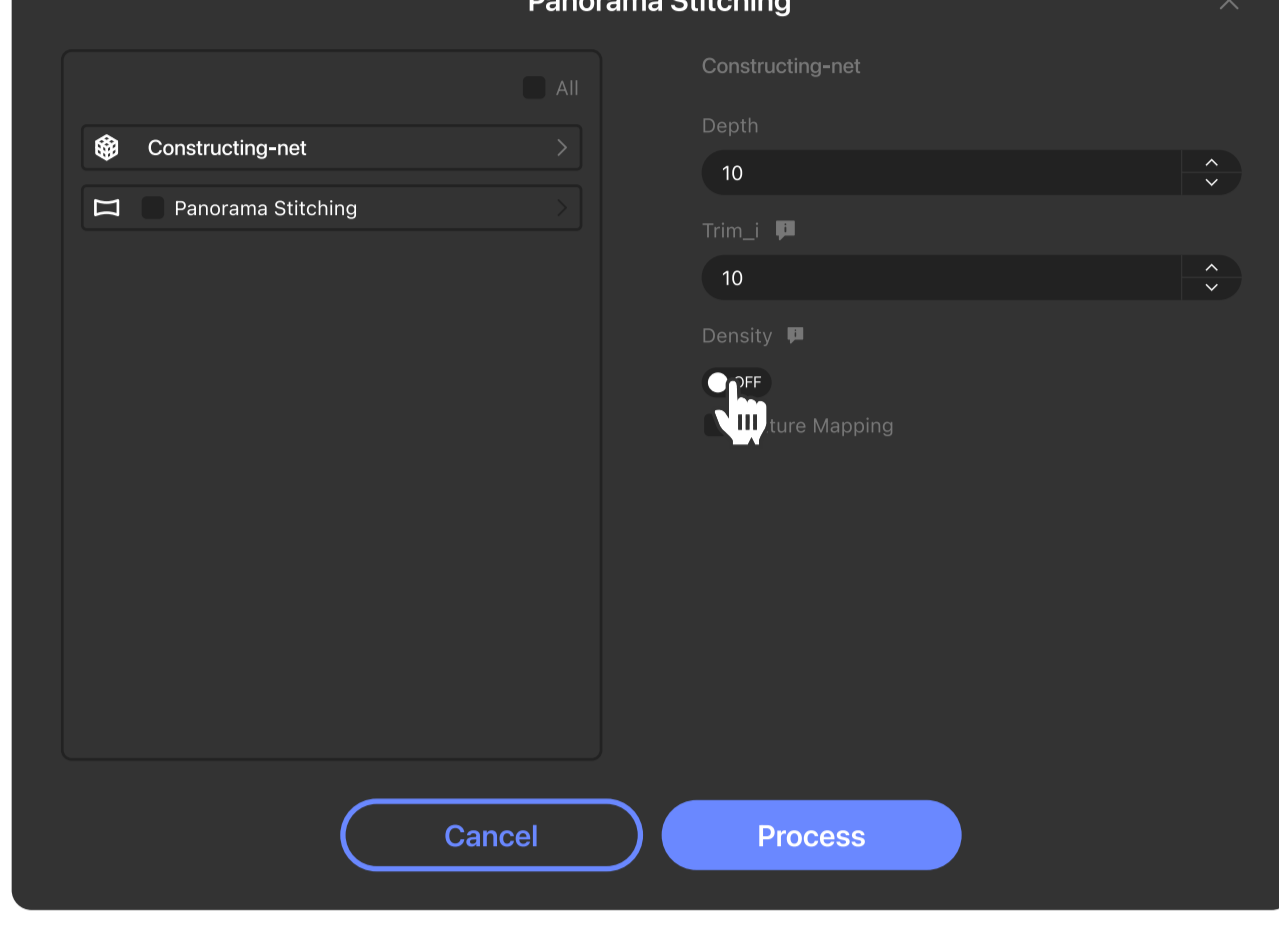


② Select the operations you wish to perform:



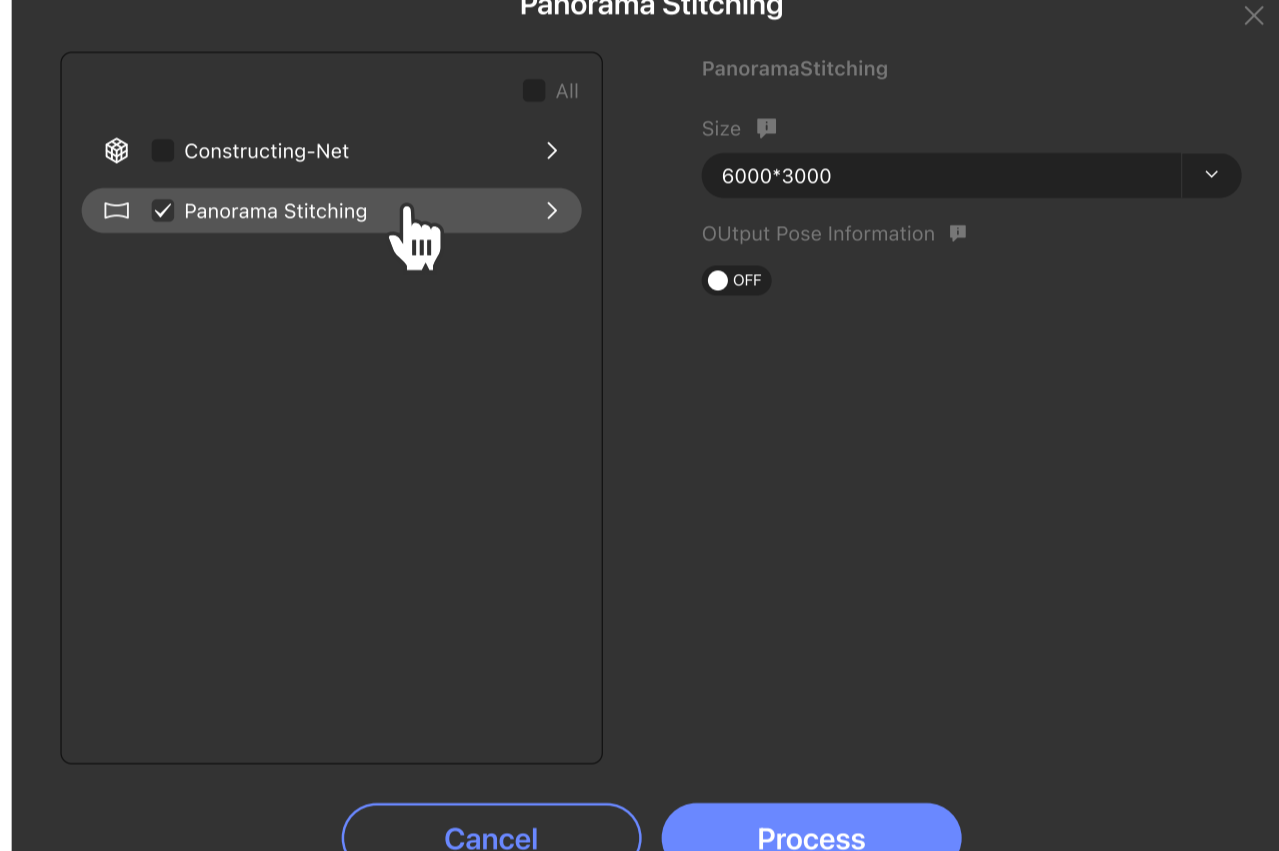
Configuration	Description
Constructing-net	Generates a 3D mesh model from point cloud data, converting discrete point clouds into continuous surface models for 3D modeling, visualization, and further processing.
Panorama Stitching	Only available in fixed-point scanning mode. Stitches multiple 2D images into a complete panorama / 3D scene, suitable for pure visual reconstruction without laser point cloud assistance.

Constructing-net Detailed Configuration:

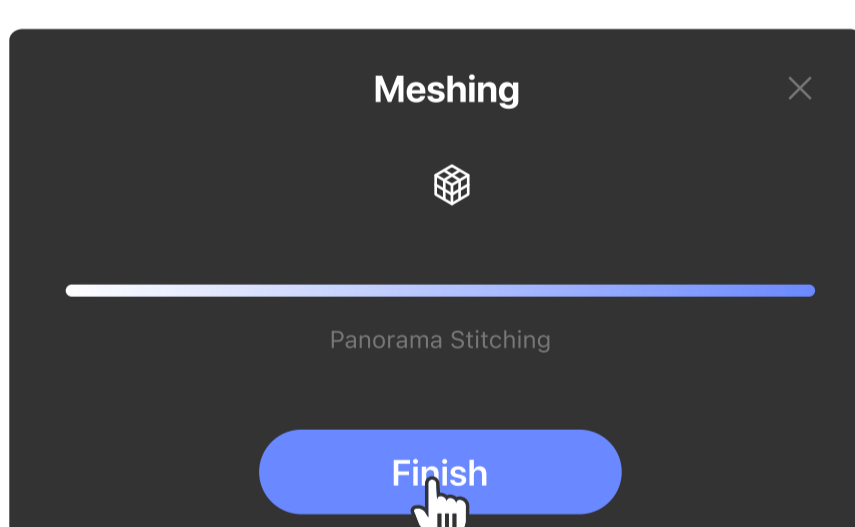


Configuration	Description
Depth	Controls the depth level of mesh reconstruction. Larger values produce richer mesh details and higher model accuracy, but increase computation time. Smaller values produce simpler meshes with faster processing speeds. Increase the value for high-precision modeling with detailed requirements; decrease it for quick previews or simplified large scenes. The default value of 10 works for most scenarios.
Trim	Used to trim redundant and noisy areas at the mesh edges. Larger values increase the trimming range to remove outliers and distortions for a cleaner model. Smaller values preserve more original data. Increase the value for models with noisy edges that require cleanup; decrease it to preserve the full original scene data. The default value of 10 works for most scenarios.
Density	Controls the topology of the mesh model. When enabled, the model can have open holes and openings, suitable for indoor or architectural scenes with natural openings. When disabled, the algorithm fills all holes to create a fully watertight mesh, suitable for applications requiring a solid model. Enable for standard architectural and indoor scenes to preserve realistic structures; disable when a closed solid model (e.g., for 3D printing) is needed.
Texture Mapping	Maps image textures captured by the camera onto the generated mesh model, giving the model realistic color and texture information for enhanced realism. When disabled, the model retains only its geometric structure with no texture information. Enable for standard visualization and result delivery; disable when only geometric structure is needed or to prioritize processing speed.

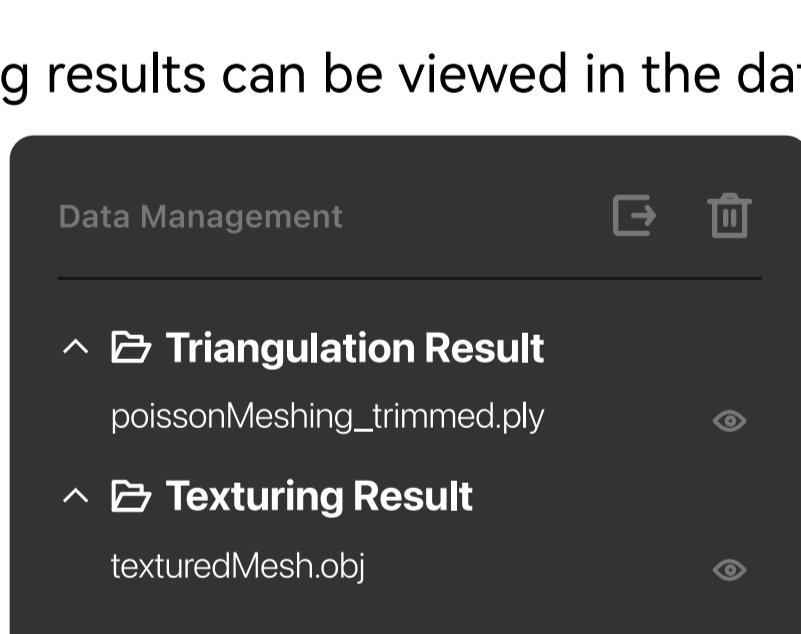
Panorama Stitching Detailed Configuration:



Configuration	Description
Size	Controls the pixel dimensions of the final panorama. Larger values produce higher-resolution images with clearer details, but larger file sizes, longer processing times, and higher hardware requirements. Smaller values produce smaller files with faster processing speeds. <ul style="list-style-type: none"> ●4000 * 2000: Low resolution, ideal for quick previews and web distribution with the fastest processing speed. ●6000 * 3000: Standard resolution, balancing detail and efficiency, the default optimal choice for most scenarios. ●9000 * 4500: High resolution, ideal for high-precision display and print-quality output with richer details. ●12000 * 6000: Ultra-high resolution, ideal for very large scenes and professional-grade result delivery, requiring high hardware performance.
Output Pose Information	Controls whether to output camera pose information for each image during panorama stitching. When enabled, camera pose data is retained for subsequent 3D reconstruction and pose analysis. When disabled, only the panorama is generated with no pose data output. Enable for scenarios requiring subsequent 3D modeling or pose tracking; disable when only the panorama is needed to prioritize processing efficiency.

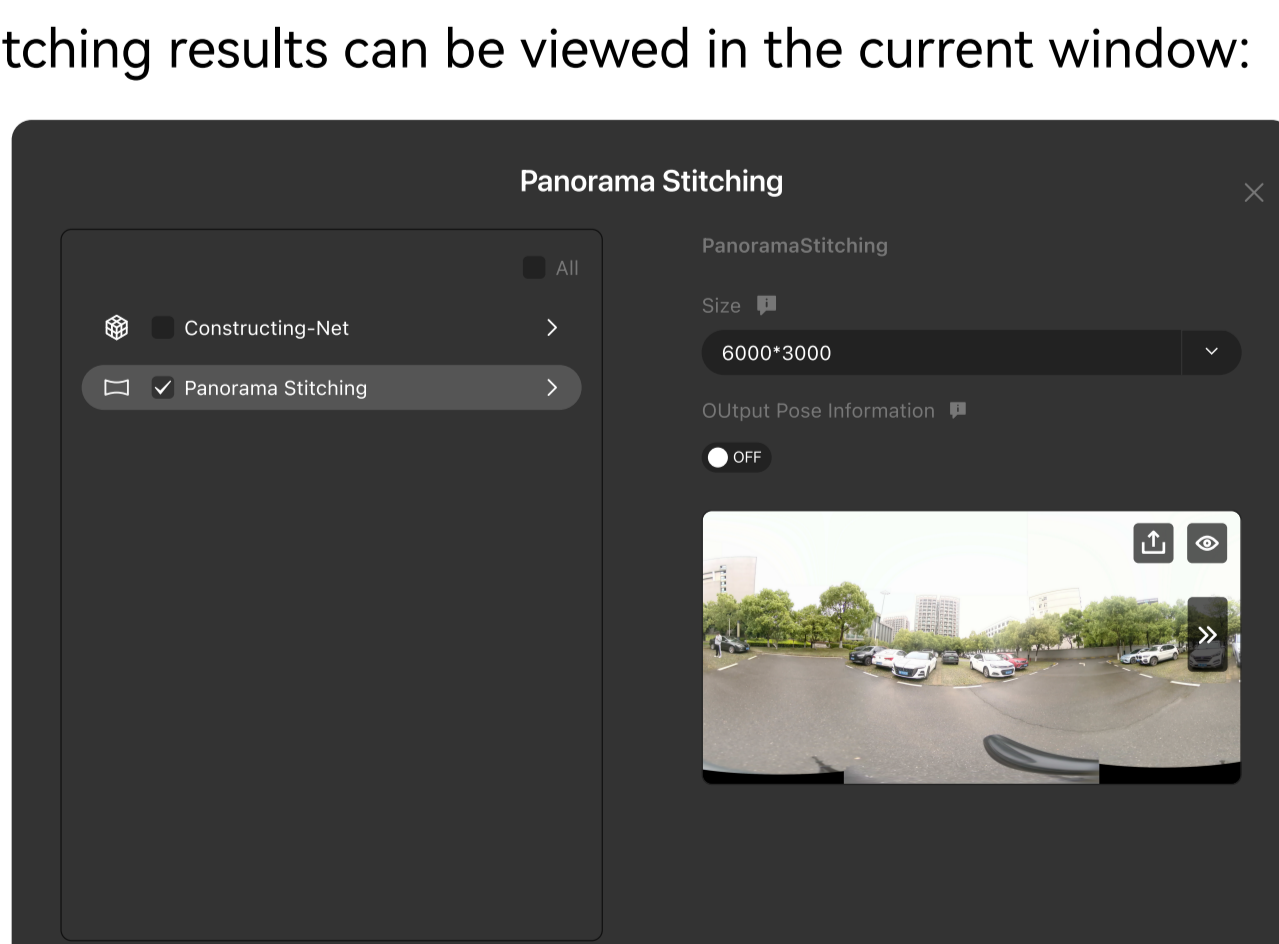


③ The meshing processing results can be viewed in the data list:



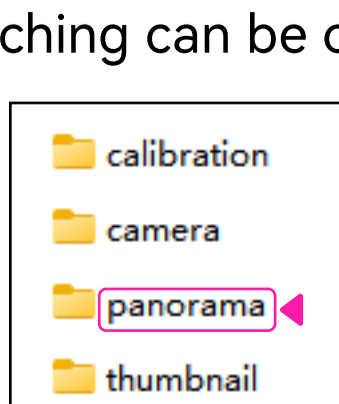
Folder	Generated Result Data
Triangulation Result	poissonMeshing_trimmed: Meshed data after processing
Texturing Result	texturedMesh: Mesh data with texture mapping generated when "Texture Mapping" is enabled during meshing

④ Panorama stitching results can be viewed in the current window:



Operation	Description
Preview	Enter the preview interface to view the current panorama stitching results and confirm if the effect meets expectations.
Upload	To prevent data loss or for better storage, it is recommended to upload the current data to the cloud space. The number of uploadable files varies by user plan; purchase as needed. <ul style="list-style-type: none"> ●Free: Can upload up to 2 files. ●Basic: Can upload up to 100 files. ●Enterprise: Unlimited uploads.
Switch Images	When multiple panorama images are available, click the icons to the left or right of the photo to switch between them.

Photos generated by panorama stitching can be obtained in local project files:



Edit

Adjustments can be made to the point cloud and mesh data.

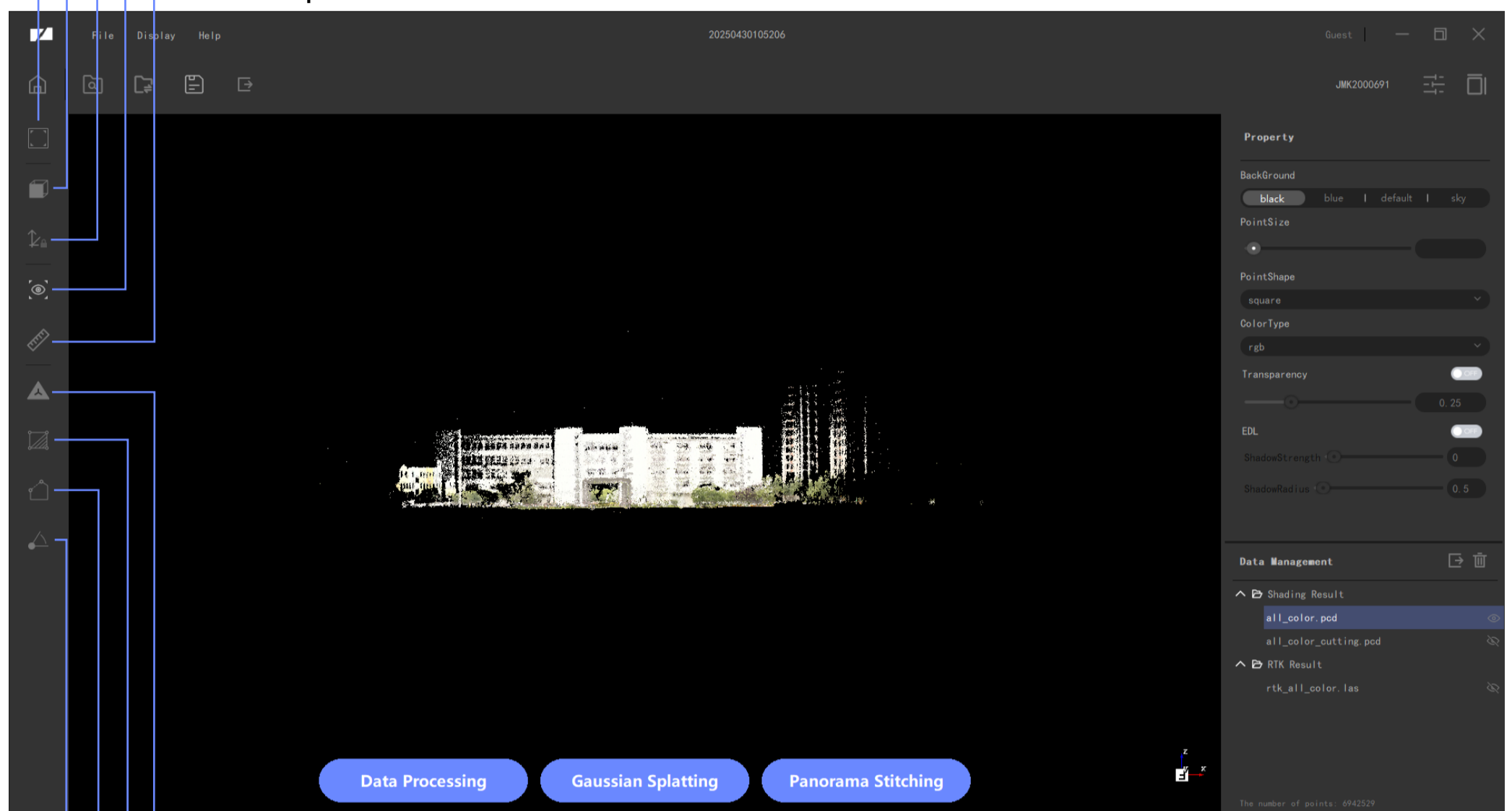
Reset camera perspective: The angle of view will be readjusted, and the point cloud data will be restored to the original top view, which will be displayed in the center.

You can view the front view, rear view, left view, right view, top view, and bottom view

Axis Lock: You can lock the X, Y, and Z axes. Once locked, transformations cannot be applied in that direction.

Enter/exit the first view: The first view mainly imitates the perspective of the human eye observing the 3D world, so that the point cloud data presentation is more in line with reality, and the effect of near and far is small

Measurement: Point measurement, linear measurement, and volume measurement can be performed



Control point coordinates: Fill in the actual UTM coordinates of three or more points to calculate the position of all scanned point clouds in the world coordinate system

Clip: You can delete point cloud data inside or outside the box selection by selecting the point

Start-to-end loop closure: When the starting point and end point of the scanning path are at the same location, and the point clouds at the overlapping places do not match, you can verify the single-frame point cloud data of the starting and ending points to calculate more accurate data

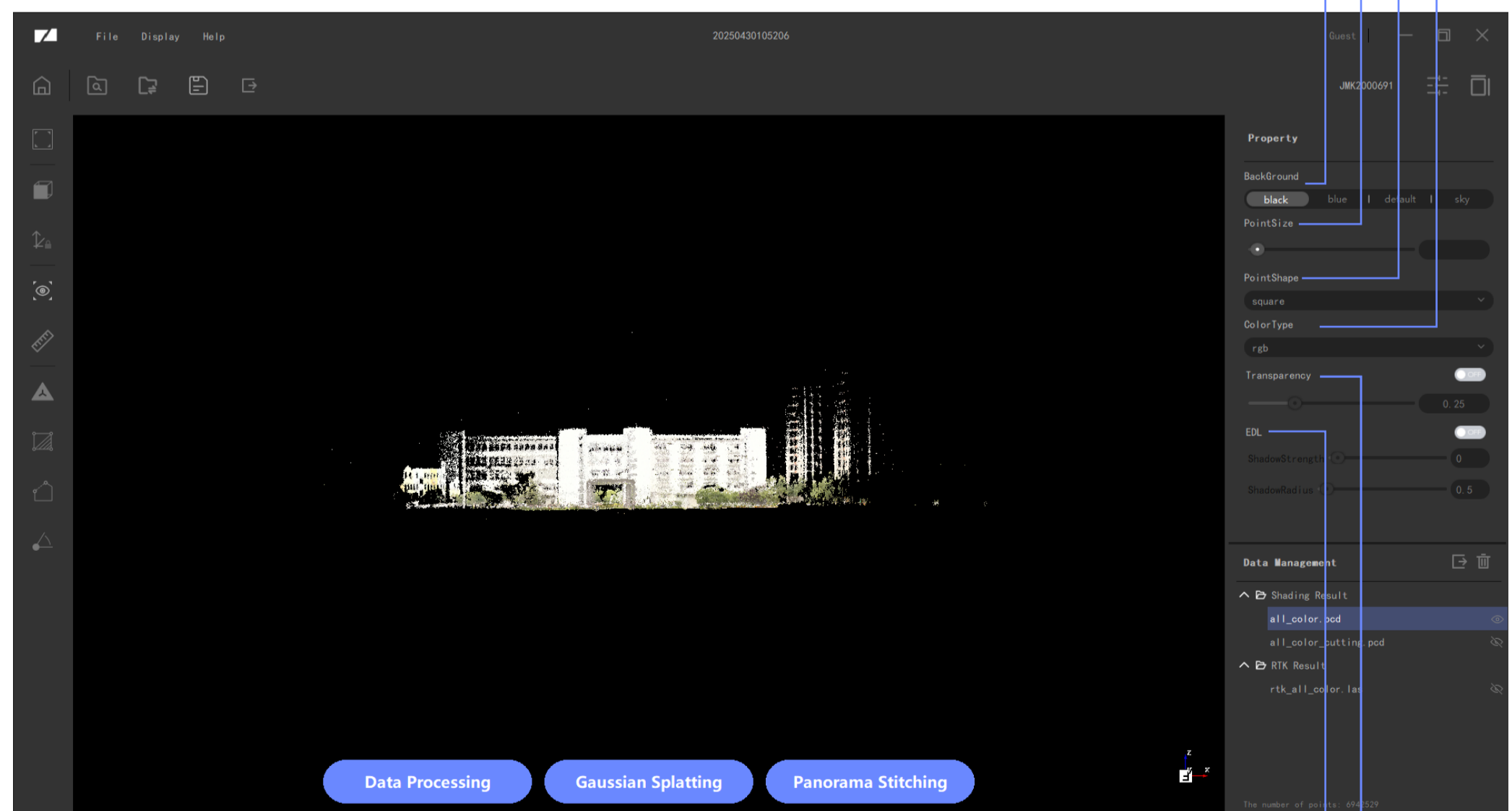
Point cloud correction: Adjust the position and angle of the point cloud

RGB is selected, and the point cloud is displayed in actual color; Select Elevation, and the point cloud color value can be used to represent the terrain; Select Intensity, and the point cloud will be displayed from the perspective of weak and strong or pale and solid hue

The shape of the point cloud, the square color is more obvious, and the round point cloud is more convenient to observe the scanning sparsity

Adjusts the size of the point cloud displayed in the current window

The background color can be toggled according to the scene



Enhances the display of feature contour information in point cloud data.

Shadow Strength: Controls the opacity or darkness of shadows.

- Higher values produce deeper, darker shadows with a more "solid" appearance
- Lower values produce lighter, more transparent shadows with a "faint" appearance

Shadow Radius: Controls the blurriness or softness of shadow edges.

- Higher values produce softer, smoother shadow edges with a gentler transition
- Lower values produce sharper, more defined shadow edges

Adjust the transparency of the point cloud data displayed in the current window, 0 is the minimum, 1 is the maximum, the smaller the value, the point cloud will show a more transparent effect

Control point coordinates

You can change the position of the scanned point cloud in the world coordinate system by inputting the locations of at least three points.

Prerequisites

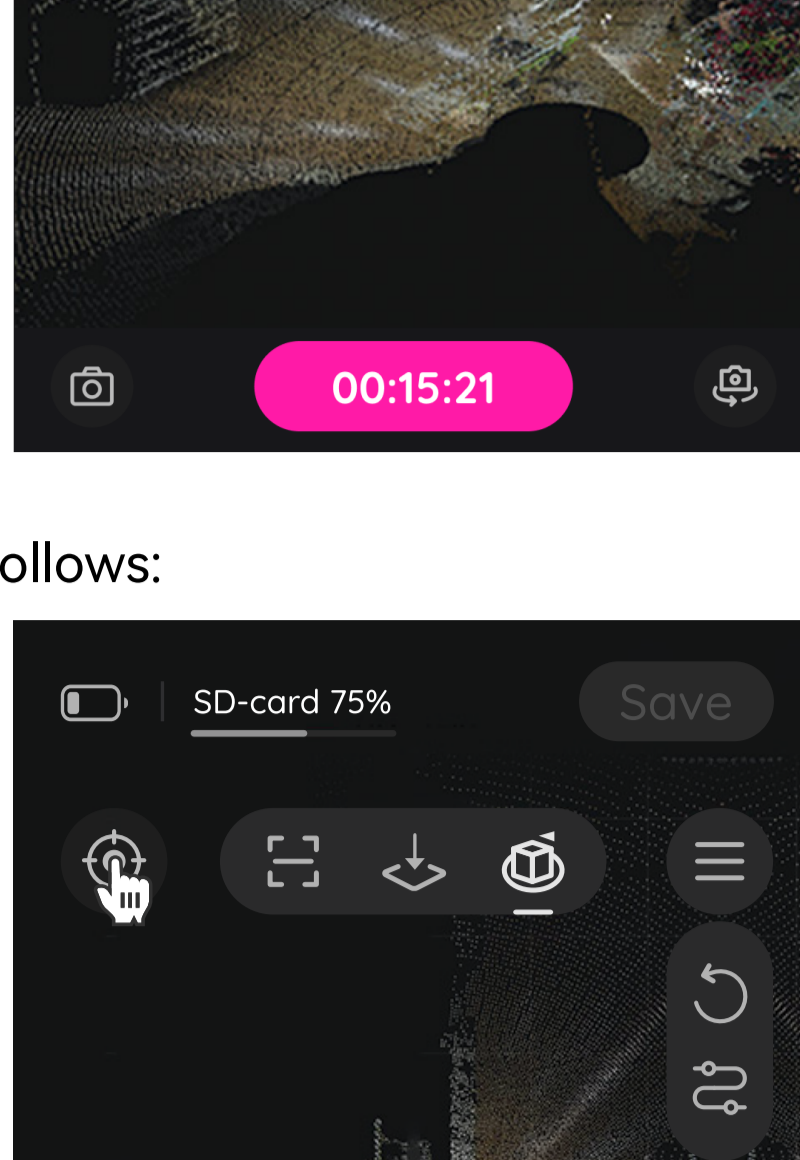
You first need to obtain the actual UTM coordinate information of the relevant point cloud in the world coordinate system.

- While scanning to add marker points, use other auxiliary devices (such as an RTK measuring instrument) to obtain the actual UTM coordinate information of the points.
- By selecting point clouds at the same location, obtain the actual UTM coordinate information of that location in the world coordinate system. The method of obtaining this information varies across different software and is for reference only (using Google Earth Pro as an example).

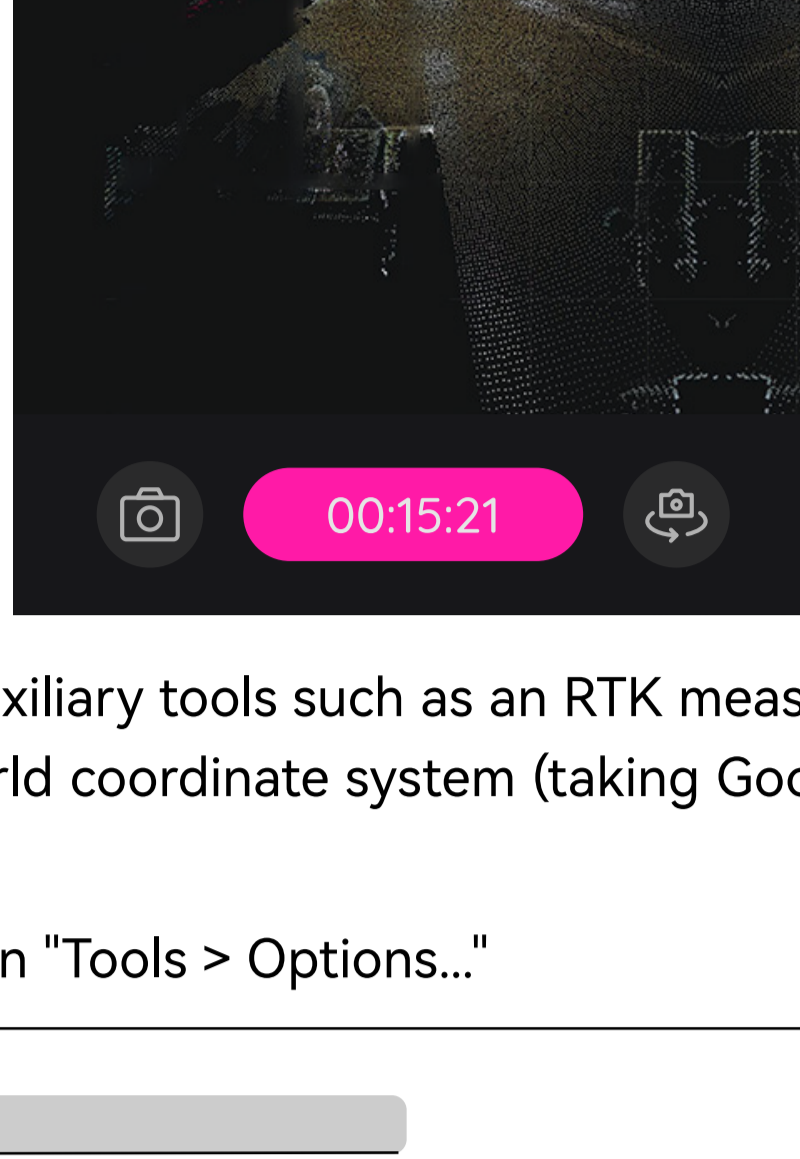
1. During scanning, you can manually add marker points; clicking once will automatically record the current position.

*When scanning and adding reference points using devices such as an RTK survey instrument at the same locations, making the data more accurate.

The Hawk & Raven interface is as follows:

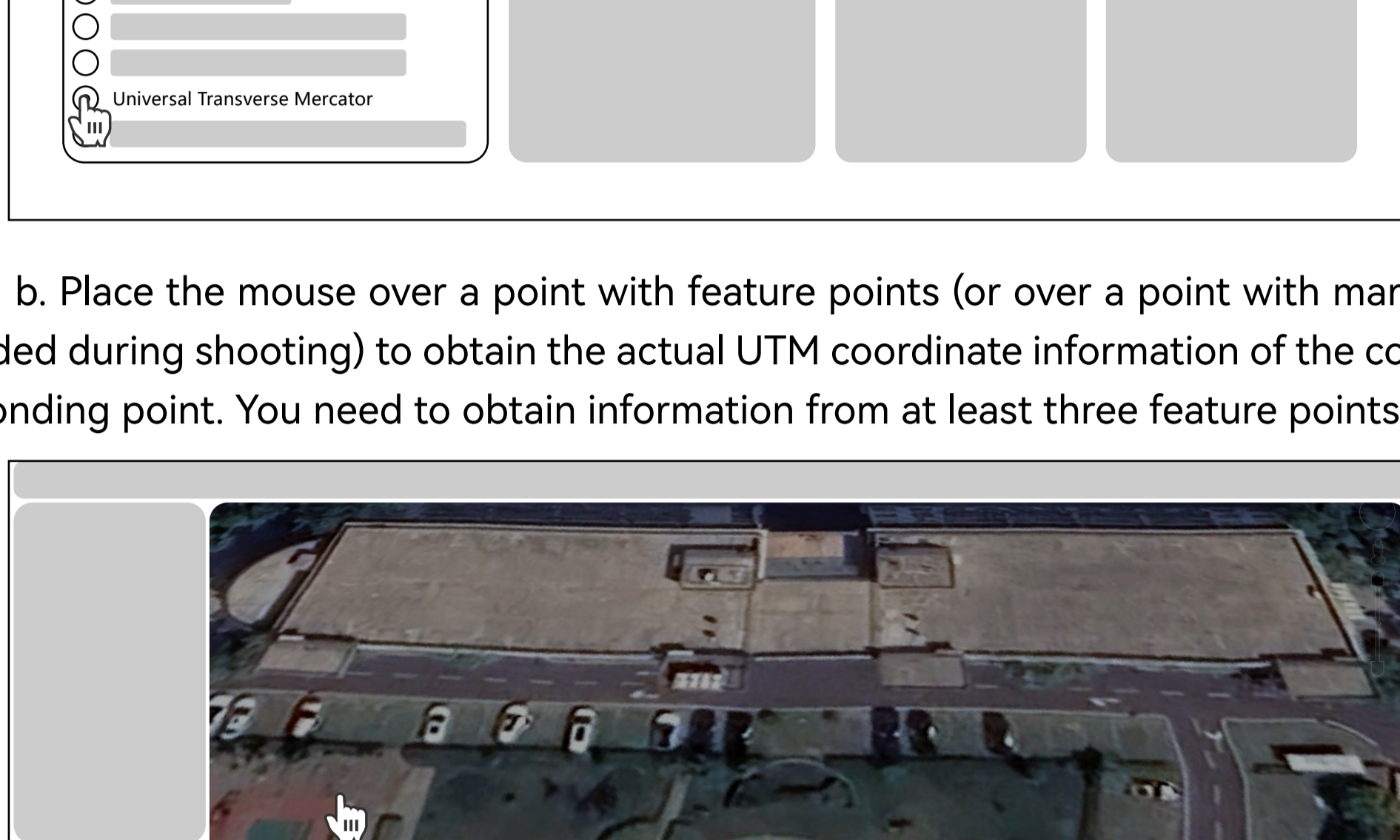


The Eagle interface is as follows:

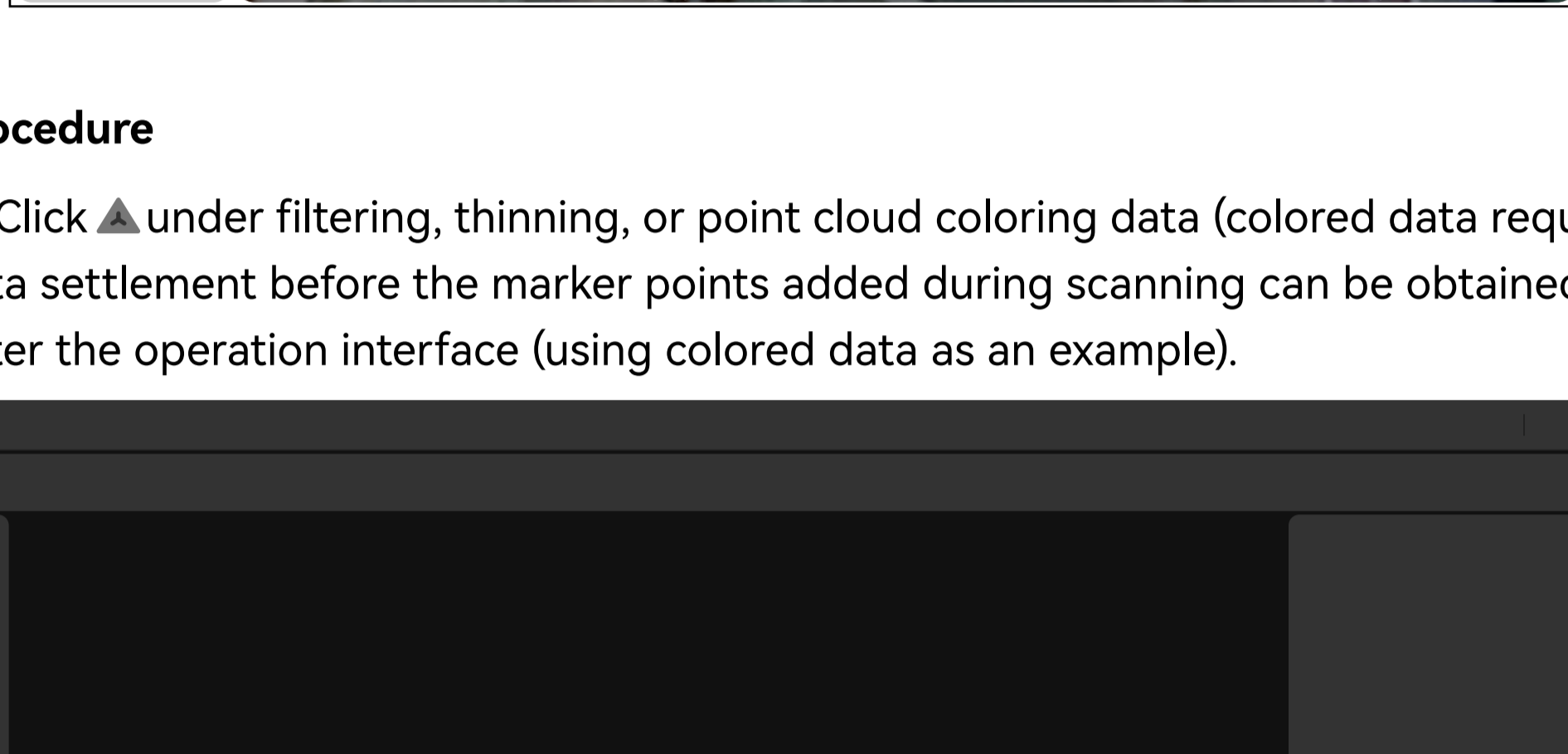


2. If there are no other auxiliary tools such as an RTK measuring instrument, it can be obtained through the world coordinate system (taking Google Earth Pro as an example).

a. Configure the UTM in "Tools > Options..."

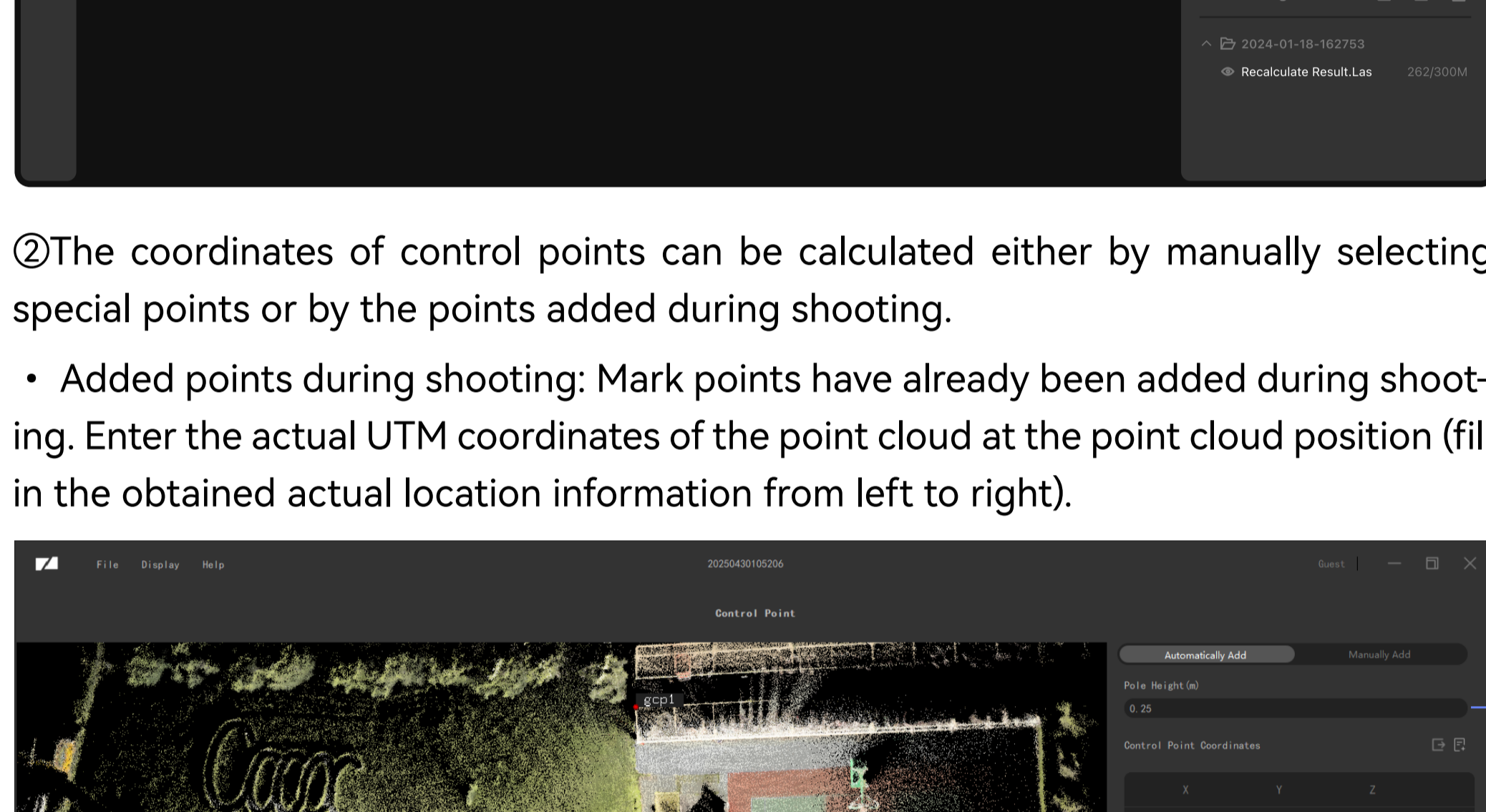


b. Place the mouse over a point with feature points (or over a point with markers added during shooting) to obtain the actual UTM coordinate information of the corresponding point. You need to obtain information from at least three feature points.



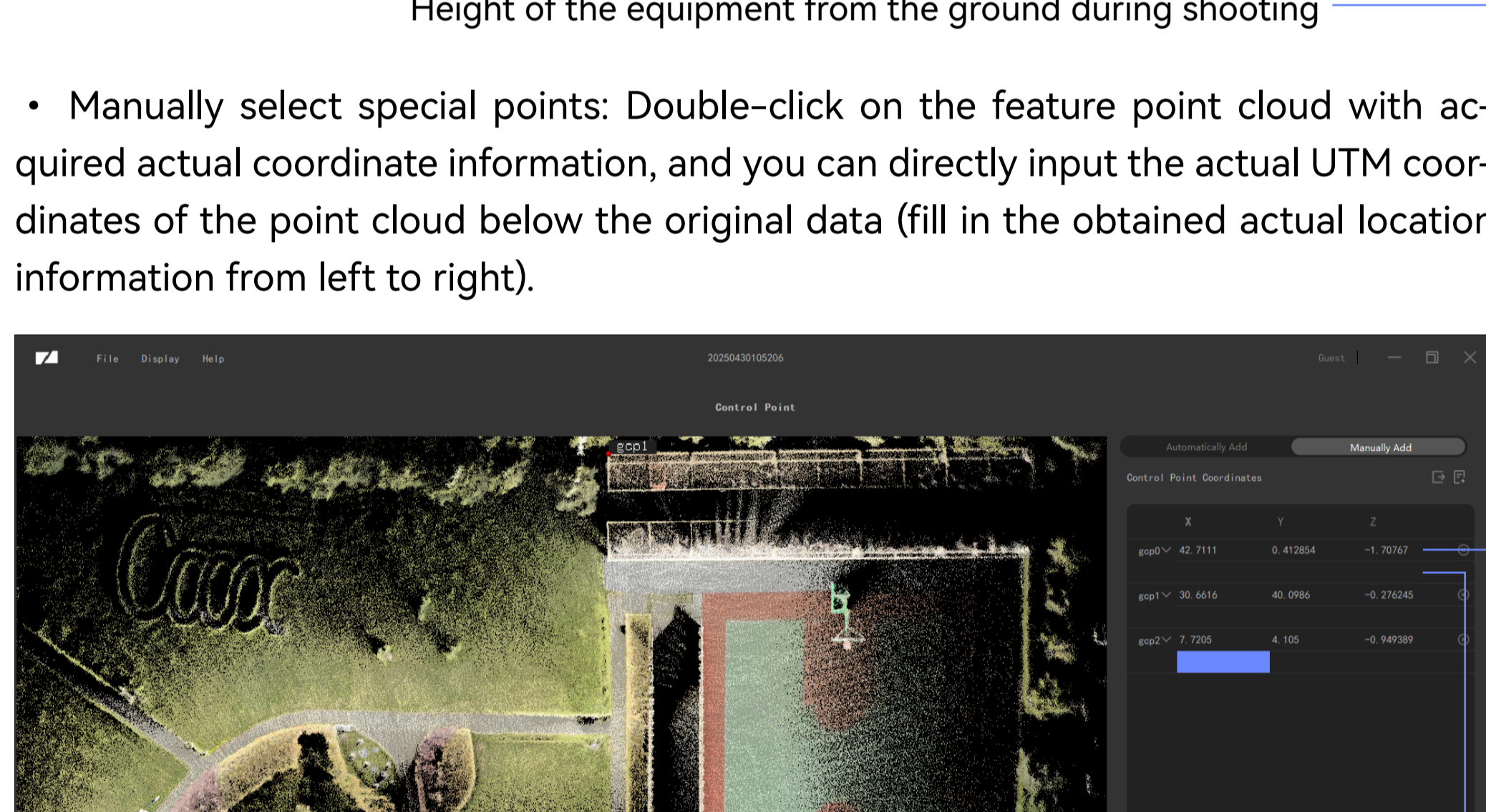
Procedure

① Click under filtering, thinning, or point cloud coloring data (colored data requires data settlement before the marker points added during scanning can be obtained) to enter the operation interface (using colored data as an example).

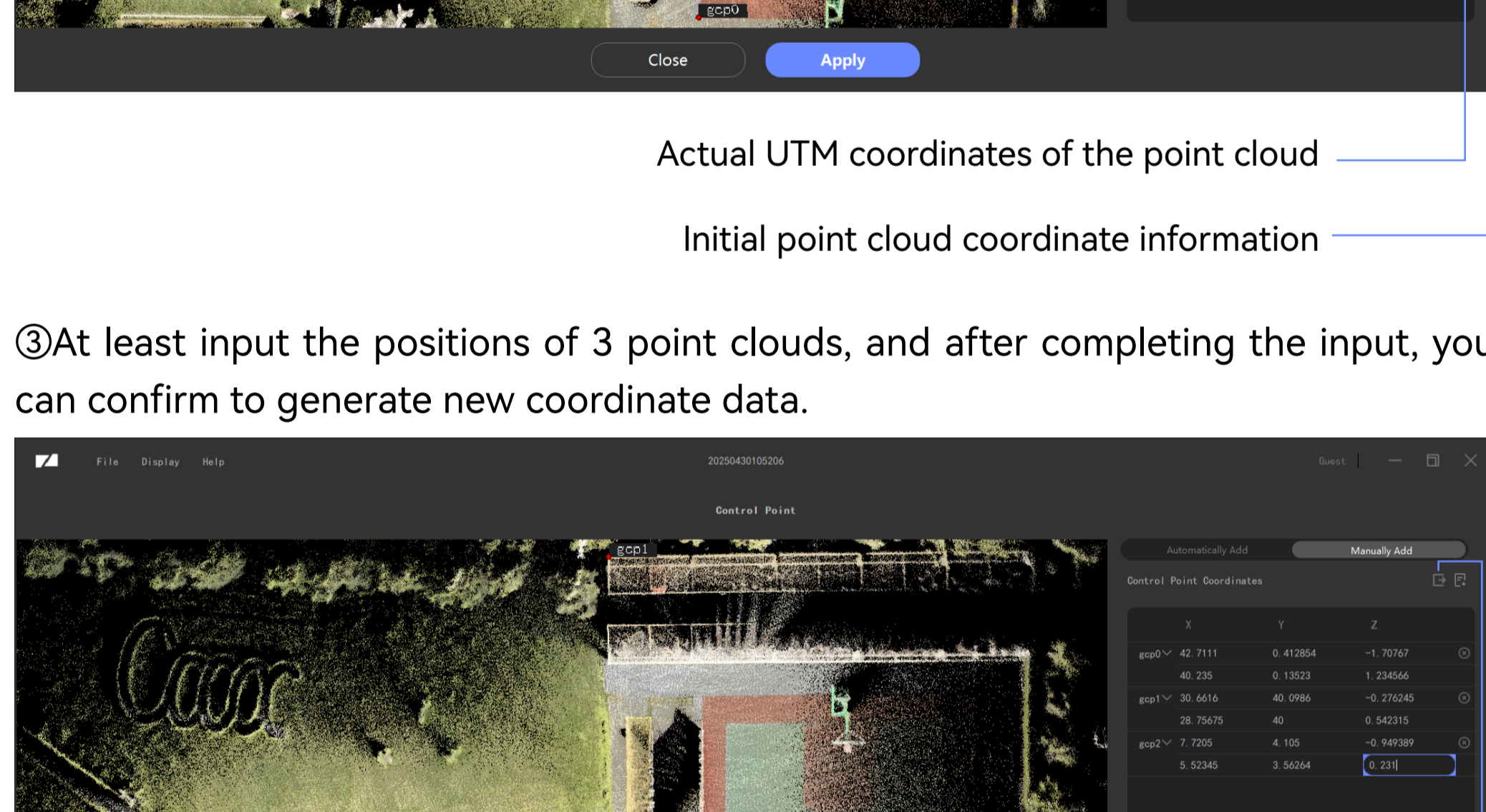


②The coordinates of control points can be calculated either by manually selecting special points or by the points added during shooting.

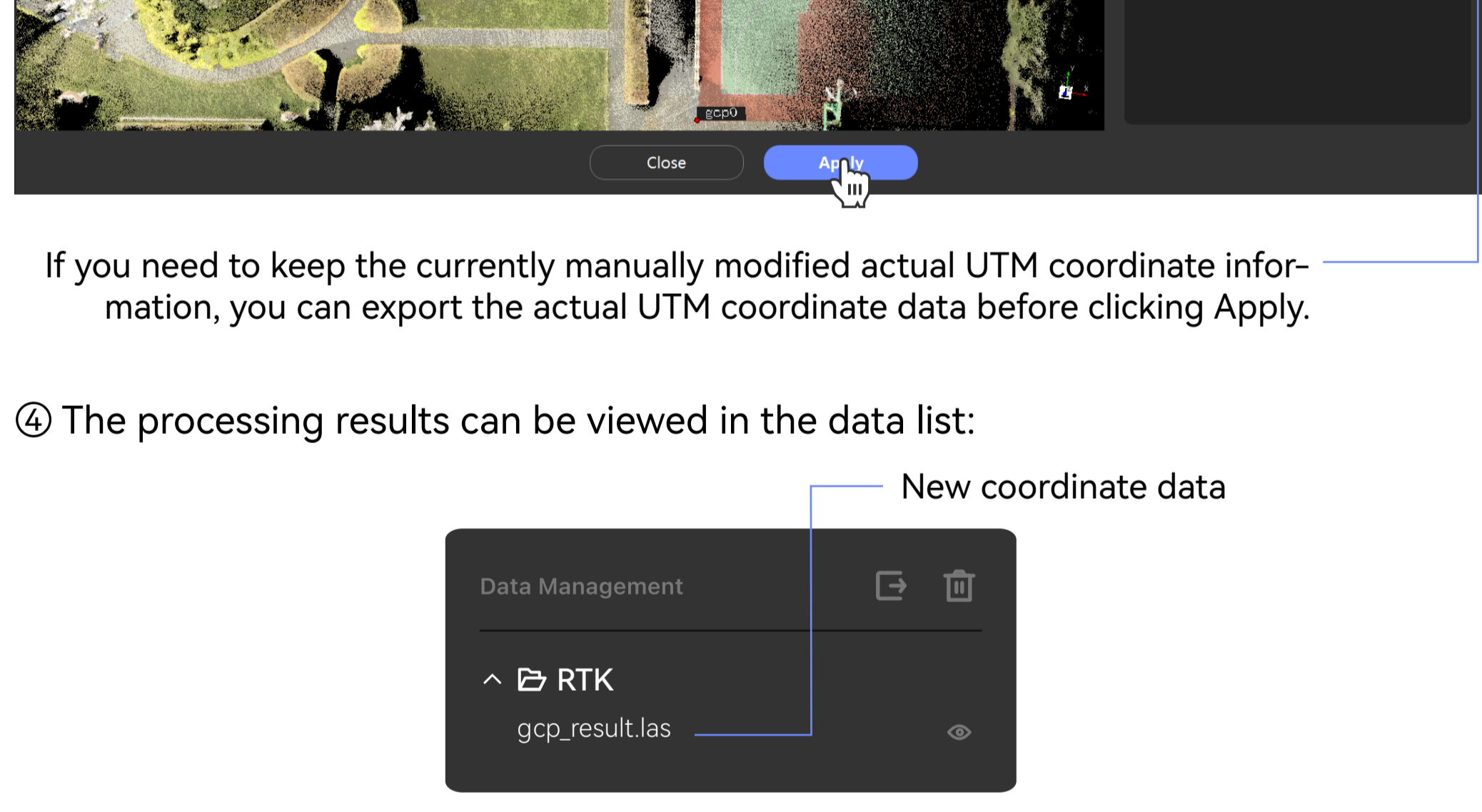
- Added points during shooting: Mark points have already been added during shooting. Enter the actual UTM coordinates of the point cloud at the point cloud position (fill in the obtained actual location information from left to right).



- Manually select special points: Double-click on the feature point cloud with acquired actual coordinate information, and you can directly input the actual UTM coordinates of the point cloud below the original data (fill in the obtained actual location information from left to right).

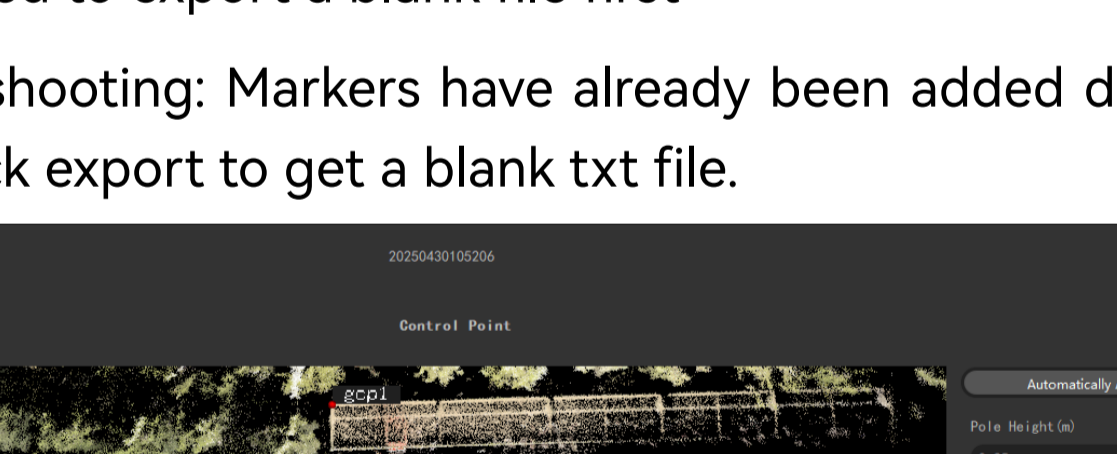


③At least input the positions of 3 point clouds, and after completing the input, you can confirm to generate new coordinate data.



If you need to keep the currently manually modified actual UTM coordinate information, you can export the actual UTM coordinate data before clicking Apply.

④ The processing results can be viewed in the data list:

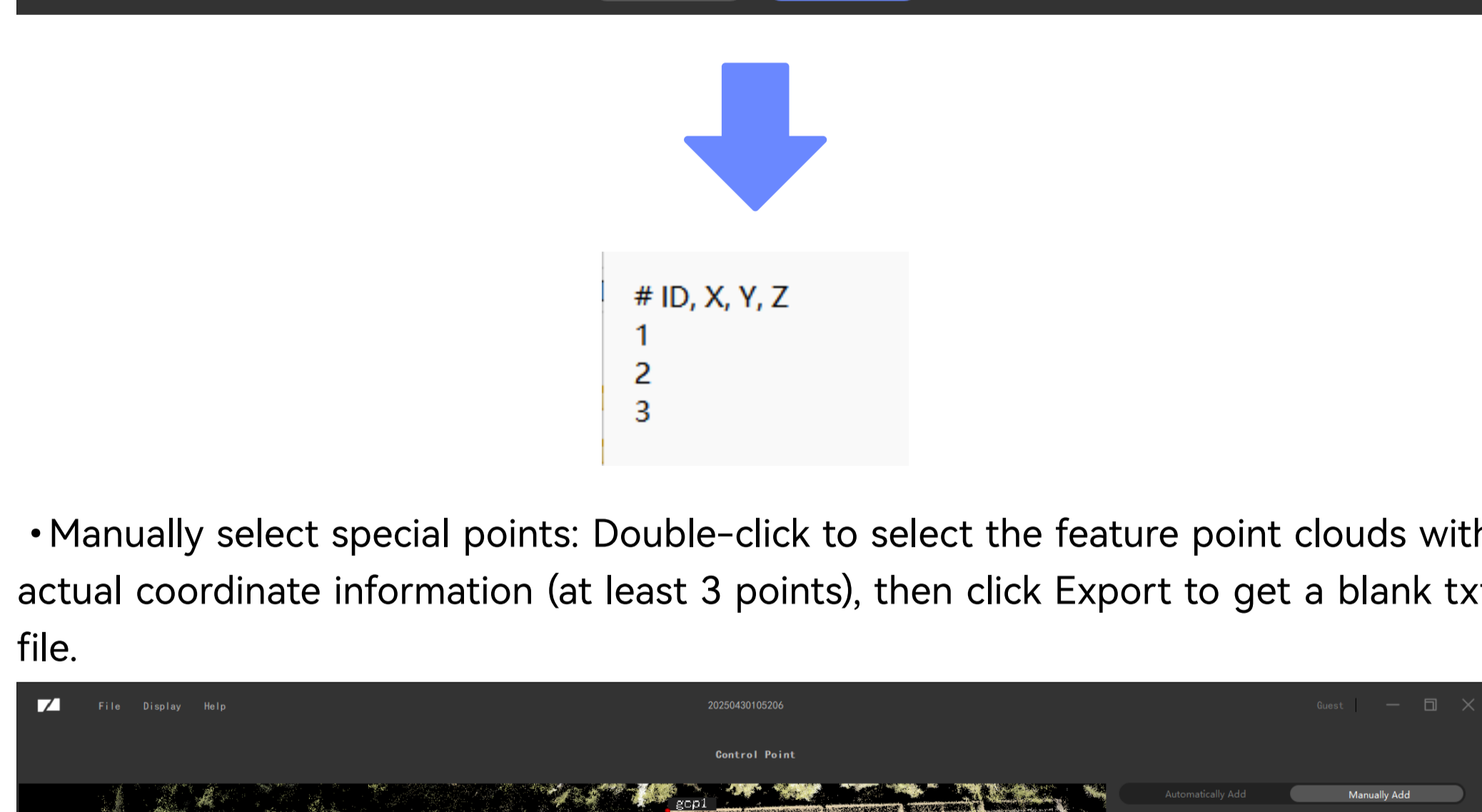


Import

Supports directly modifying location information by importing a file with the actual coordinates of the selected points.

①First time use, you need to export a blank file first

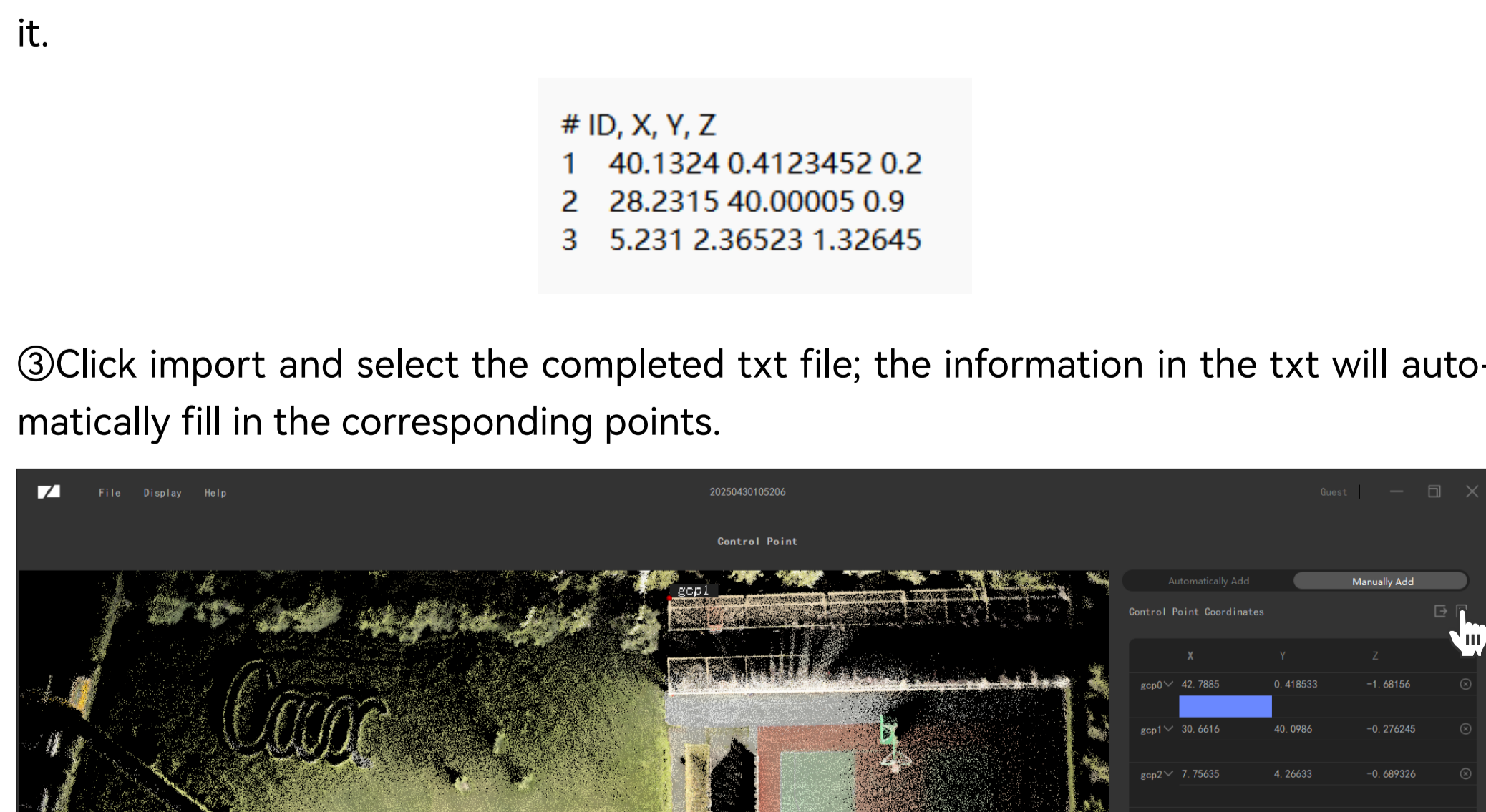
- Points added during shooting: Markers have already been added during shooting, and you can directly click export to get a blank txt file.



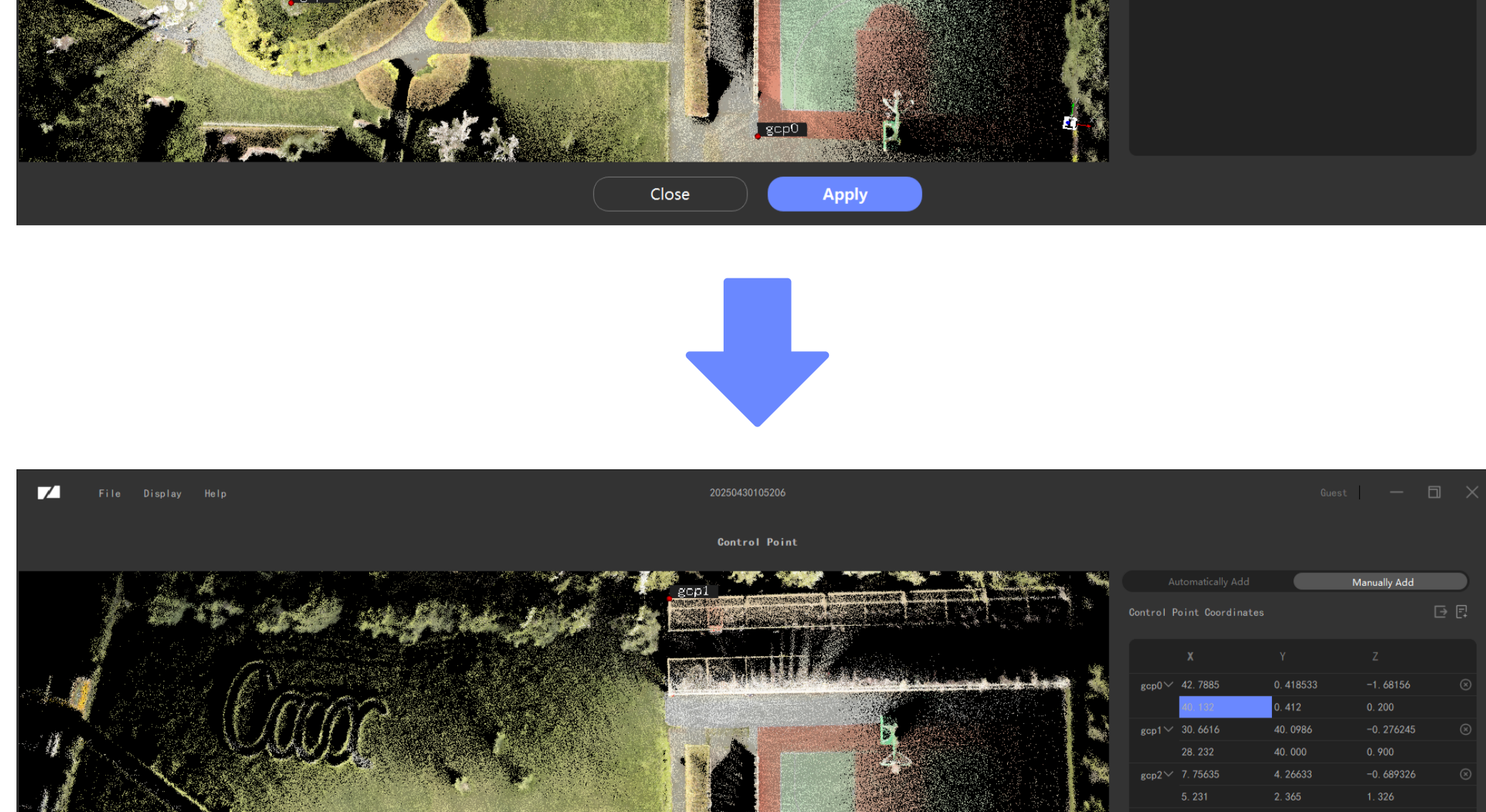
- Manually select special points: Double-click to select the feature point clouds with actual coordinate information (at least 3 points), then click Export to get a blank txt file.



②In the exported blank txt file, sequentially enter the actual UTM coordinate information of the corresponding points according to X, Y, Z (separated by spaces), and save it.



③Click import and select the completed txt file; the information in the txt will automatically fill in the corresponding points.



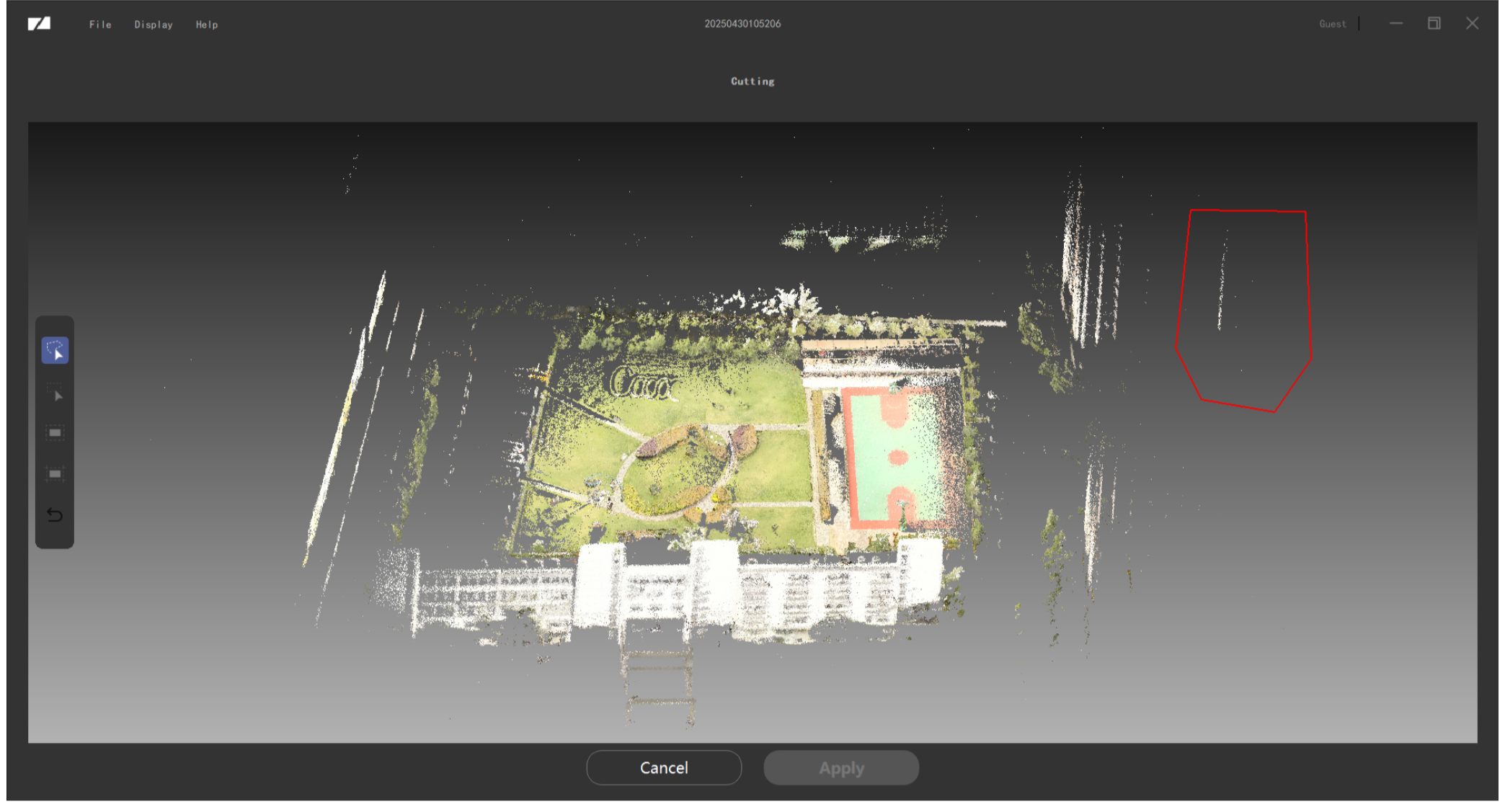
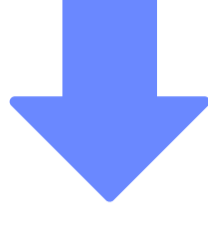
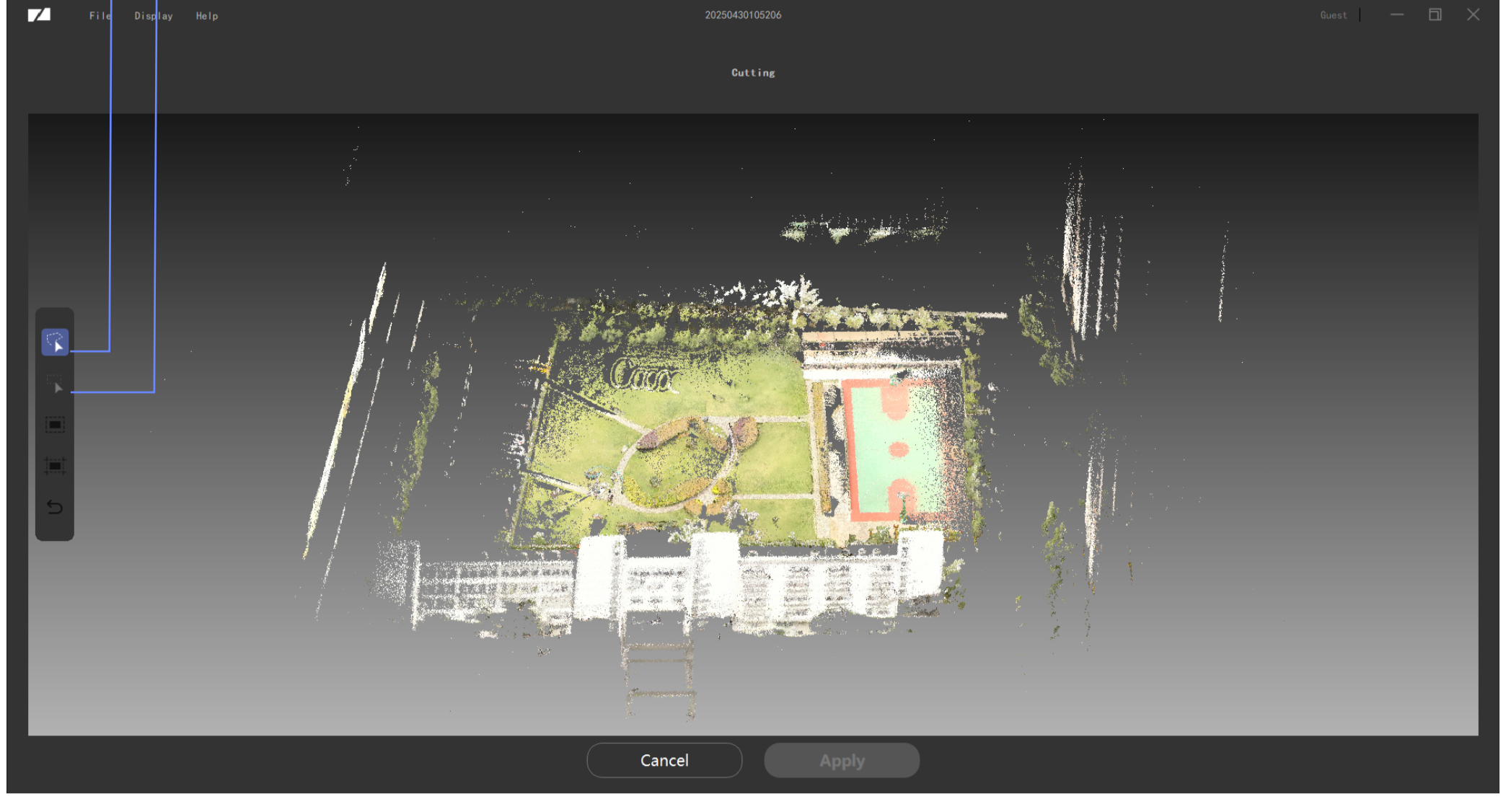
④After confirming that the entered information is correct, you can click confirm to generate new coordinate data.

Clip

① Select the point cloud data to be processed through polygon cropping or rectangular cropping (take polygon cropping as an example)

Polygon Clipping: Left-click to add a point, and the right-click will automatically close the point to the generated area.

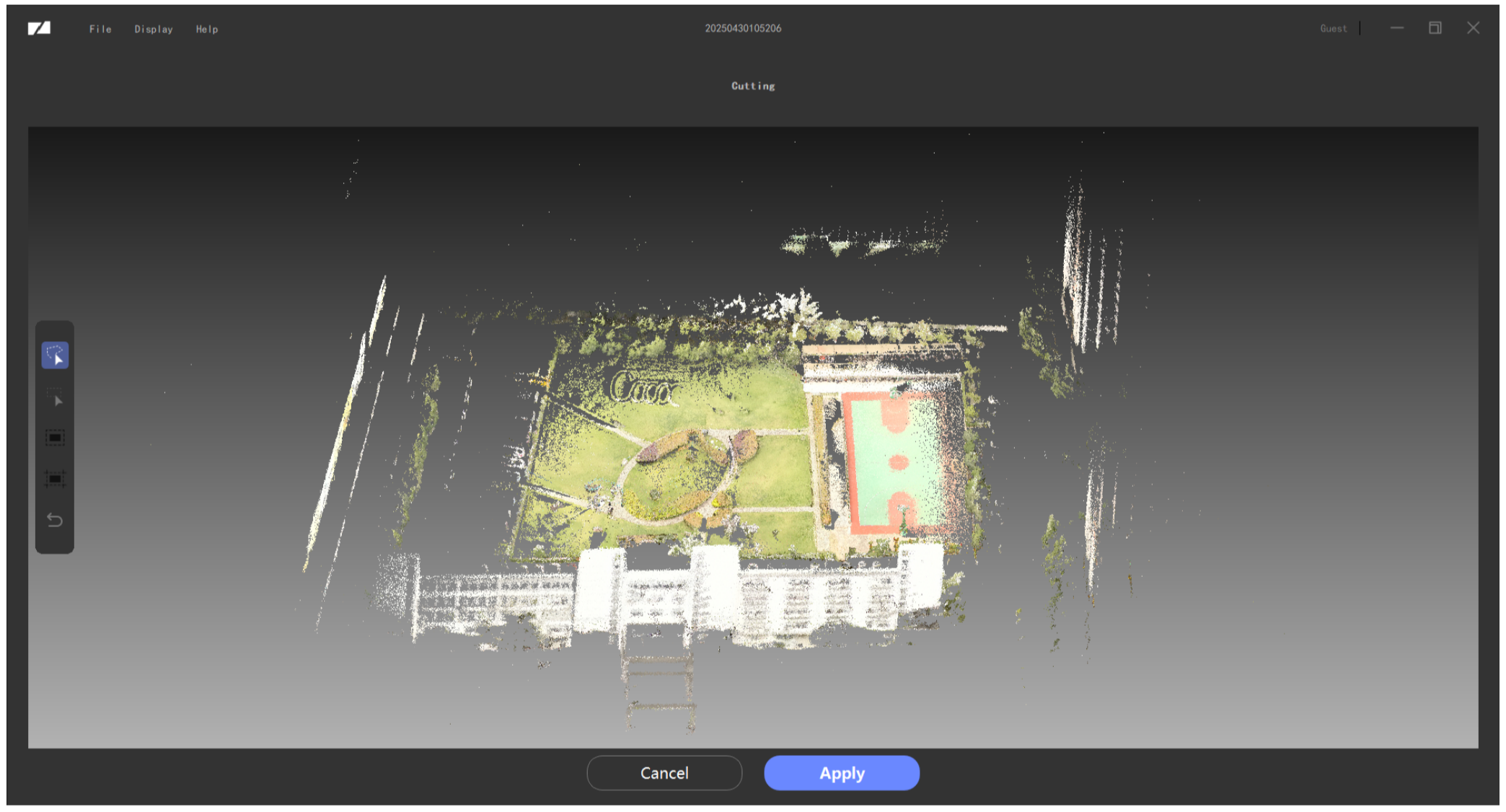
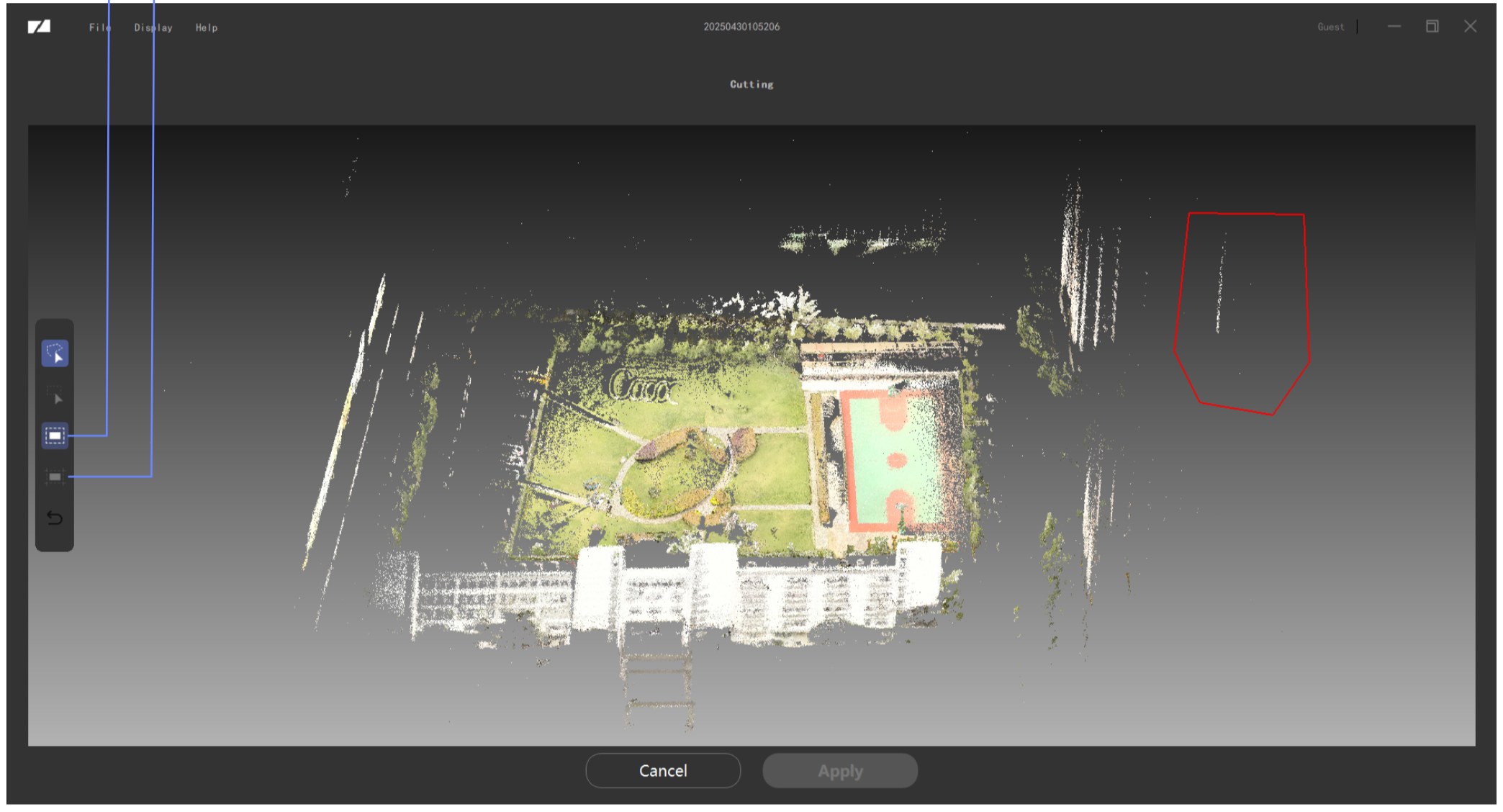
Rect Clipping: Drag and drop with the left mouse button to create a rectangular shape of the selection.



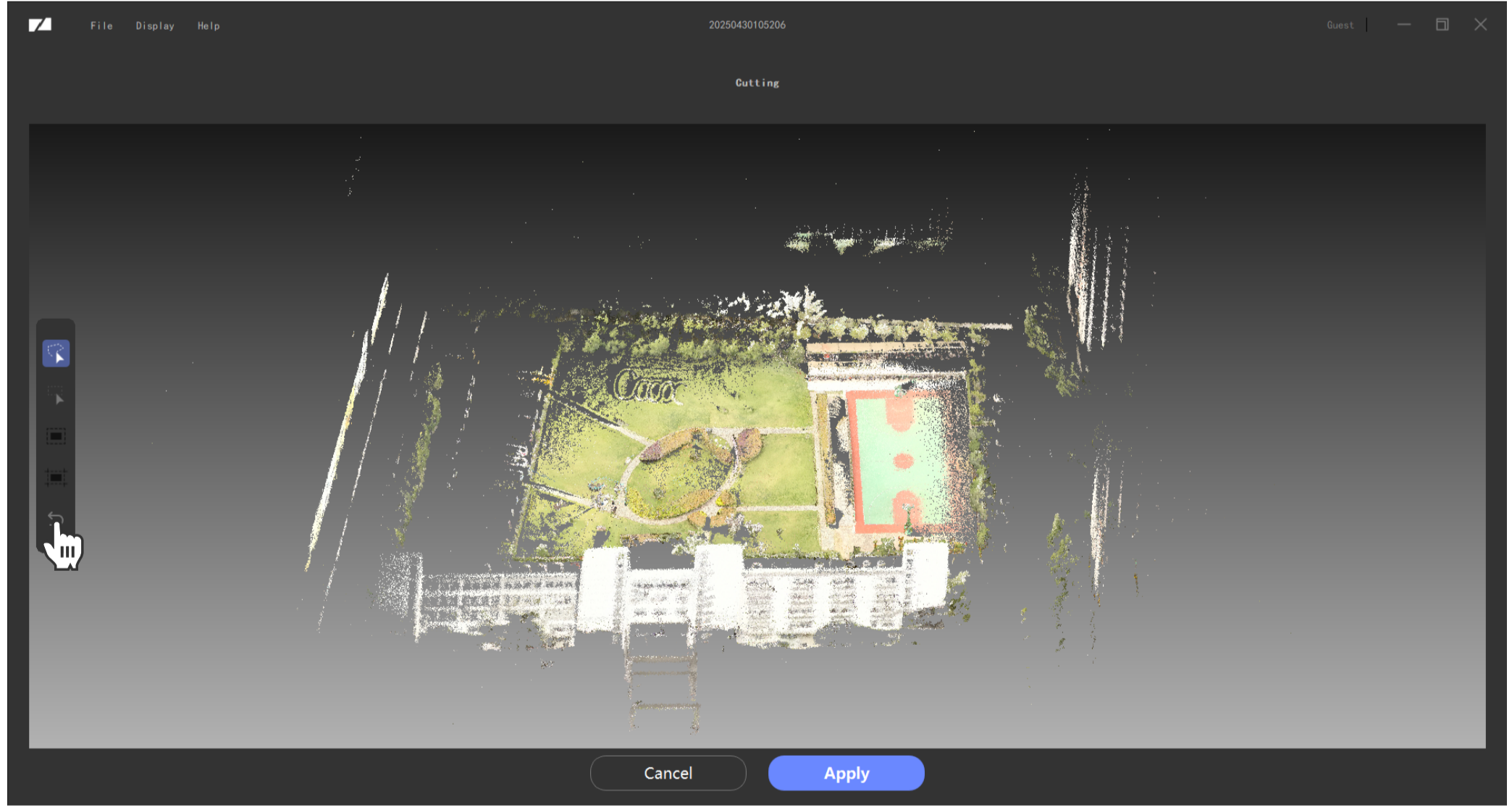
② You can choose to delete the point cloud data in or out of the box selection (take deleting the data in the box selection as an example)

Cut Inside: Deletes the point cloud data in the selected area

Cut Outside: Deletes the point cloud data outside the selected area

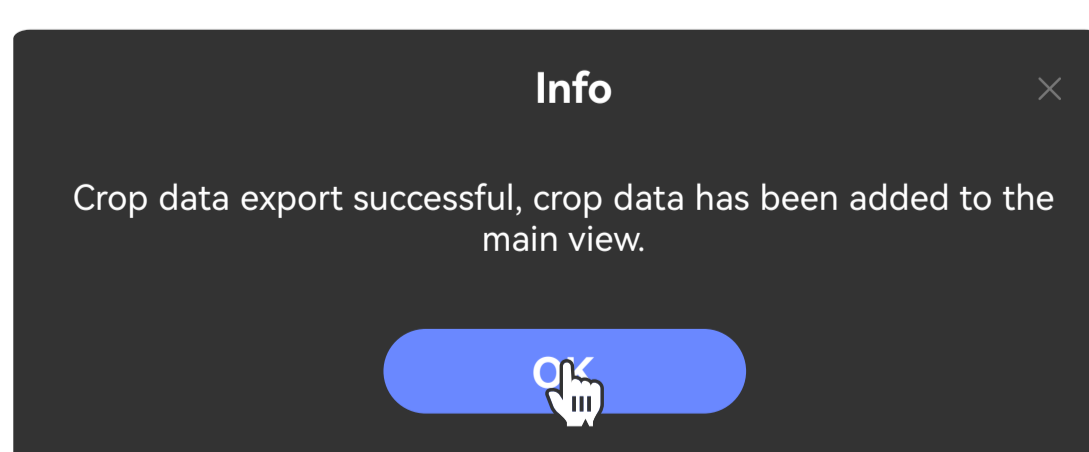


Optional: ③ The deleted data can be revoked



④ If you keep the current cropping data, you can click "Apply" to generate a new cropping data

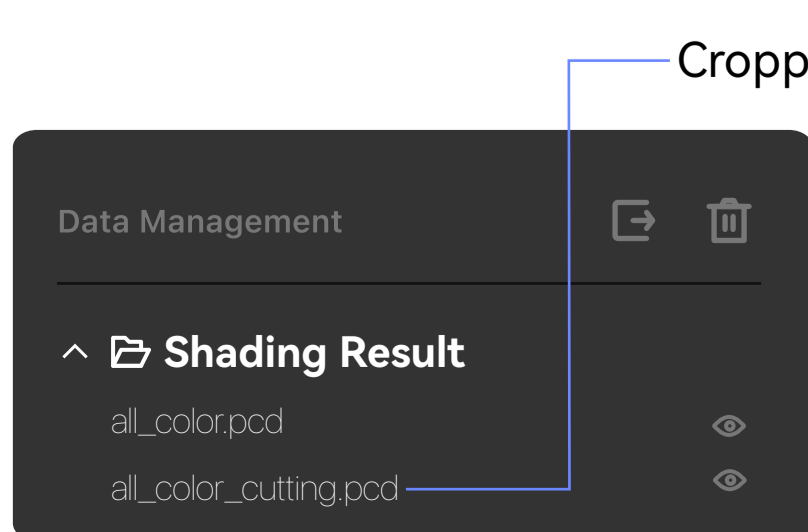
Apply



⑤ Click "Cancel" to exit the cropping interface

Cancel

⑥ The cropped data can be viewed in the data list:



Measurement

Measurements include point measurement, line measurement, height measurement, and volume measurement.

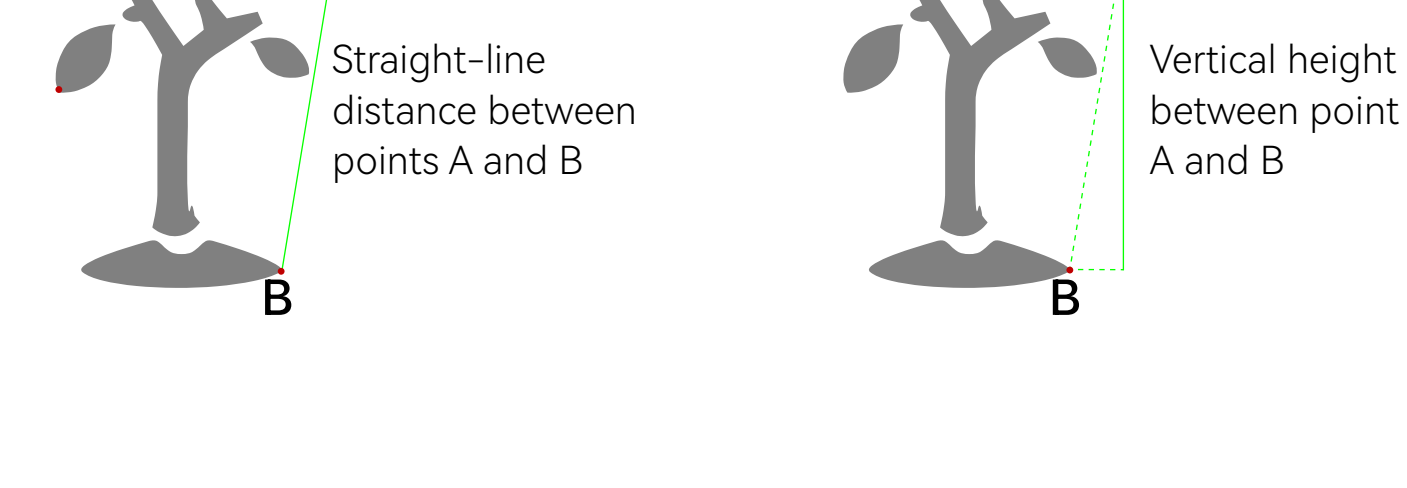
Point measurement refers to displaying the relative coordinates of the selected point (if using RTK coordinates, UTM coordinates are displayed).

Line measurement refers to measuring the distance between two points (at least two points).

Height measurement refers to the vertical height between two points.

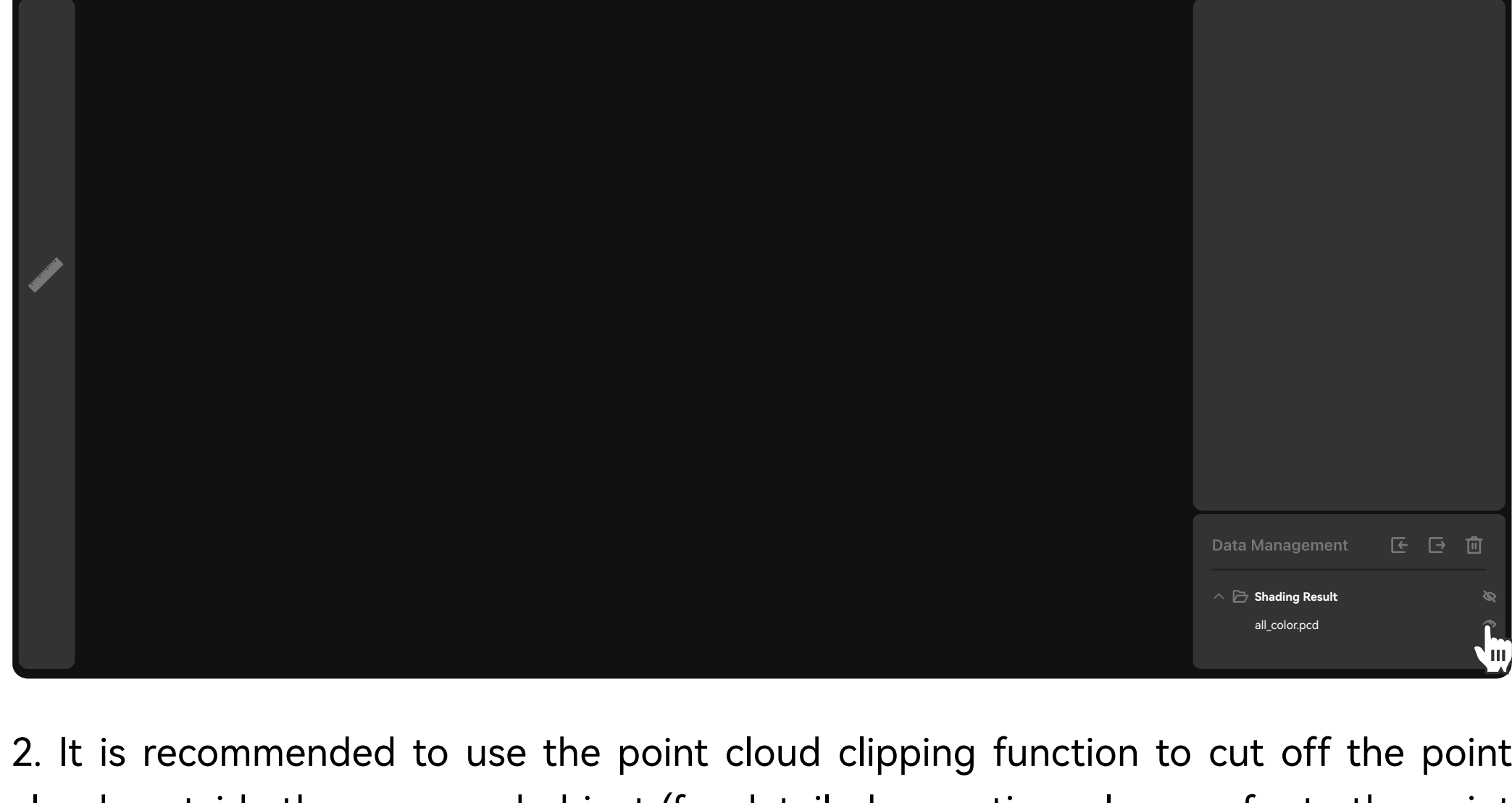
Volume measurement refers to selecting a point cloud and automatically calculating the volume of the selected point cloud.

*The specific distinctions between linear measurement and height measurement are explained as follows:

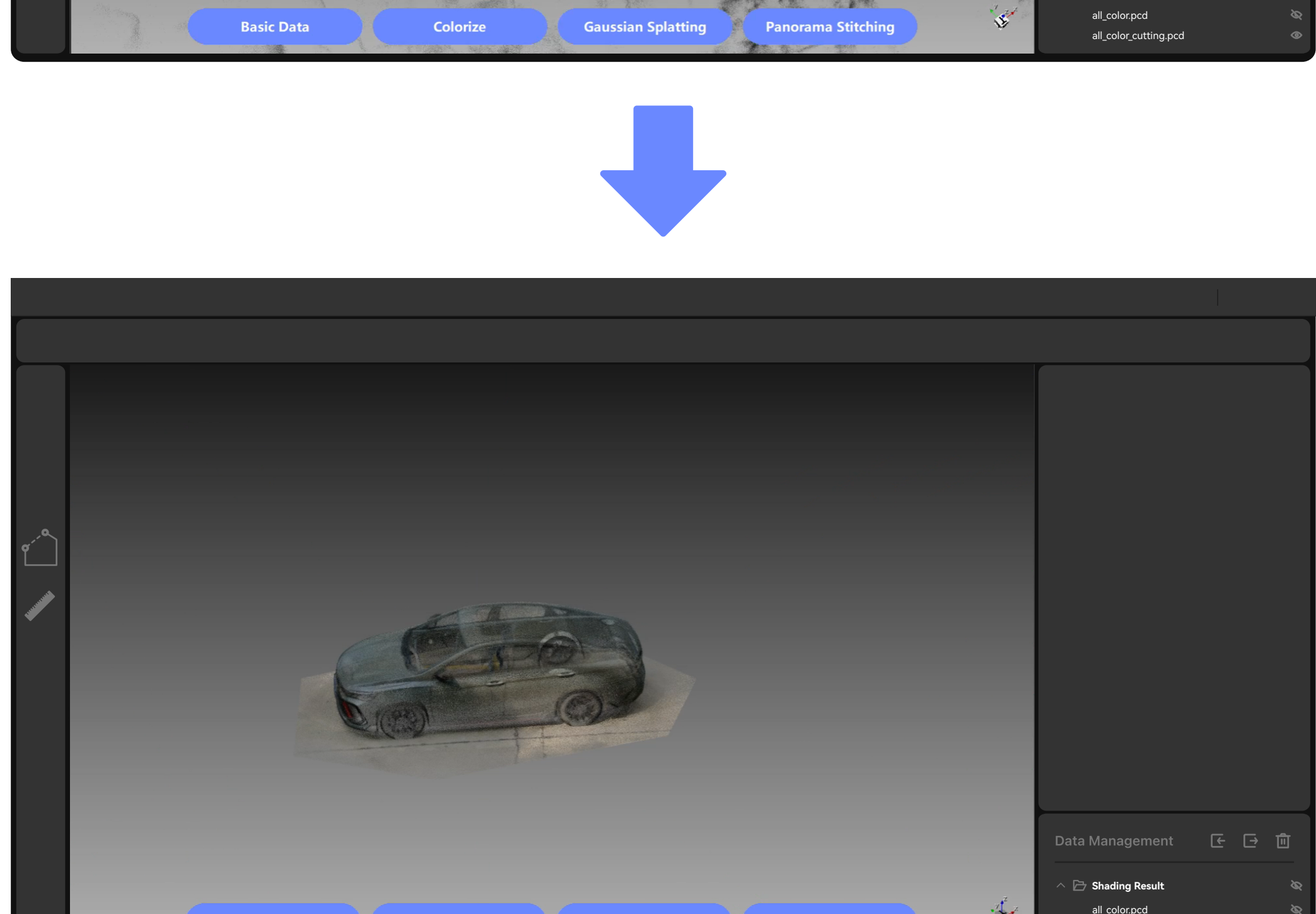


Prerequisites

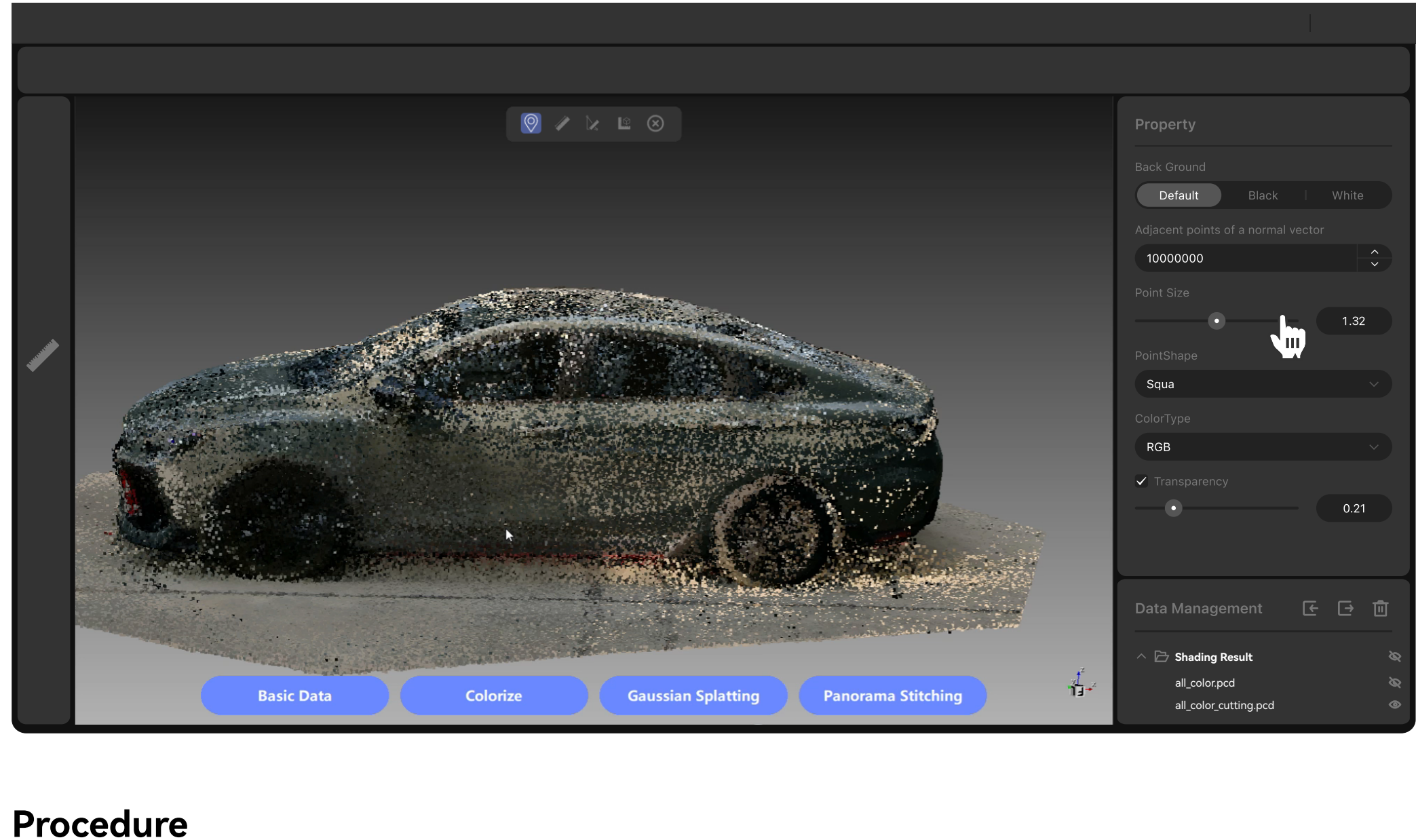
1. First, open the colored point cloud data, do not display other data.



2. It is recommended to use the point cloud clipping function to cut off the point clouds outside the measured object (for detailed operation, please refer to the point cloud clipping section).

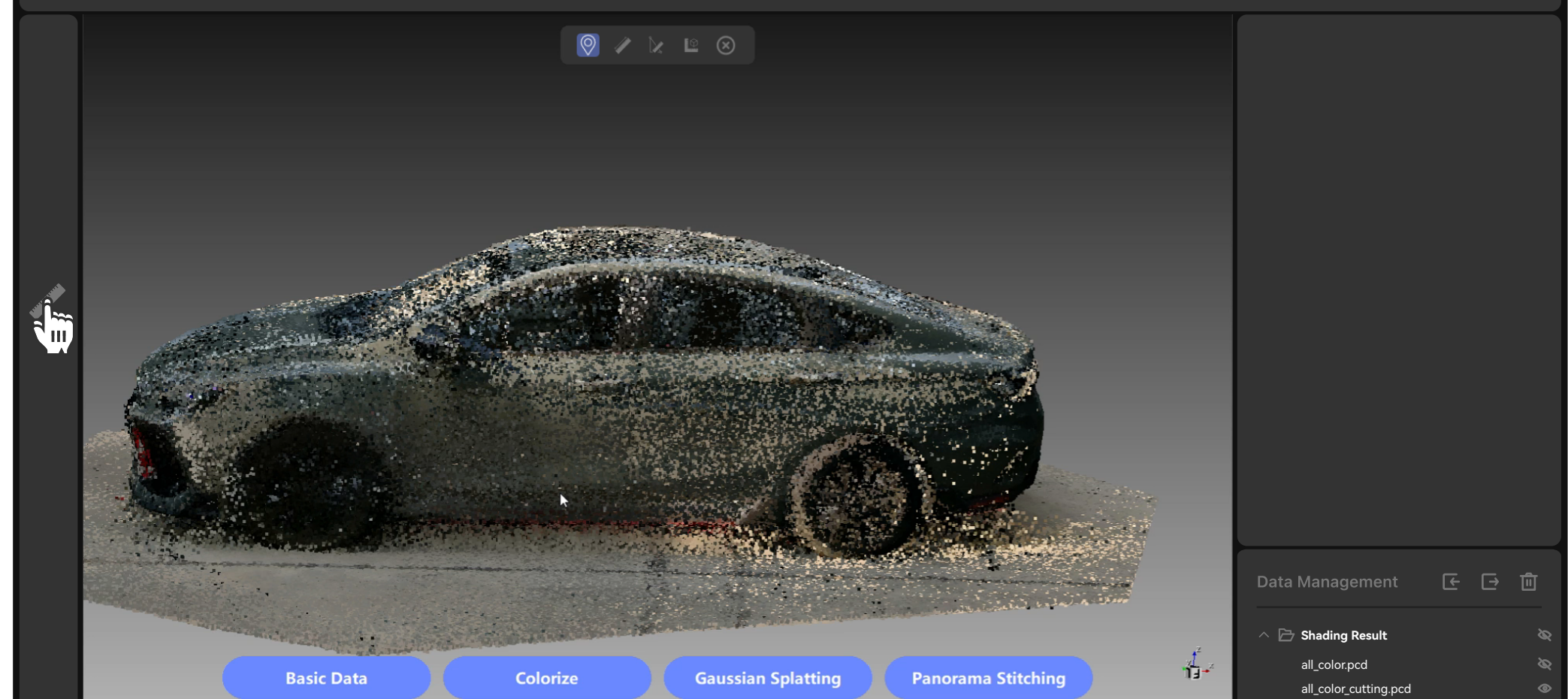


3. According to the scanning scene, the point cloud size in the attribute bar can be appropriately increased to facilitate point selection (to avoid incorrect selections or selecting points behind the point cloud).



Procedure

① Click  under the point cloud coloring data to enter the operation interface (using coloring data as an example)



② Choose the measurement method according to actual needs.

Point measurement: left-click the mouse to obtain the point's coordinates (RTK data measurement gives RTK coordinates, non-RTK data measurement gives relative coordinates)

Linear Measurement: Left-click to add points (at least 2 points), automatically generating the linear distance between the two corresponding points.

Height Measurement: Left-click the mouse to add 2 points, and the vertical height between the two points will be calculated automatically.

Volume measurement: Hold down the Ctrl key and drag the left mouse button to lasso select, automatically generating the point cloud volume of the selected area.

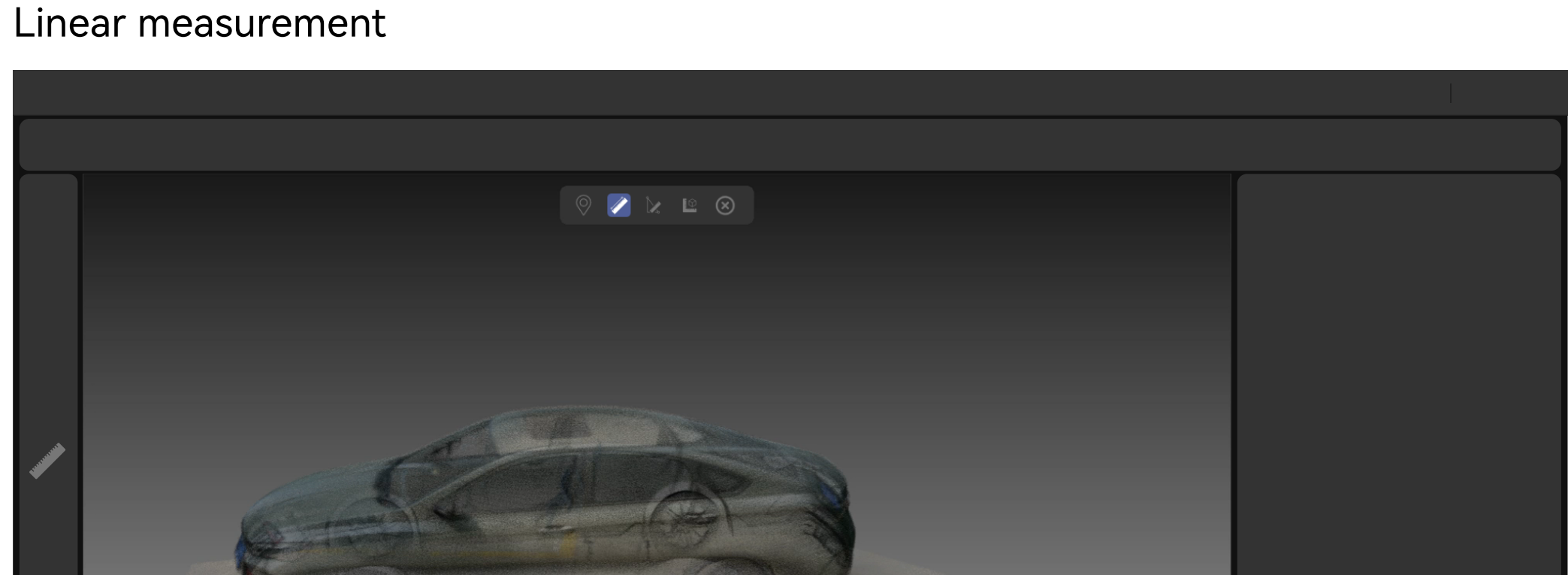
Clear: Clear all current measurement operations



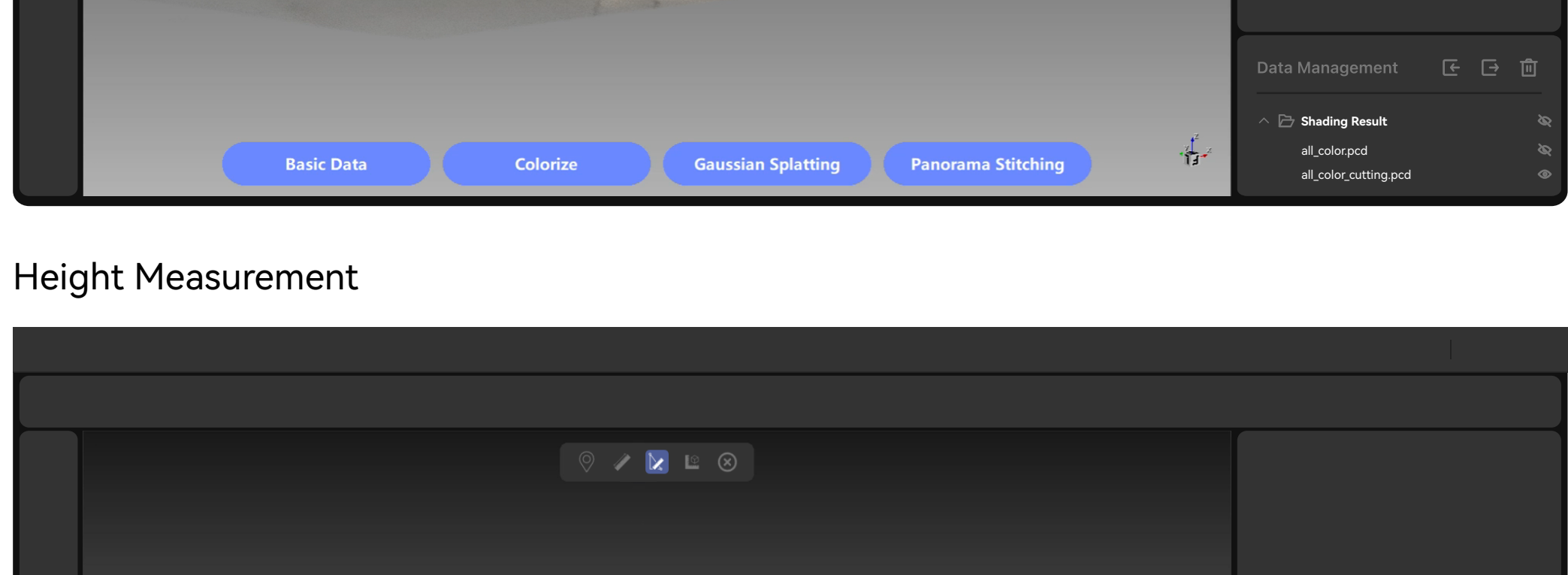
Point measurement



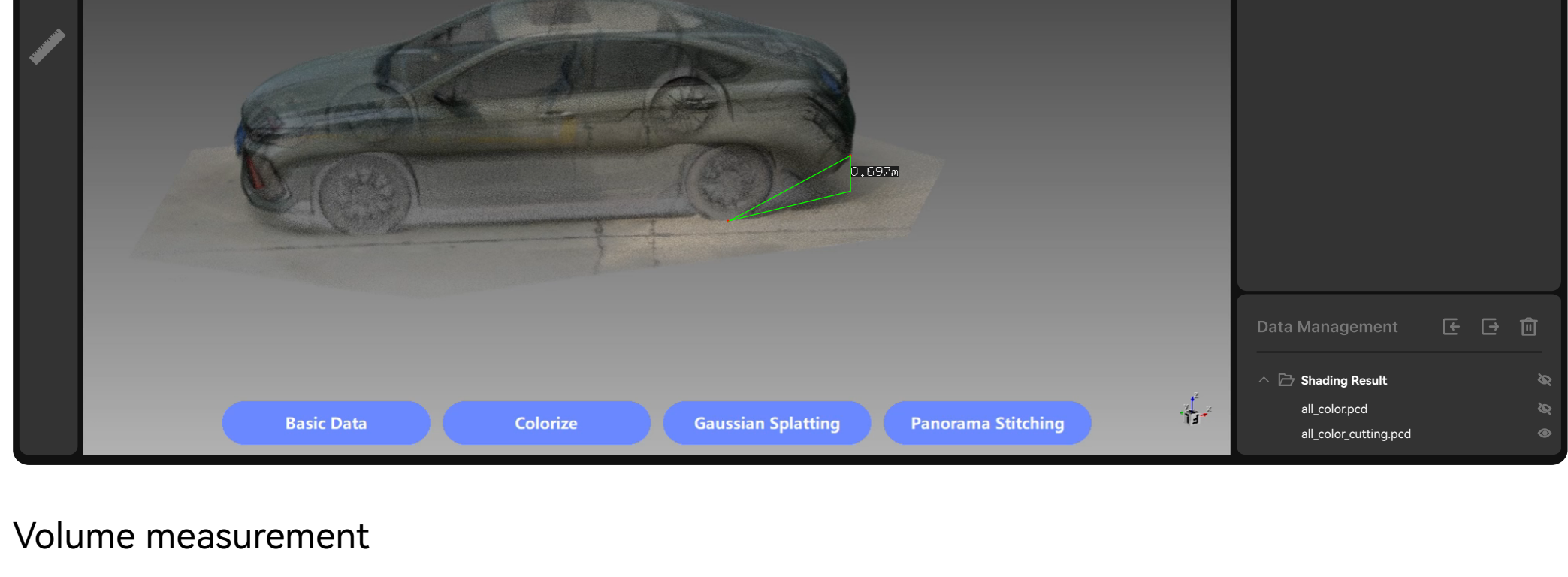
Linear measurement



Height Measurement



Volume measurement

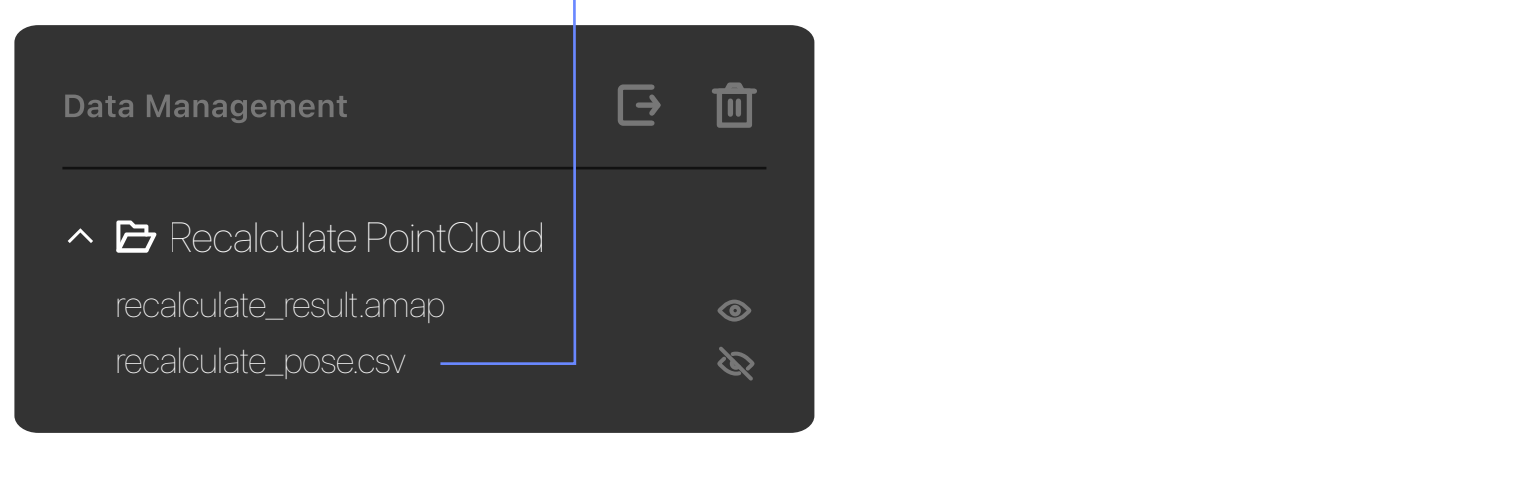


Start-to-end loop closure

Obtain more accurate data by verifying the single-frame point cloud data at the start and end points of the same location. Before performing this operation, it is necessary to perform data calculation to obtain the trajectory and route of the shooting process.

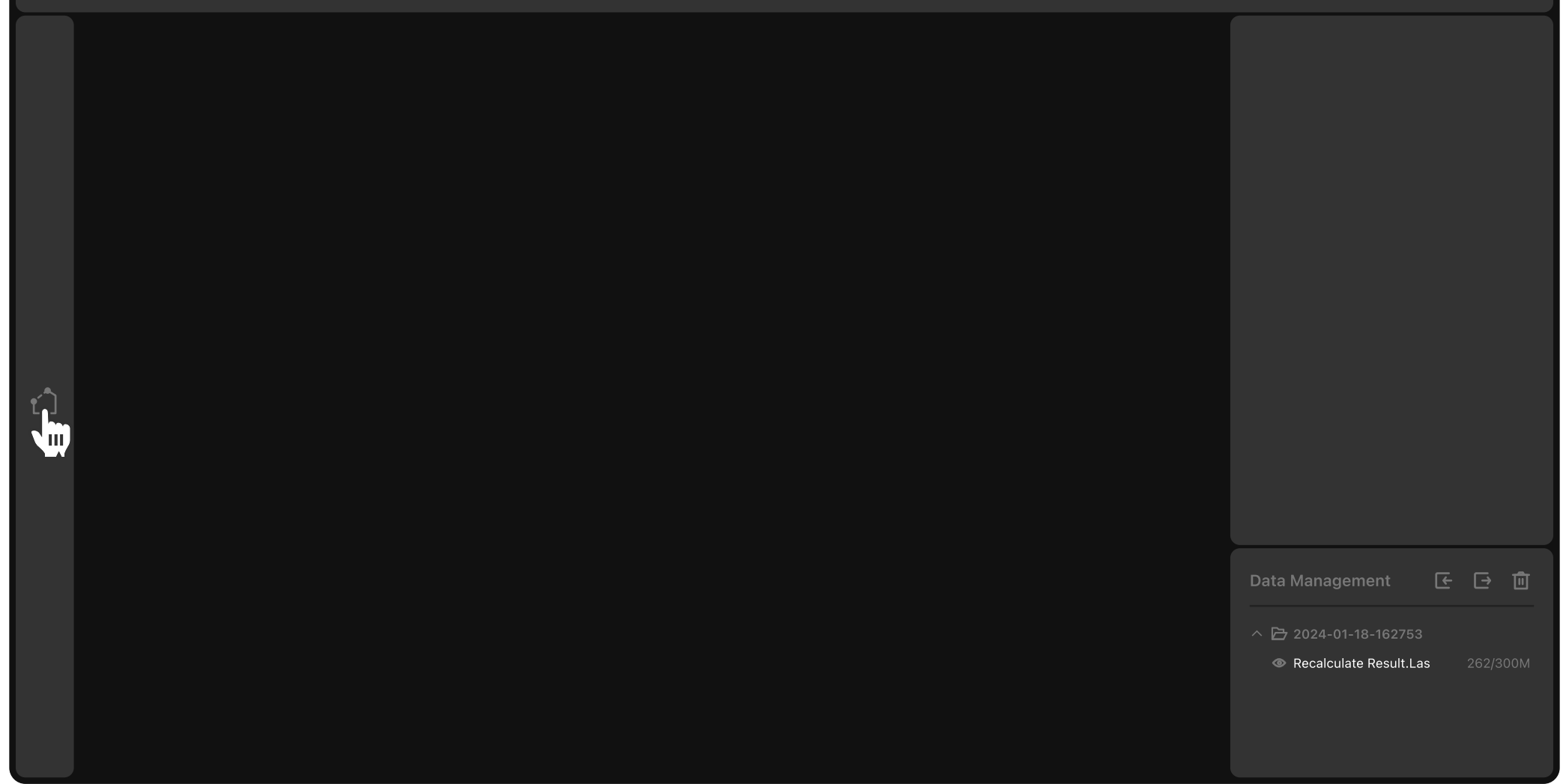
Prerequisites

It is necessary to perform data calculation to obtain the trajectory route file of the shooting

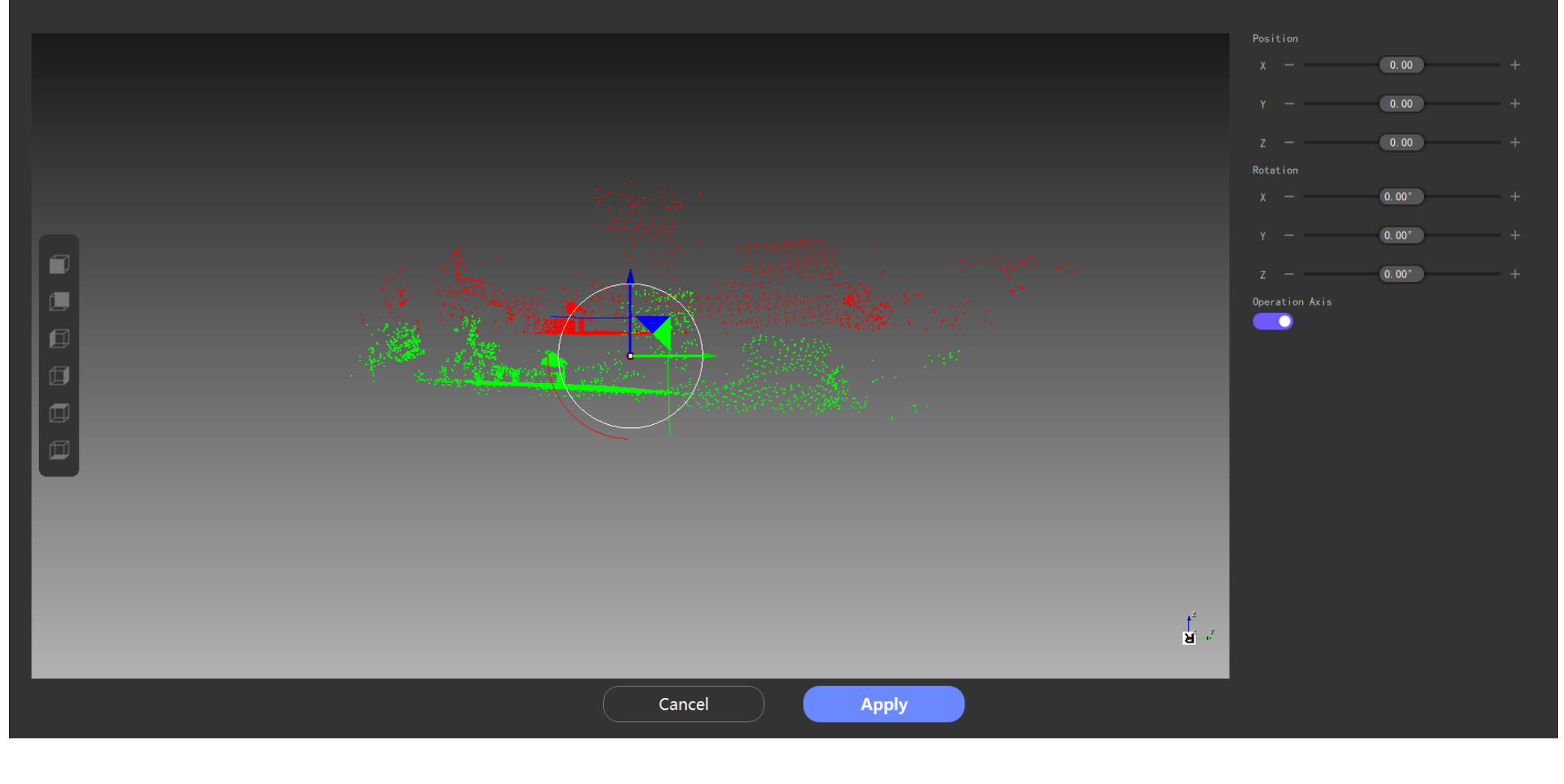
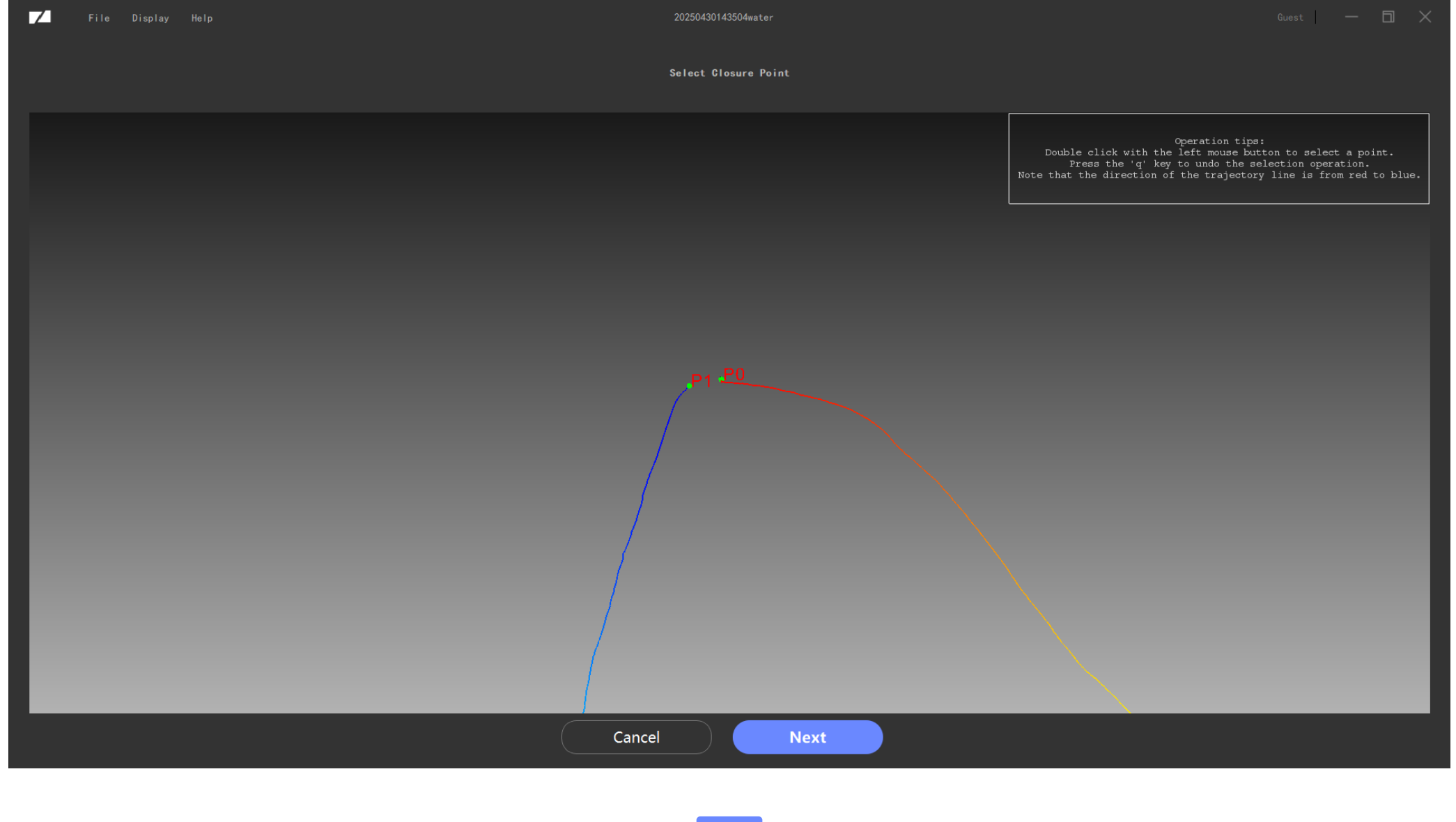
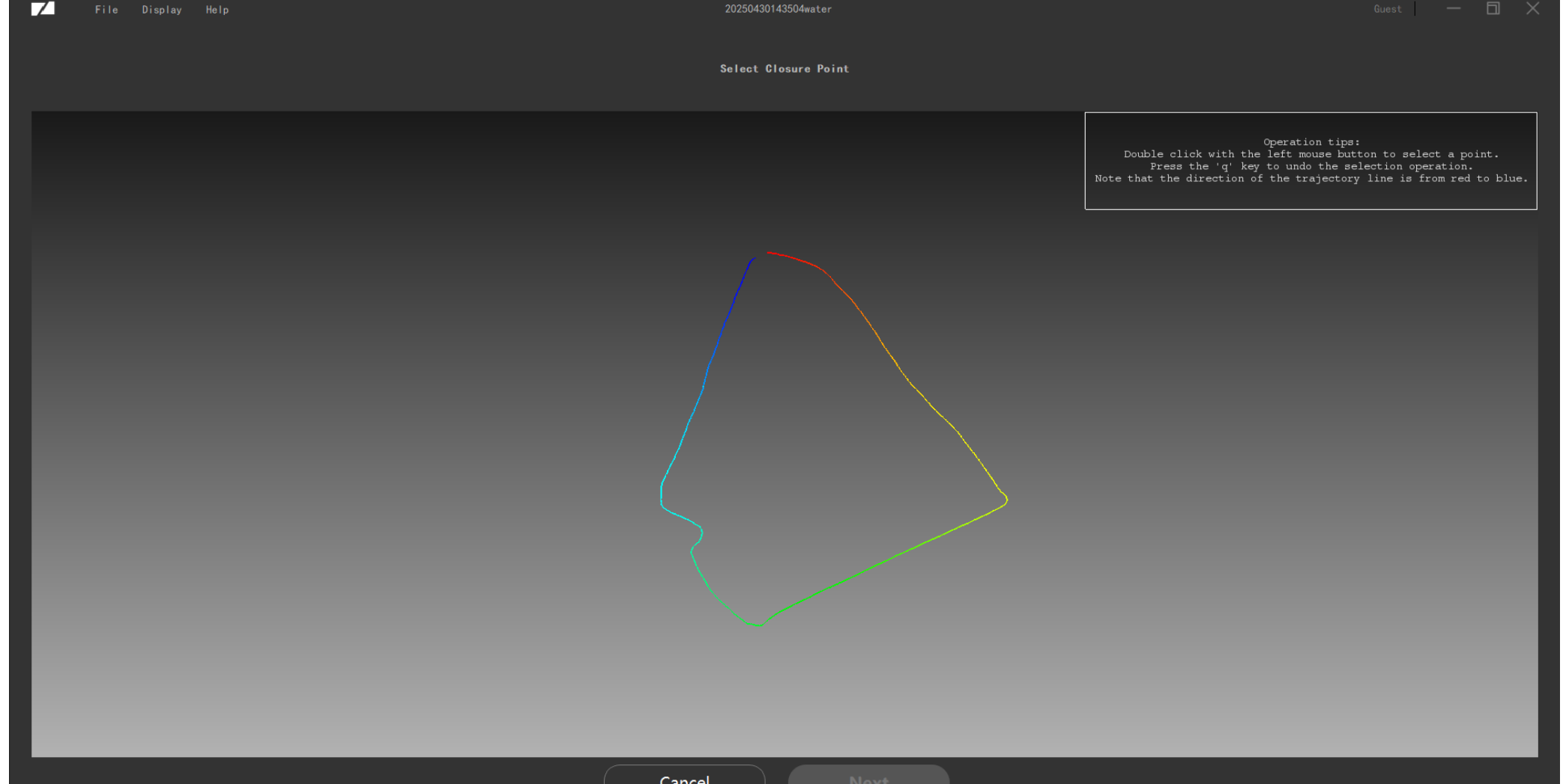


Procedure

① Click under filtering, thinning, or point cloud coloring data to enter the operation interface (take coloring data as an example) .

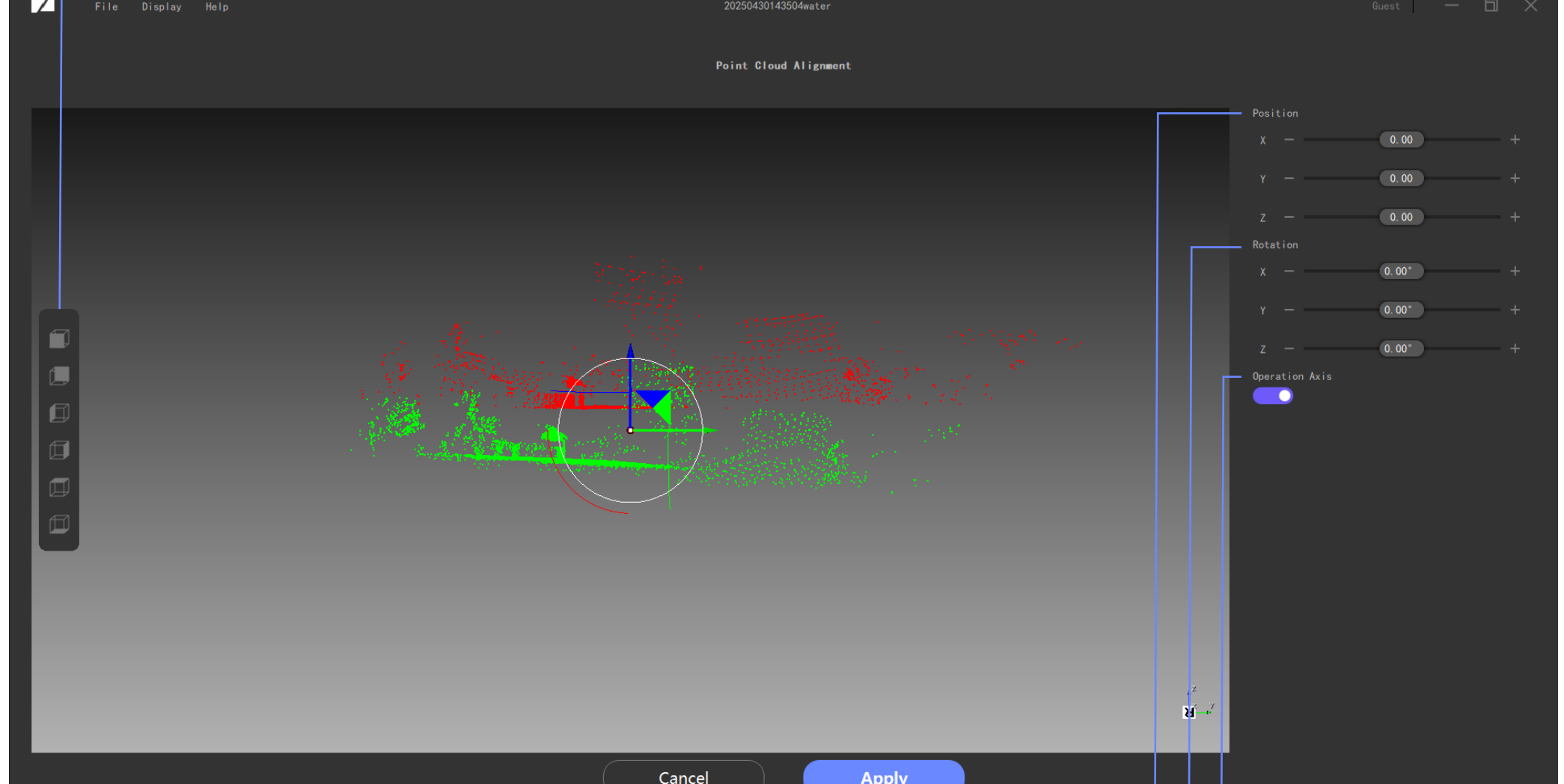


② Double-click the selected start and end points (click "Q" to unselect the points), and click "Next" to get the point cloud data of a single frame of the start and end points.



③ You can adjust the position of the green point cloud data so that the point cloud data of the two points are roughly consistent.

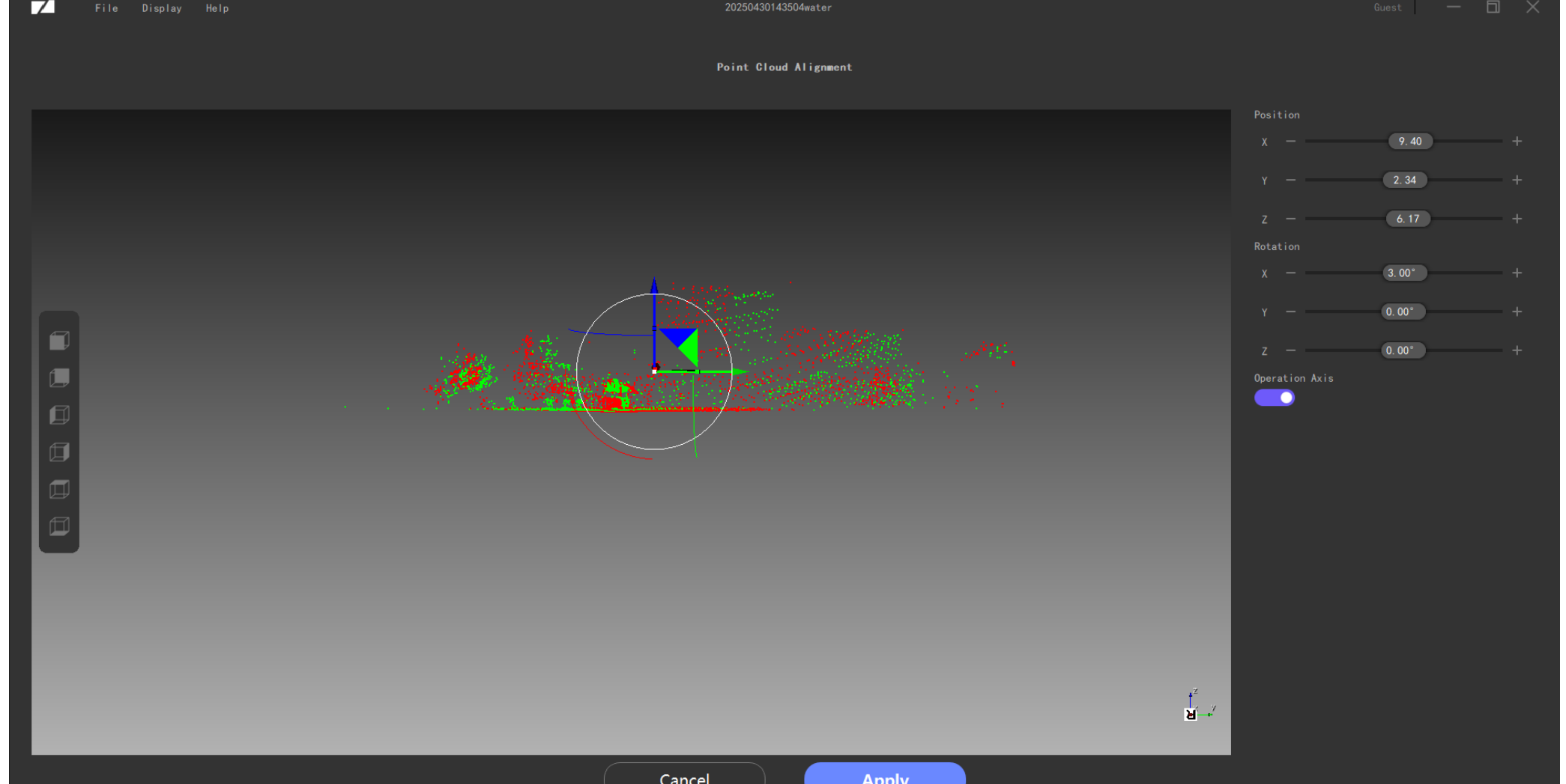
Six views, adjust the current point cloud perspective position. It is easier to see the agreement between the current two frames of the point cloud by trying to see the top view.



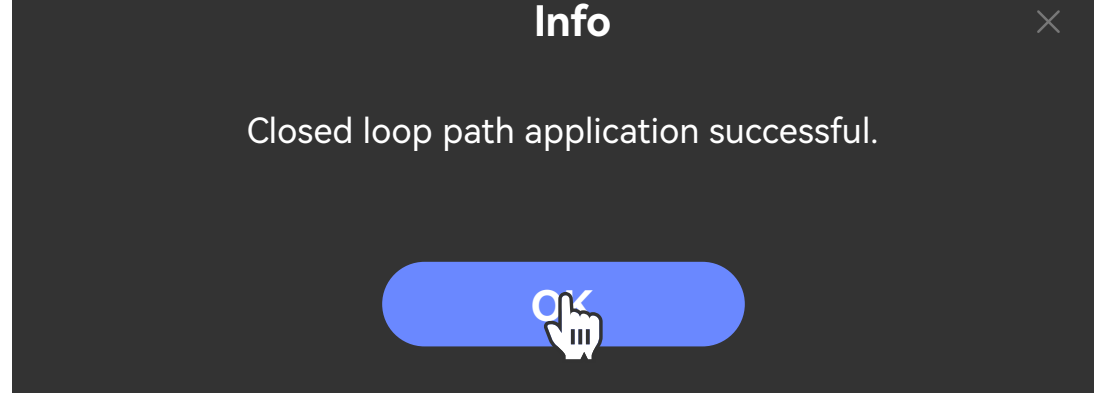
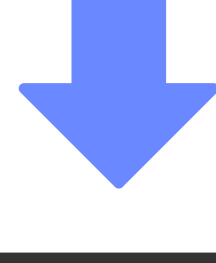
Position change by translating the X, Y, and Z axes

Position change by rotation angle of X, Y, and Z axes

When enabled, a circular coordinate system with X, Y, and Z axes appears in the point cloud image, and the position can be changed by directly dragging the coordinate system



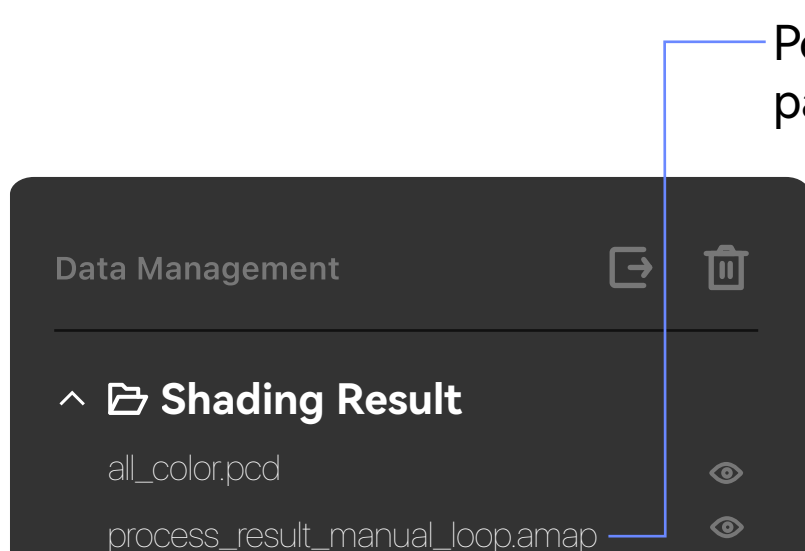
④ Click "Apply" to generate the data after the point cloud is closed.



⑤ Click "Cancel" to exit the path closure screen

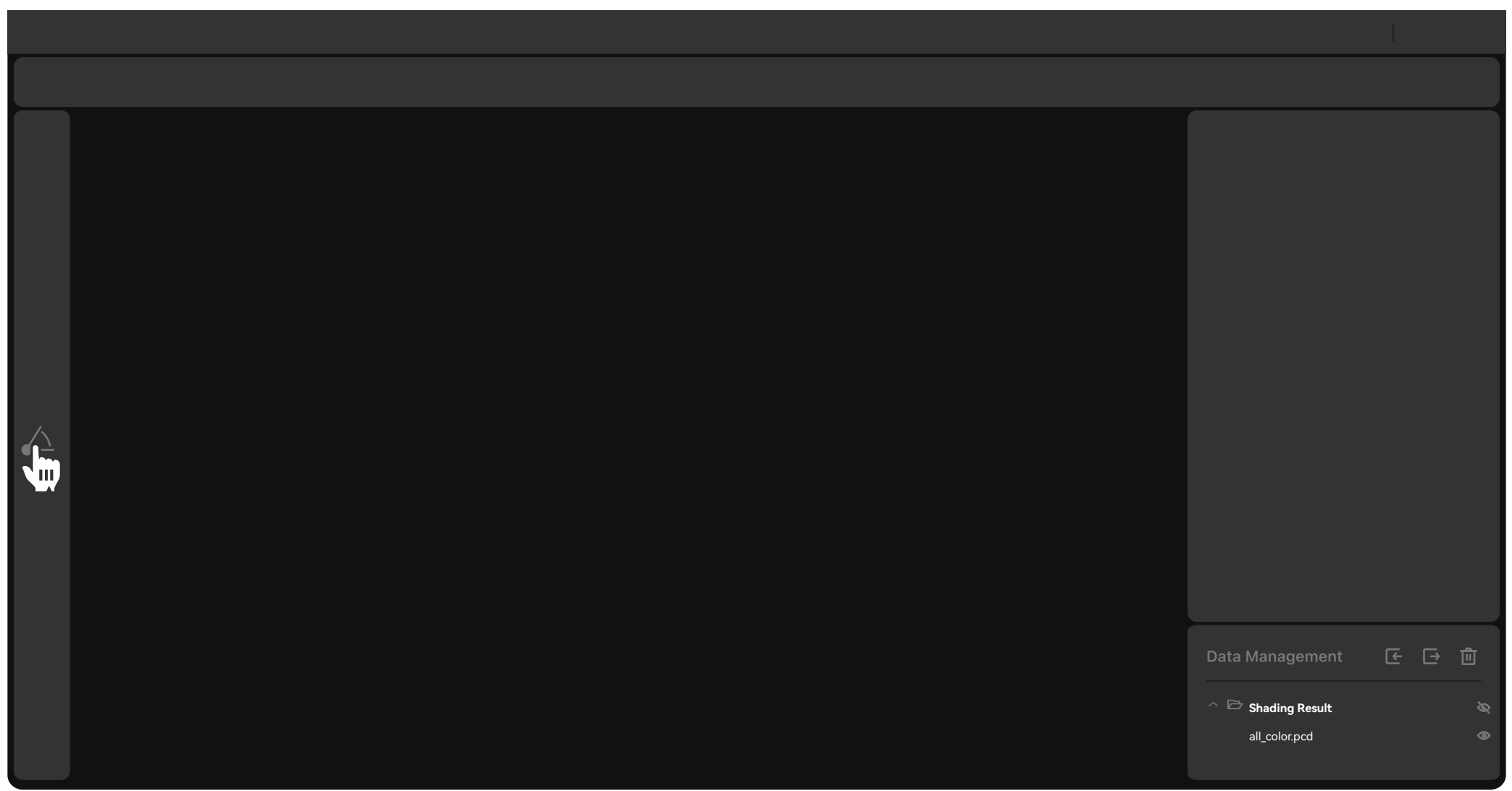


⑥ The processed data can be viewed in the data list:



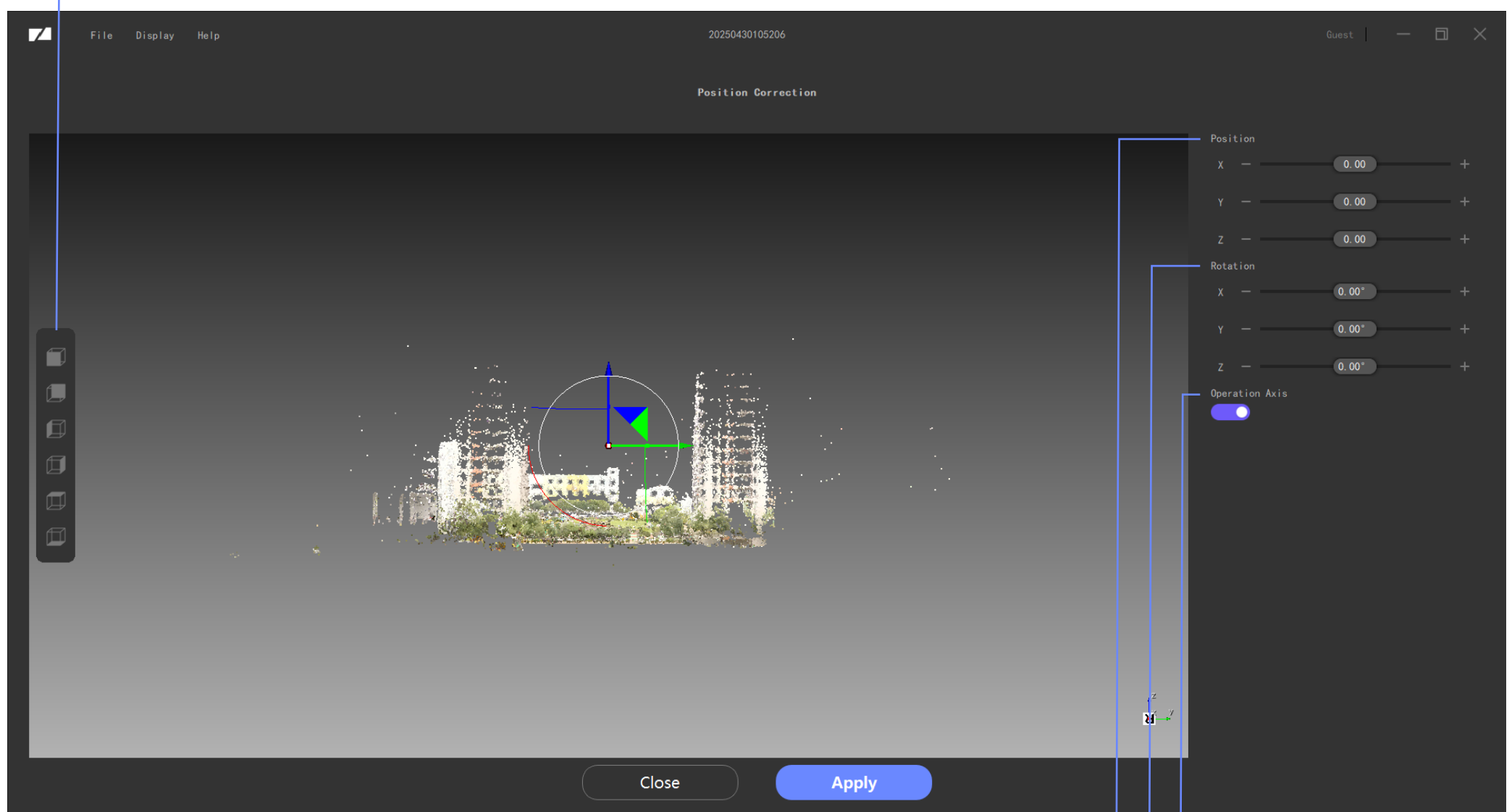
Point cloud correction

① Click ↶ to enter the point cloud angle correction interface.



② Adjust the data location according to the requirements.

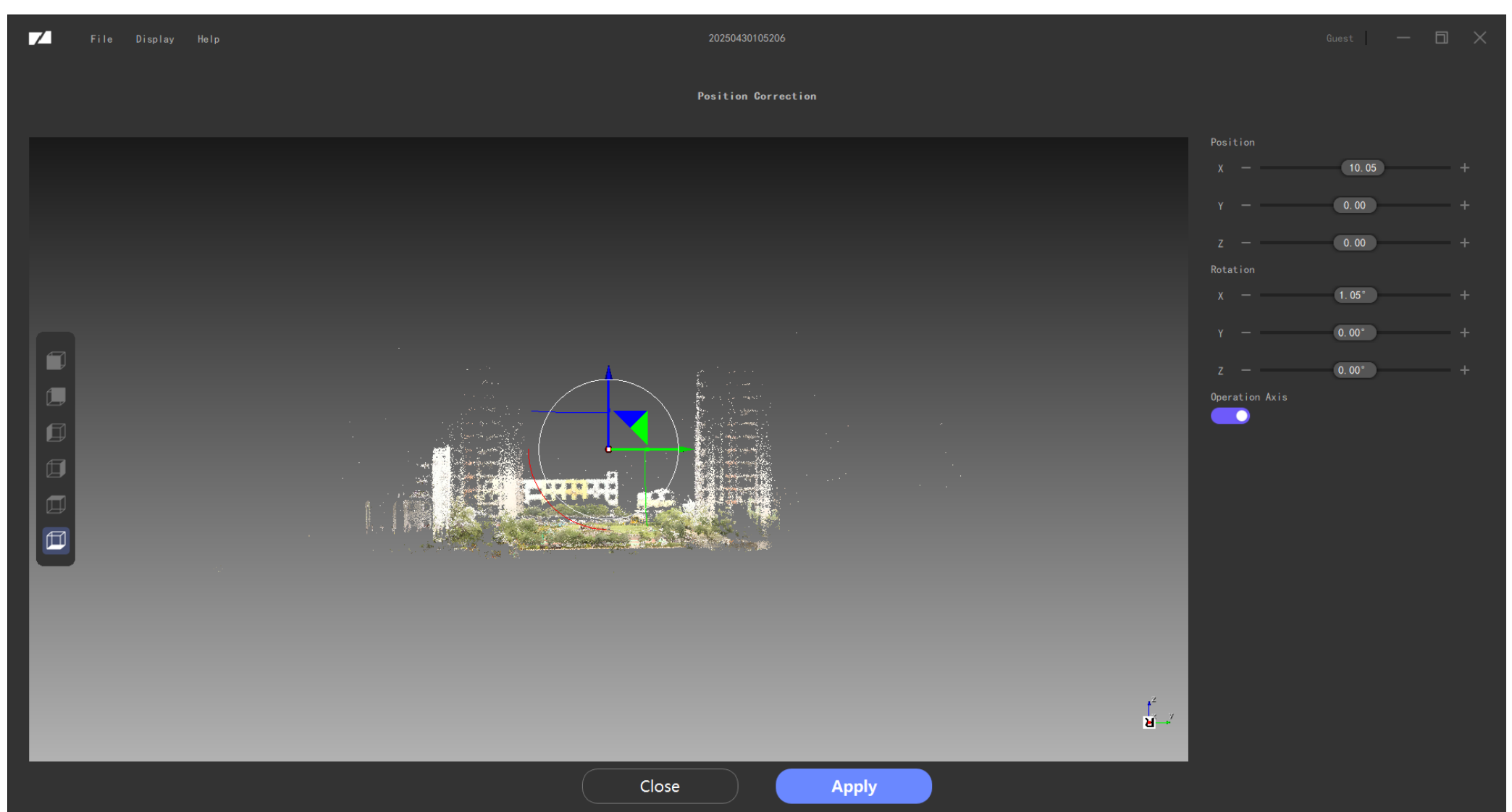
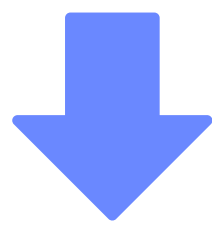
Six views, adjust the current point cloud perspective position.



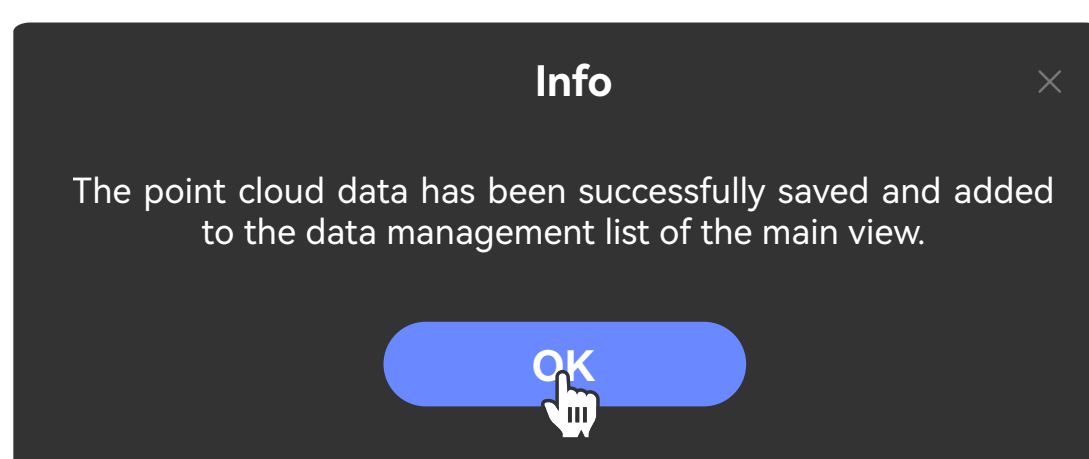
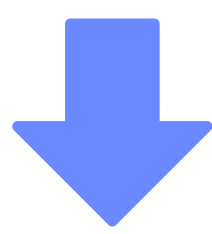
Position change by translating the X, Y, and Z axes

Position change by rotation angle of X, Y, and Z axes

When enabled, a circular coordinate system with X, Y, and Z axes appears in the point cloud image, and the position can be changed by directly dragging the coordinate system



③ Click 'Apply' to generate the modified data.

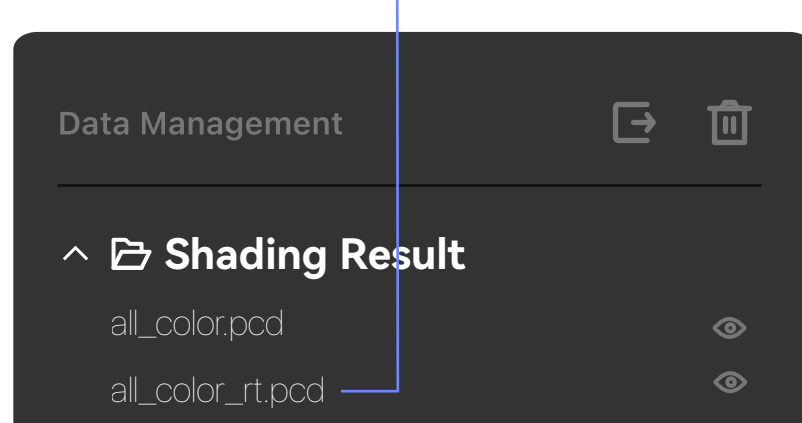


④ Click 'Close' to exit the point cloud correction interface.



⑤ The processed data can be viewed in the data list.

Point cloud data after angle correction



RTK

Three methods are supported for obtaining world coordinates:

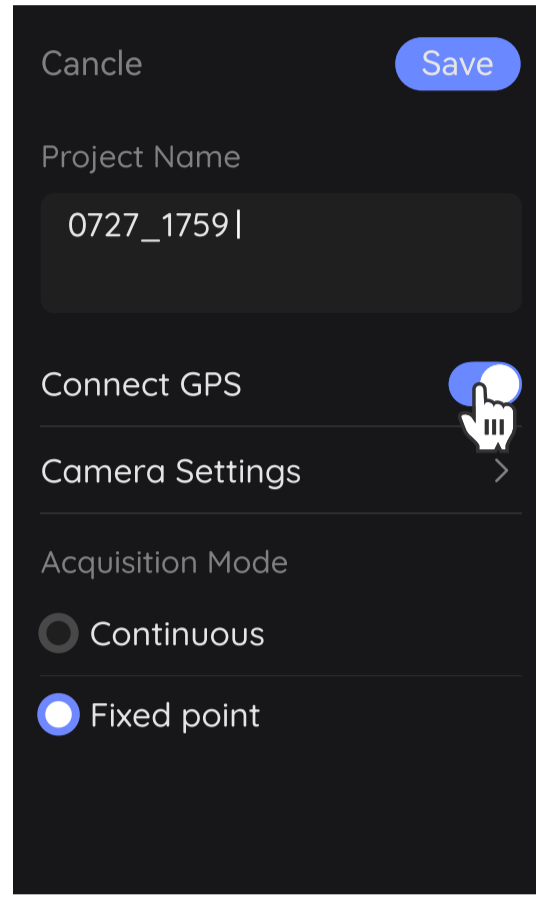
1. Positioning using only the built-in GPS.
2. Positioning using base station .25o observation data files (Observation Data) and .25p parameter files or position data (Parameters/Position Data). (File names .25o and .25p are for reference only; use the actual file names in your application.)
3. High-precision positioning via RTK differential data services.

Both base station and RTK differential data are only supported on devices with a built-in RTK chip and an external GPS connection.

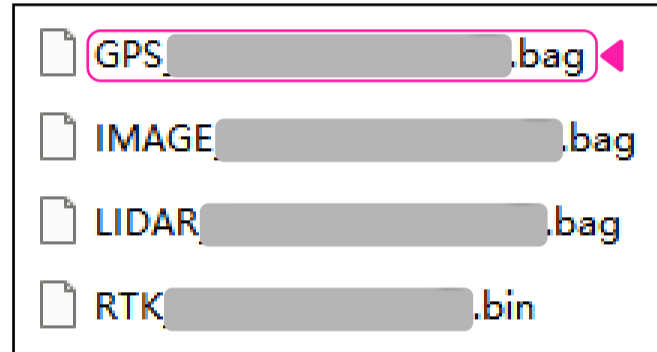
Built-in GPS

Scan requirements

1. GPS needs to be turned on when scanning



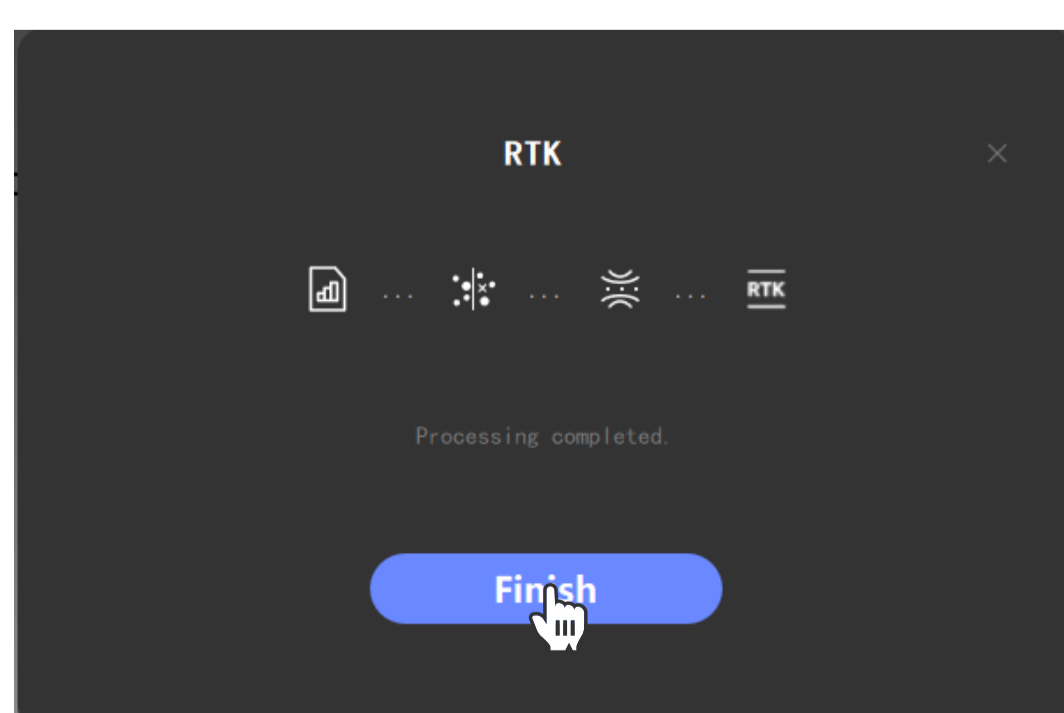
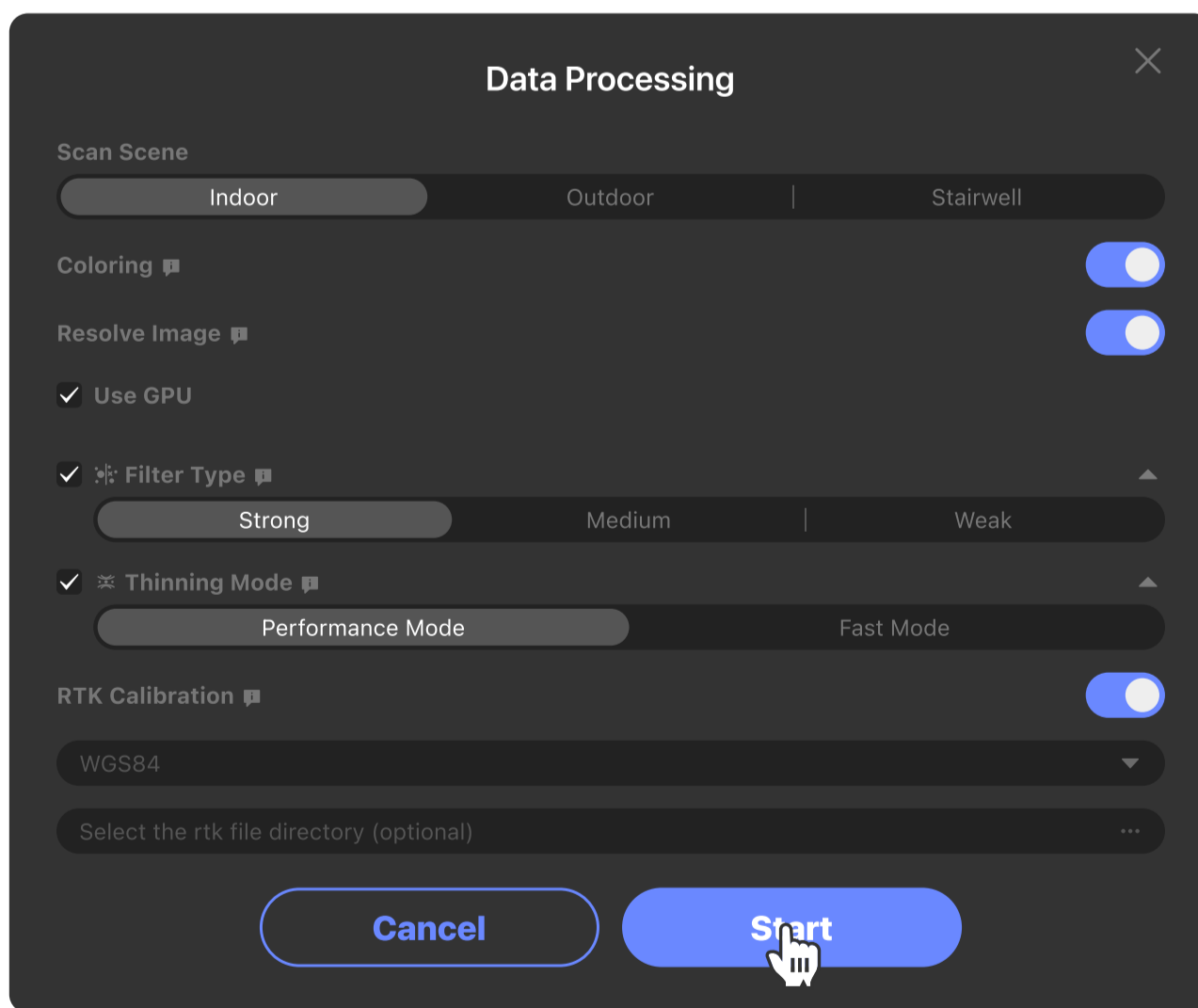
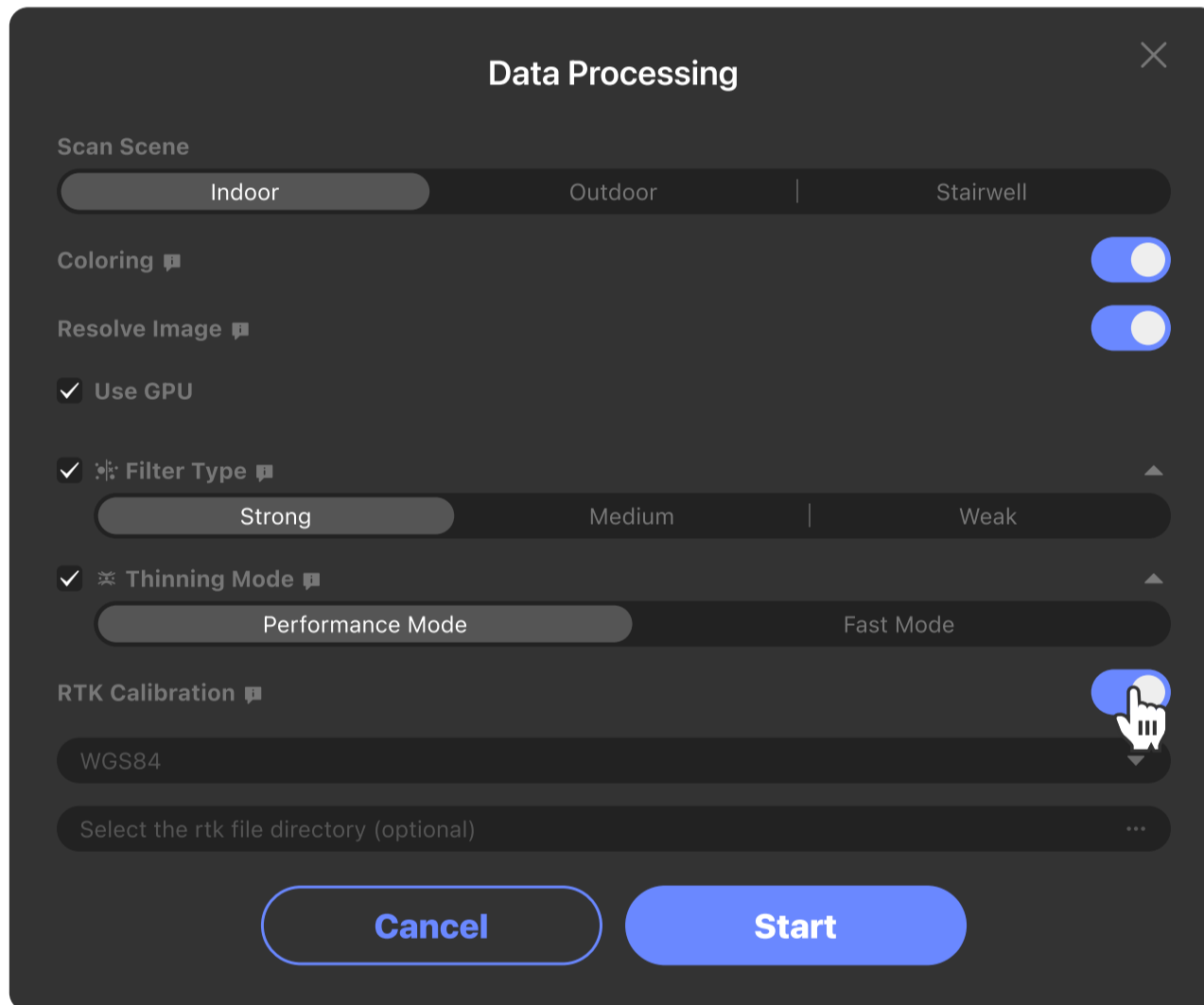
2. The exported model has the data with the name of GPS_XXXXXX.bag (if GPS is enabled during scanning, the exported scan data file will automatically generate the data with the name of GPS_XXXXXX.bag)



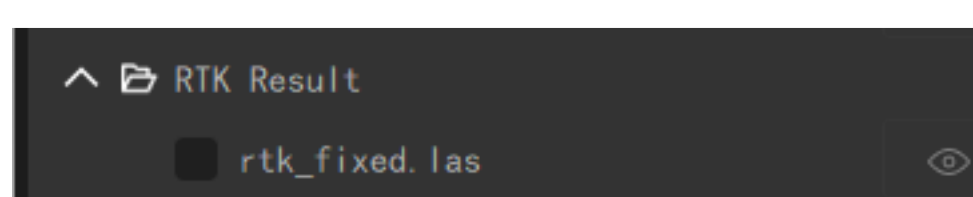
Procedure

After importing the scan data with the name of GPS_XXXXXX.bag, you can process it directly if you select RTK configuration, as follows:

- ① Check the RTK configuration during data processing.



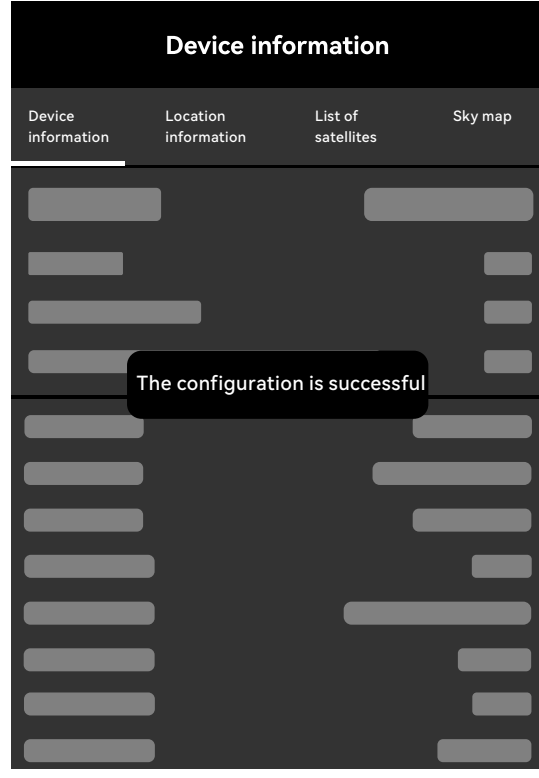
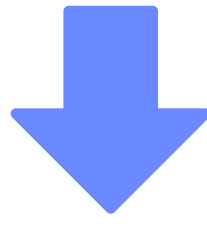
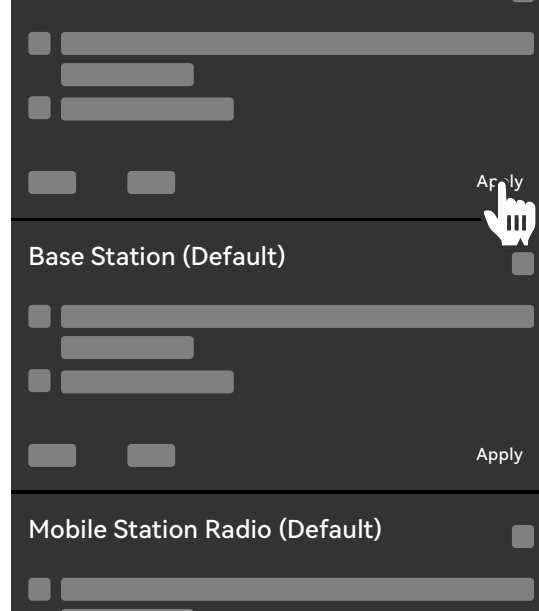
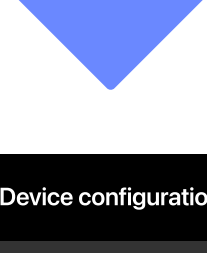
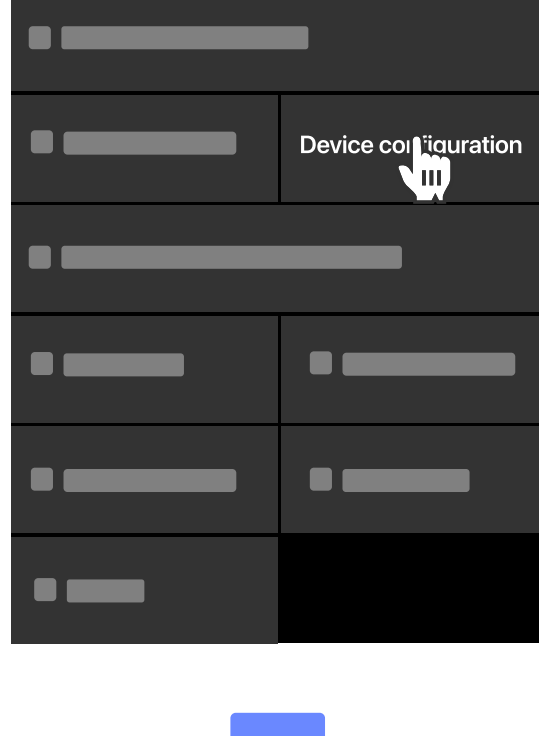
- ② RTK data is generated in the data list



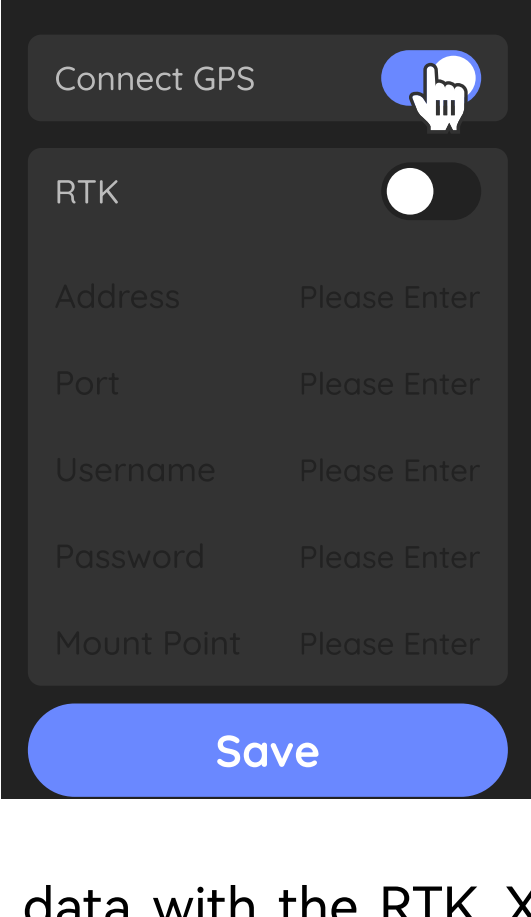
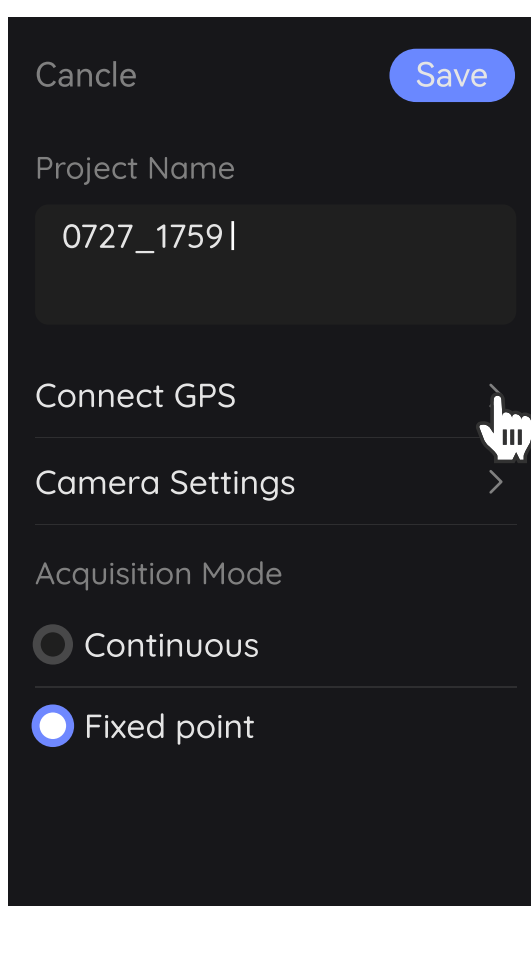
Base station

Scan requirements

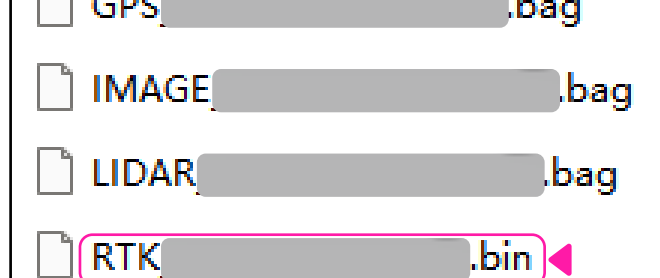
1. The scanning device needs to be a device with RTK accessories (including built-in chip and external GPS)
2. Turn on the base station before scanning
 - a. Turn on the base station host and keep it stationary
 - b. Connect the base station handbook with the host
 - c. Select a static station (you can refer to the following operations, different brands of equipment are different, for reference only)



3. GPS needs to be turned on when scanning



4. The exported model has the data with the RTK_XXXXXX.bin name (for specific RTK devices, if GPS is turned on during scanning, the exported scan data file will automatically generate data with RTK_XXXXXX.bin name)



Other requirements

Relevant files including the Observation Data file and the Parameters/Position Data file need to be obtained from the RTK base station.

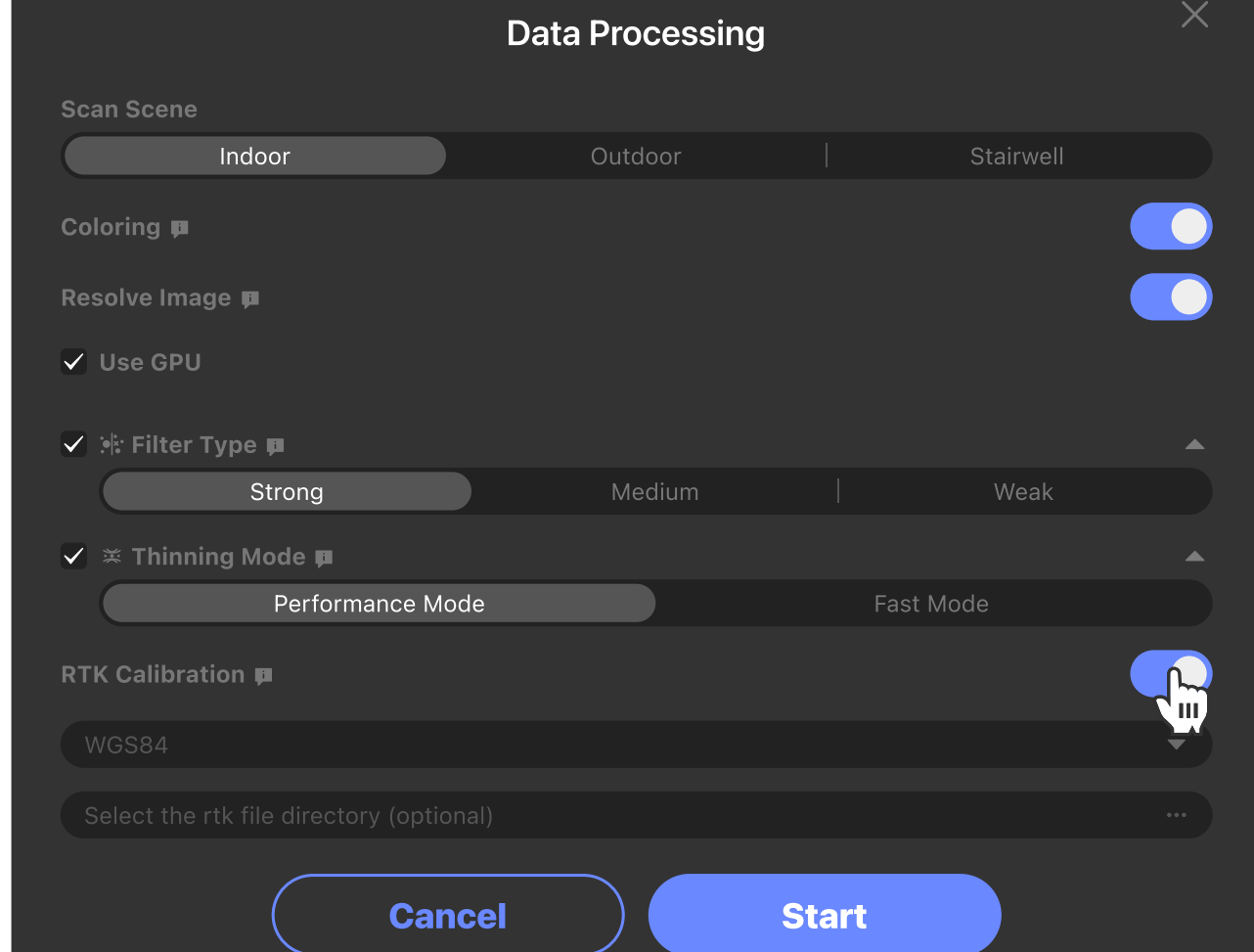
Naming conventions vary by year. For example, the observation data file for the year 2025 is named .25o, and the parameters/position data file is named .25p; for the year 2026, the files are named .26o and .26p.

(Connect the base station to a computer and export the files from the "Static Record Files". Procedures may vary slightly depending on the device model in use.)

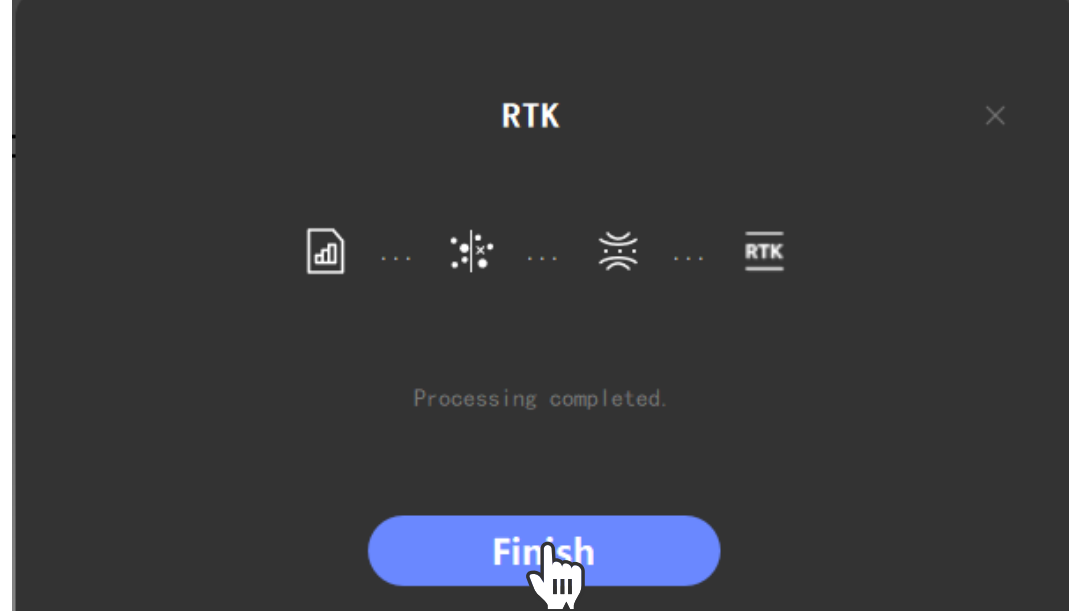
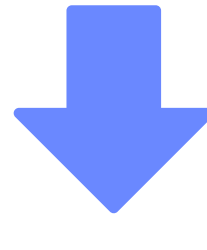
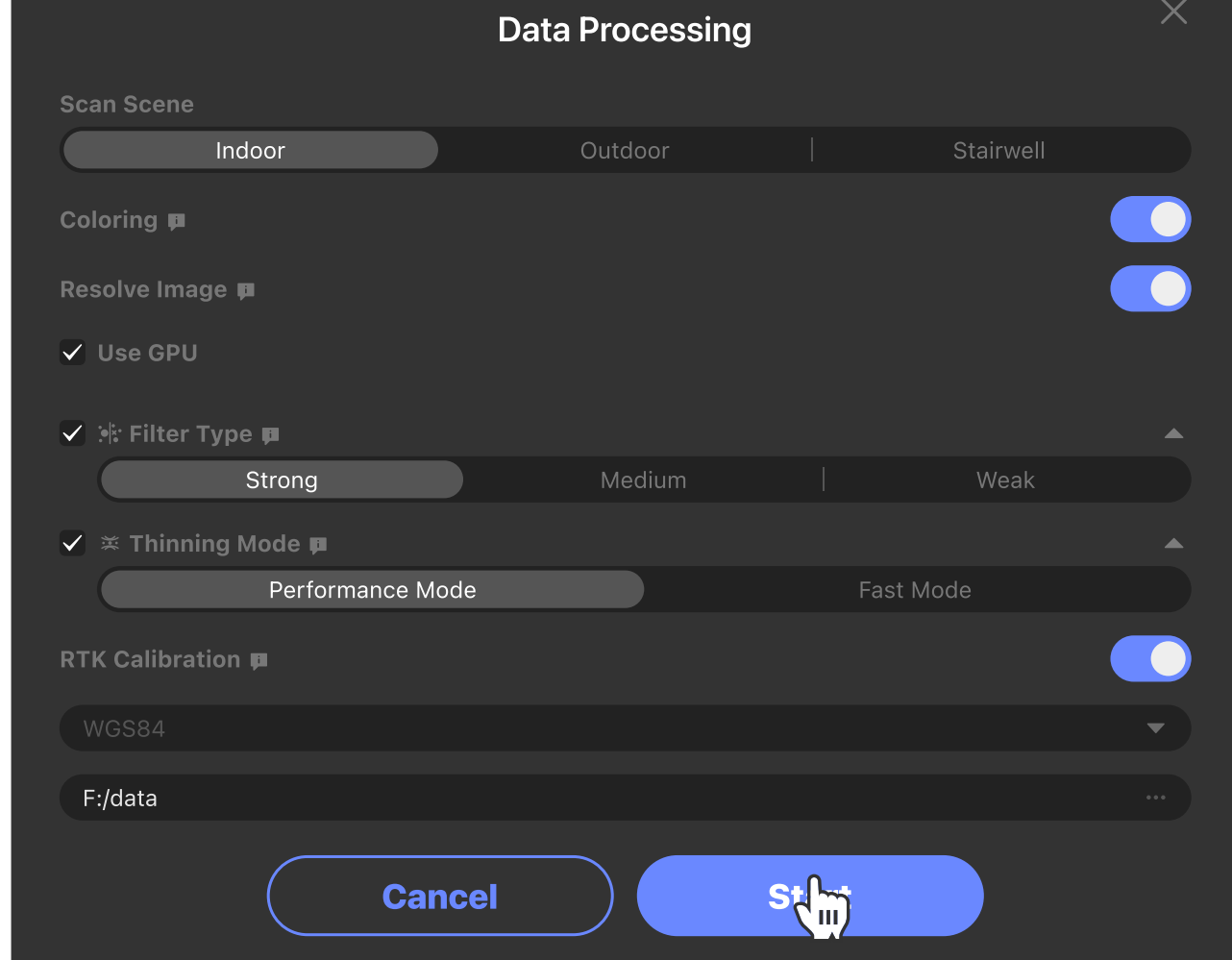
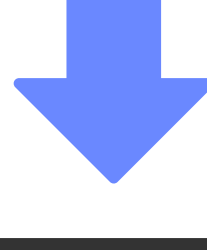
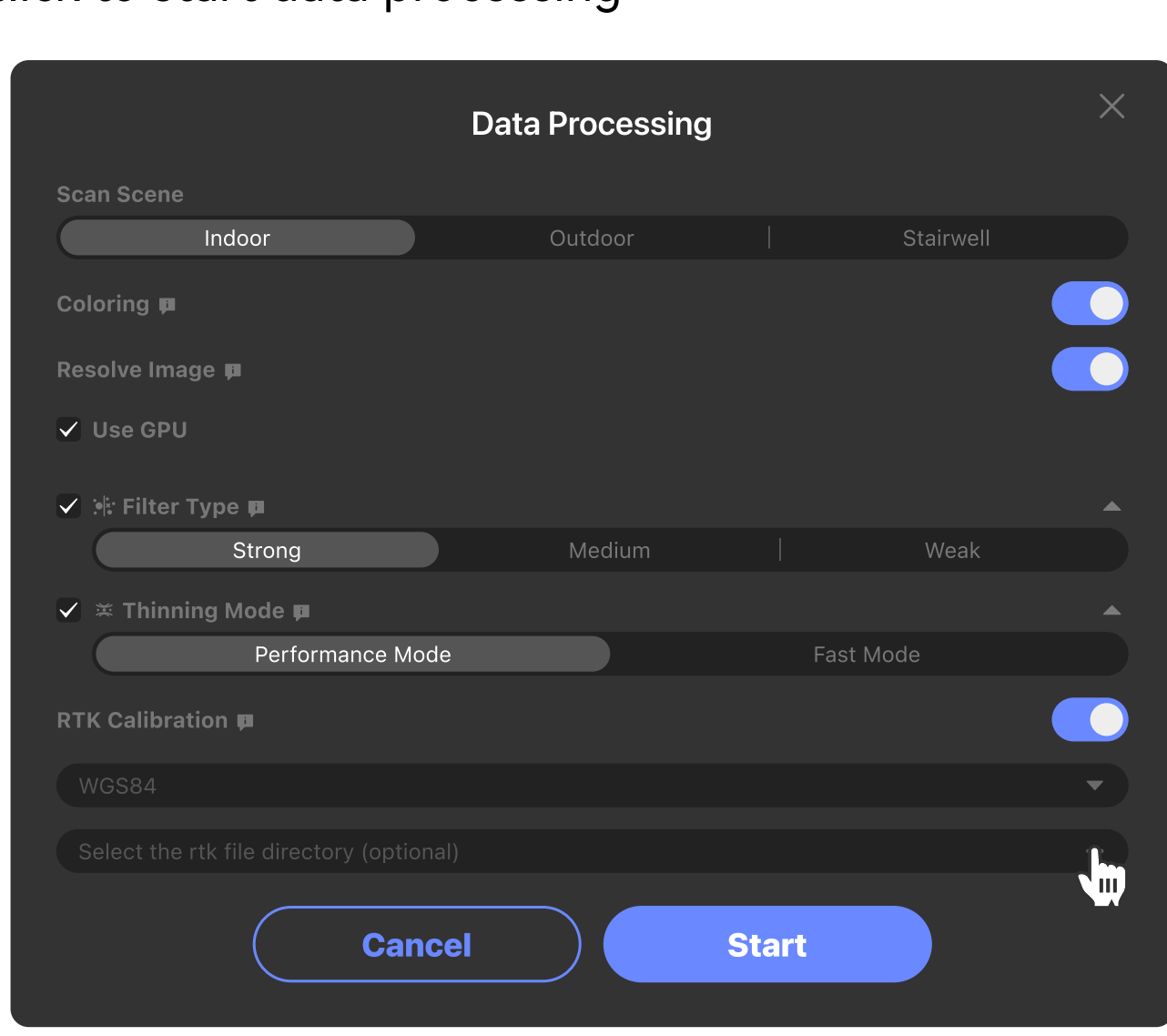
Procedure

After importing the scan data with the RTK_XXXXXX.bin name, if you select RTK Configuration, you can import the file path obtained from the RTK base station to perform RTK-related processing, as follows:

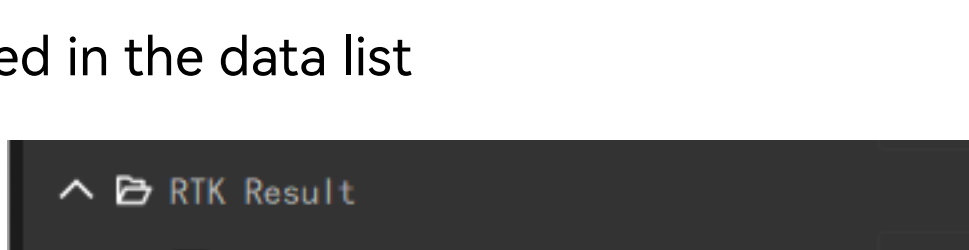
- ① Check the RTK configuration during data processing.



- ② Select the folder corresponding to the local RTK base station (containing .25o and .25p data) and click to start data processing



- ③ RTK data is generated in the data list

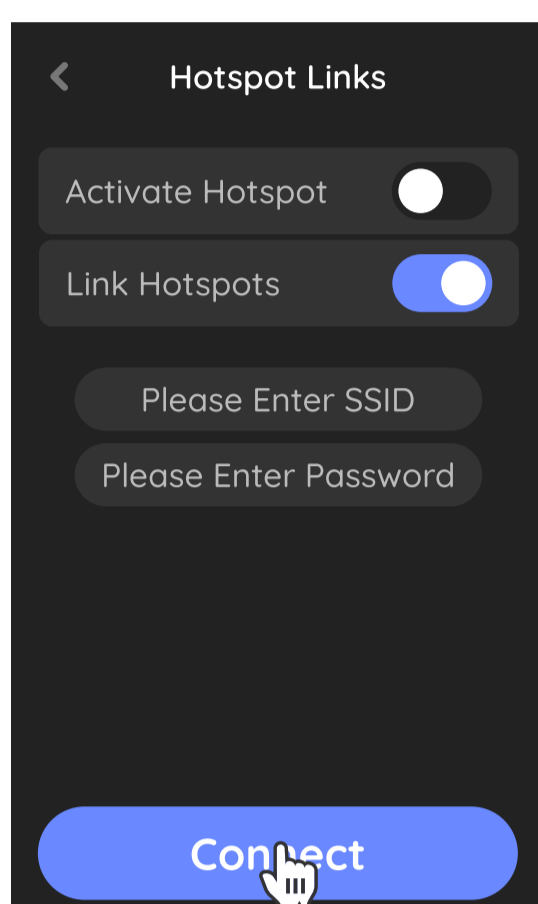
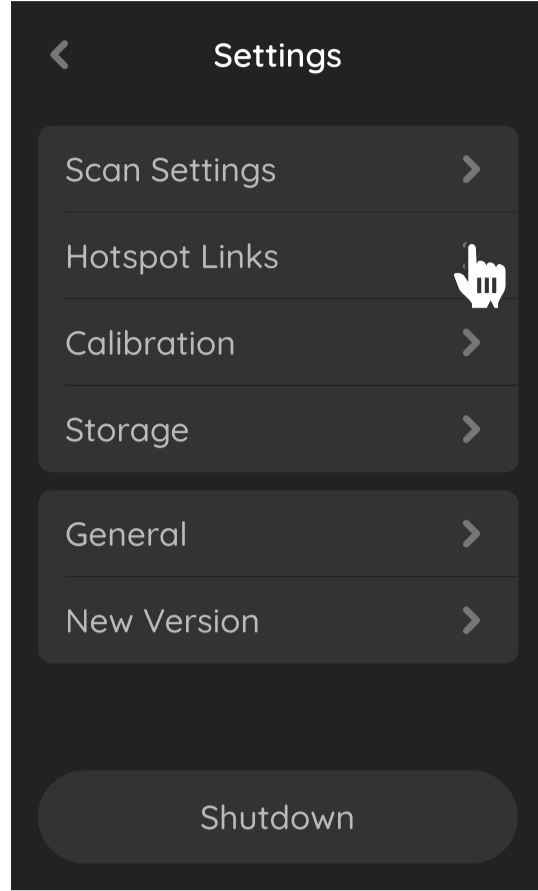


RTK differential service

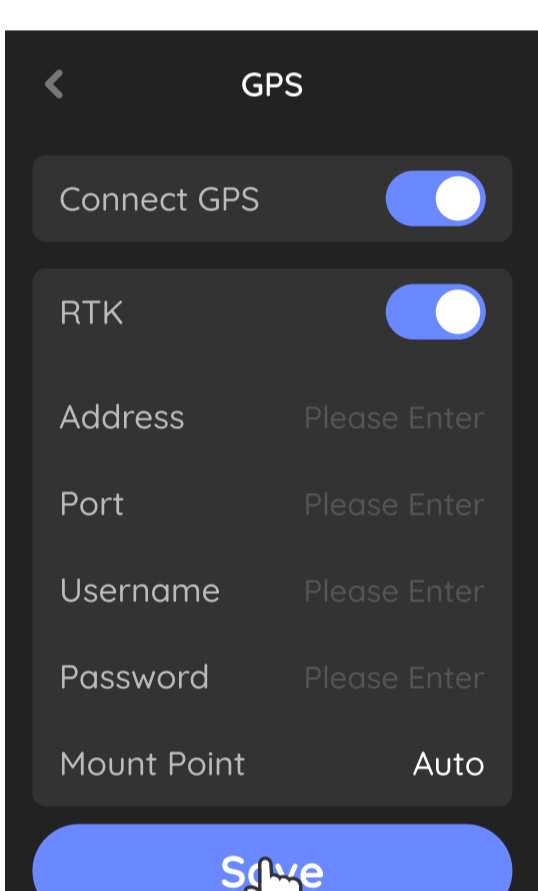
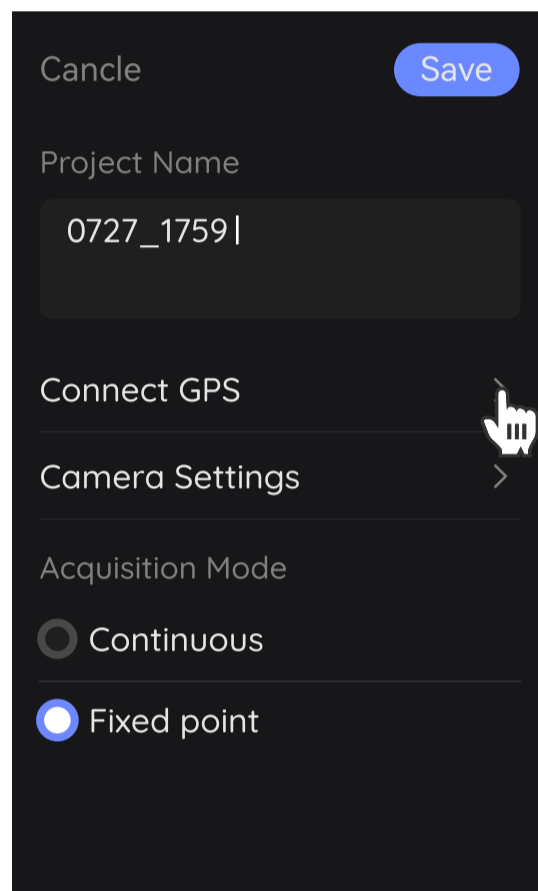
The actual positioning accuracy is affected by various factors, such as whether there are obstructions in the surrounding environment, whether it is a high-speed dynamic scenario, and whether the ionosphere is active or the satellites are functioning properly.

Scan requirements

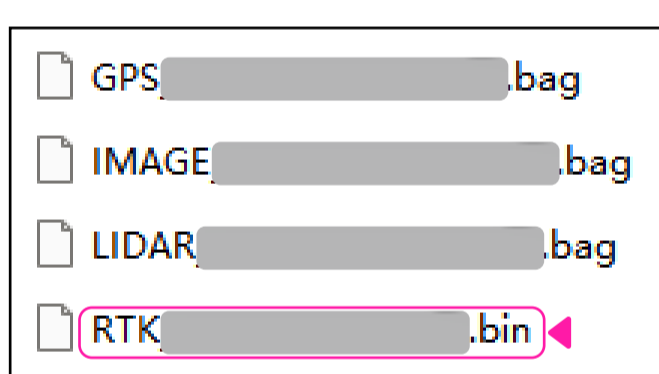
1. The scanning device needs to be a device with RTK accessories (including built-in chip and external GPS)
2. Before scanning, the device needs to be connected to the network. During scanning, differential data is obtained through the network (for outdoor scanning, it is recommended to connect to a mobile network).



3. Purchase RTK differential data services from a third-party provider and obtain information such as domain name, port, username, and password.
4. When scanning, GPS and RTK need to be enabled, and the domain name, port, username, and password for the RTK differential data must be entered.



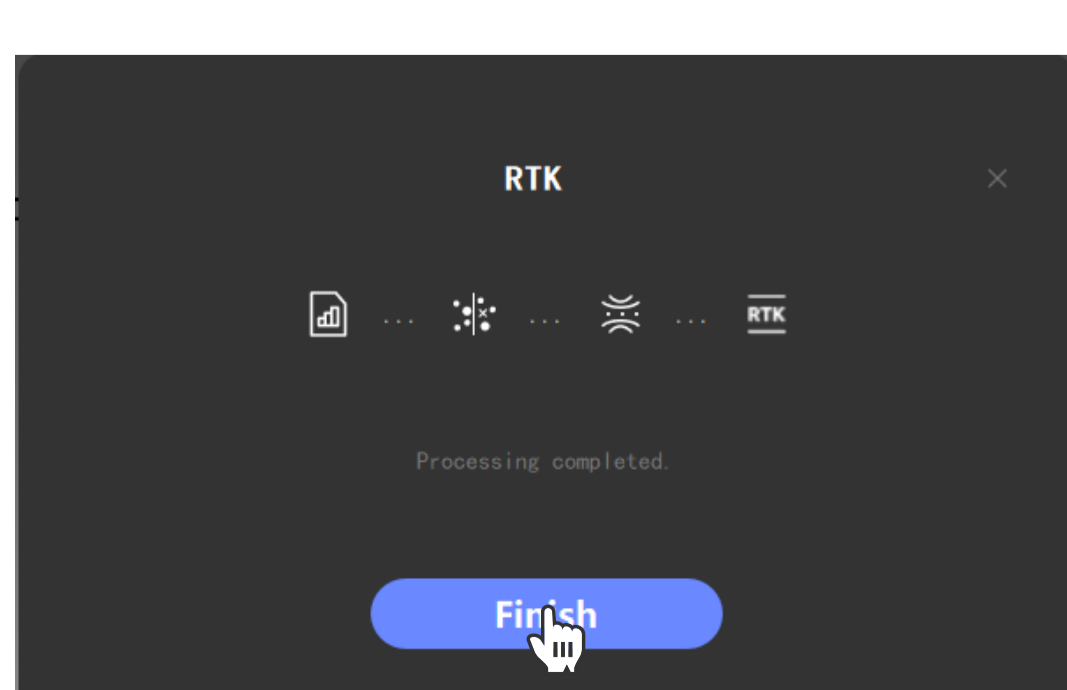
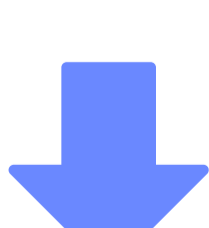
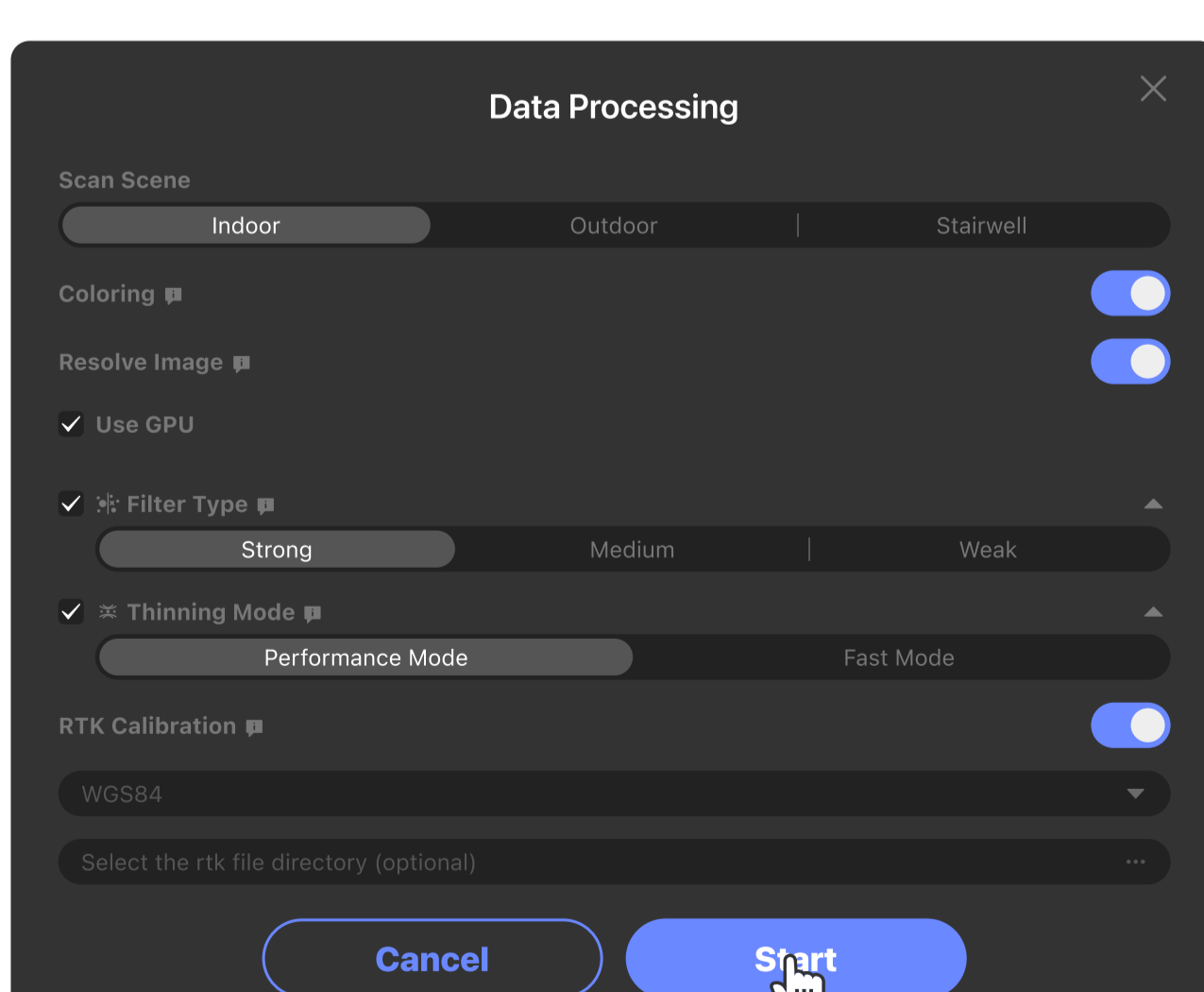
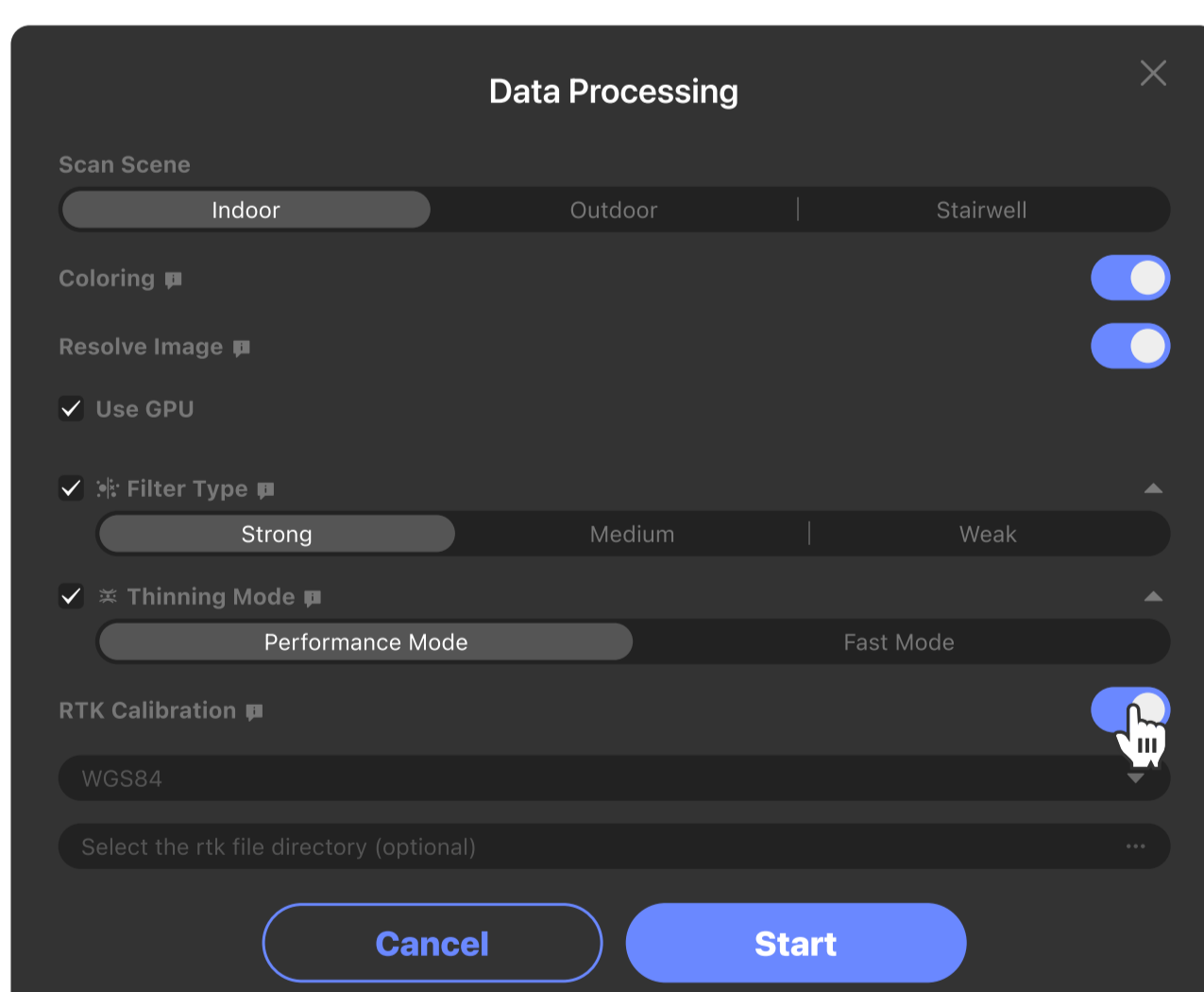
5. The exported model contains data named RTK_XXXXXX.bin



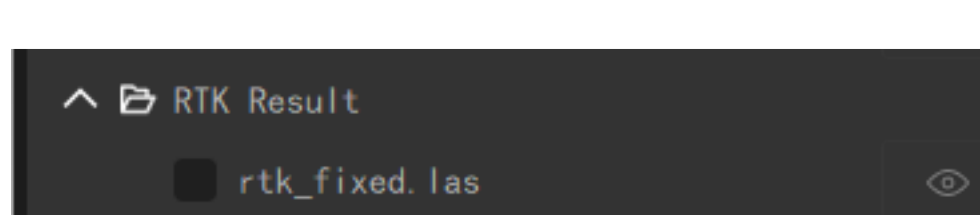
Procedure

After importing the scan data with the name RTK_XXXXXX.bin, you can directly process it by selecting the RTK configuration. The specific steps are as follows.

- ① Check the RTK configuration during data processing.

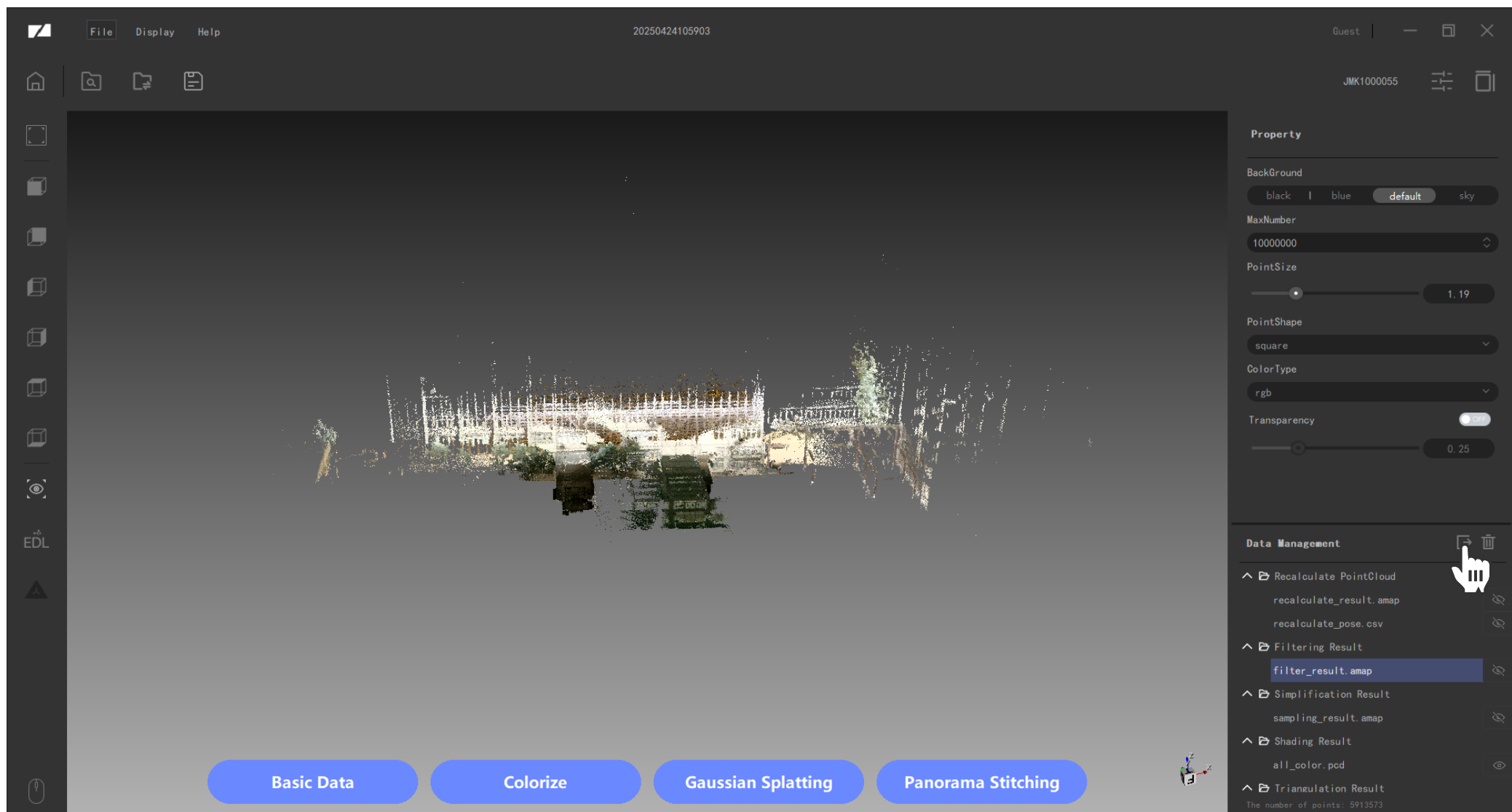


- ② RTK data is generated in the data list



Export the Model

Click "Export" in the "Data Layer List" at the bottom right:



At present, the software point cloud data supports the export of LAS, PCD, PLY, e57, xyz formats, and more model formats will be added in the future, thank you for your attention!