

Galois

Professional 3D acquisition products, using laser to achieve millimeter-level error acquisition, can be used in indoor and outdoor scenes

Galois Capturing Overview

This article will help you quickly understand how to capture VR with Galois

1. Galois Capturing Overview

Galois is a professional-grade laser VR scanner that supports the capturing of large indoor and outdoor spaces within 50,000 square meters.

2. Understanding Galois Capturing

2.1 Frequently Asked Questions by Users: If you encounter the following questions, you can quickly **click** to view them

2.2 Quick start guide: If you are a novice, you can refer to the following tutorials to complete the first space acquisition experience step by step

2.3 Advanced operation guide: When you have completed the novice tutorial, you still want to experience more functions, please **click** to view more advanced gameplay

Frequently Asked Questions

1. What are the equipment requirements if scanning with a Galois?

At present, Realsee app is compatible with mainstream mobile phones on the market.

iOS: iOS 13.0 and later, iPhone 8 and later.

Android: Android system 8.0 and later, memory 4G or later.

The mobile phone configuration affects the VR capture efficiency and user experience. It is recommended to use a device with high performance and memory to ensure a smooth scanning experience with a Galois.

2. What is the maximum number of points Galois can capture for a project?

Generally, a single project should be at most 1000 points in total.

VR projects can quickly occupy the storage space of your mobile phone because each point captured with Galois takes up 40 Megabytes.

Please reserve enough storage space for the mobile phone before capturing.

3. Can I get a better result for a 3D model?

The quality of a 3D model is impacted by two key factors: capturing path and the utilization of feature tools.

1) Capturing path:

To achieve optimal results, it is important to plan the capturing path logically. [Click here](#) for guidance on how to plan an effective capturing path.

2) Feature Tools:

Enhance your model by incorporating relevant feature tools, such as those used for modifying and cleaning up a 3D model. [Click here](#) for information on how to use these tools effectively.

4. How to use the feature tools?

Galois utilizes LiDAR to capture 3D models by measuring the specular or diffuse reflection that occurs in glass materials. However, this process may result in the generation of redundant models.

To improve the quality of the 3D models, it is important to utilize proper feature tools during the

capturing process.

To enhance the accuracy of glass materials such as mirrors and windows, it is recommended to include glass tools in the process. Additionally, when capturing spaces that contain transparent glass partitions, glass tools should be added on both sides of the glass.

Finally, to refine the final result, the delete tool can be used to remove any unwanted elements from the 3D model.

5. How to scan multiple floors and stairs?

When scanning a multi-floor building, the floor management tool can assist in seamlessly integrating data points from each level.

To use the tool for scanning multiple floors:

1. Utilize the floor management tool to add each floor
2. Begin by placing a point at the entrance of the stairwell and then placing additional points every 3-5 stairs.

For an efficient scanning process:

1. Start from the bottom floor and move upwards, making it easier to place and adjust the tripod.
2. To achieve a neater and cleaner 3D model, it's advisable to allocate the points on the stairs to the lower floor

6. How to solve the automatic splicing failures of Galois?

The following are common causes of splicing failures:

1. Insufficient point spacing - To avoid this issue, it is recommended to place a scan point every 1.5 to 2m (4.9 to 6.5 feet) .
2. High similarity between objects scanned in consecutive points - This can lead to failed splicing.
3. Lack of overlapping images between consecutive points - This can also result in unsuccessful splicing.

To resolve these issues:

1. Insufficient point spacing - Adjust the point placement to ensure that the distance between two consecutive scan points is within the recommended range of 1.5 to 2m (4.9 to 6.5 feet) . You may also consider optimizing the scanning path to increase the success rate.
2. High similarity between objects scanned in consecutive points - To overcome this, consider turning off the automatic stitching function and using manual stitching instead. You may need to familiarize yourself with the manual stitching functionality for best results.
3. Lack of overlapping images between consecutive points - In this case, manual splicing may be required.

7. How to scan a large space (the number of data points is greater than > 200)?

Scanning large spaces can be challenging due to their emptiness and repetition. To optimize the process, it is important to follow the following guidelines:

1. Allocate sufficient time for the scanning operation, as it may take longer than expected.
2. Plan a clear and efficient path for scanning to maximize efficiency and minimize errors.
3. Begin scanning at the perimeter and work your way towards the center.
4. For repetitive areas, consider using markers such as items or colored stickers to assist in data collection and ensure accuracy.

8. How to improve the success rate of automatic splicing?

When mapping out a sequence of points, it is crucial to adhere to the following guidelines:

1. The spacing between two consecutive points should range from 4.9 to 6.5 feet.
2. Ensure clear line of sight between adjacent points by removing any obstructions that may block the path.
3. It is particularly important to scan points at key junctions, such as doorways, passages, and corners, where two spaces intersect.

9. When to use manual splicing (or stitching)?

In the event that automatic splicing is not successful, manual splicing can be utilized as an alternative solution.

When capturing footage outdoors or in situations where data points have high similarity, manual splicing can be utilized to achieve the desired outcome.

If you prefer to not utilize automatic splicing, you have the option to turn off the automatic splicing function and use manual splicing exclusively.

To effectively use the manual splicing technique:

Utilize noticeable features of a structure or marker in the environment as a reference point for manual splicing.

If there are changes in the spatial height during manual splicing, be sure to adjust the height of the model accordingly to maintain accuracy.

10. How to effectively capture spaces with high similarity?

Spaces with high similarity are susceptible to stitching failures. To avoid this, it is recommended to turn off the automatic stitching function and opt for manual stitching (or splicing). To improve the accuracy of manual stitching, you can try the following tips:

1. Incorporate markers into the space to aid in the scanning process, such as adding stickers or strategically placing objects.
2. Identify prominent structures or features within the space and use them as reference points

for manual splicing.

Note: Spaces with high similarity, such as long white-walled corridors, can present challenges for stitching and should be approached with caution.

11. How to plan the path of scanning?

The quality and accuracy of a 3D model and the walk-through experience are heavily dependent on the rational placement of the captured points during scanning.

Effective planning of the scanning path can significantly impact the overall spatial effect. It is suggested to follow a clockwise or counterclockwise direction when planning the path, as this mimics a user's natural browsing movement within the space.

To optimize the scanning process, consider the following tips:

1. Start by placing the first point at the entrance of the space.
2. Maintain a distance of at least 20cm between the scanning device and walls during the capturing process.
3. Space out the placement of points approximately every 4.9 to 6.5 feet to ensure thorough coverage of the space.

12. How to scan indoor and outdoor spaces?

Galois is a laser radar device that has the ability to capture scenes in both indoor and outdoor environments, including environments with intense sunlight. To ensure optimal results when capturing outdoor spaces, consider the following tips:

1. Prioritize capturing points indoors first and then move on to shooting outdoors. This order of capturing can aid in manual splicing.
2. It is necessary to turn off the automatic splicing function when capturing outdoor spaces.
3. When shooting outdoors, the spacing between points can be increased, but it is recommended to not exceed 16 feet between two adjacent points. Utilize distinctive structures or features as reference points for manual splicing.

13. Galois Capture Model Switching

Alignment Mode Overview

To better improve the fluency and ease of use when capture with Galois HDR, we have defined two different alignment modes: Auto-Alignment and Manual Adjustment. The two modes cater to different operation habits and scenarios. You can switch between them at any time during collection.

Auto-Alignment

Mode Introduction: In this mode, all scan spots will be automatically stitched by the algorithm. On the same floor, you do not need to make any positional judgments or manual adjustments.

Advantages: 1) Simple operation, no need to understand the space structure in advance; 2) Avoids the impact of human judgment errors. From our abundant sample data, we have observed this approach generally yields better model quality.

Disadvantages: 1) You cannot freely adjust the scan spot positions; 2) You must ensure there is a visible overlap area between each scan spot and previous scans

Applicable Scenarios: Spaces with rich object and structural changes; spots planned densely; contiguous spaces that can be sequentially reached by stepping through. For example: residential spaces furnished with abundance; spaces under 3000 square feet.

Note: If you switch floors without continuous staircase scans (such as taking elevator between floors), resulting in the new floor being disconnected from the previous floor, you can use the floor alignment feature to adjust.

Manual Adjustment

Mode Introduction: In this mode, all scan spots will first be automatically aligned by the algorithm, but if the algorithm fails to complete the alignment, you can manually adjust the point cloud positions.

Advantages: 1) Flexible spot placement, no need to ensure each scan spot is contiguous or visible to others; 2) When algorithm alignment fails (due to large distances, overly similar spaces, etc.), you can solve it by adjusting positions instead of rescanning, more efficient.

Disadvantages: 1) You need to be sufficiently familiar with the positional relationships between scans and ensure adjusting them correctly; 2) You need to carefully check each scan spot's position for correctness, because our algorithm will 100% trust your confirmed positions.

Applicable Scenarios: Spacious spaces or many highly similar scenes; planned sparse spot distribution; disconnected spaces. For example: office spaces with very similar corridors; large buildings like factories; spacious residences; spaces over 3000 square feet.

How to Switch Modes?

In the Galois capture page, click Toolbox > Alignment, and select the suitable mode for you.

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< Device Disconnected Finish

1F 2D 3D

Scan Settings



Accuracy settings

Standard

Normal point cloud

High precision

Dense point cloud

Data Upload



When turned on, scan data will automatically uploaded via cellular traffic during scanning

Wi-Fi settings

Please connect your device and set up it.

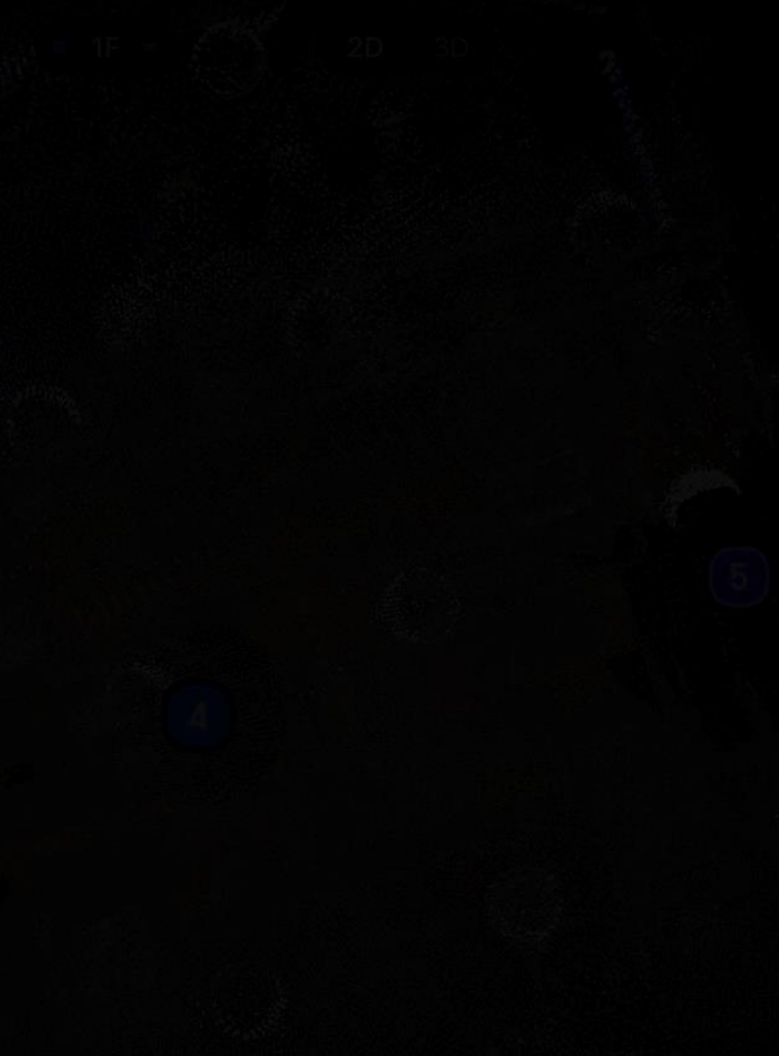
Alignment Mode

Auto-Alignment >

01:41



Device Disconnected



Cancel

Alignment Mode ⓘ

Confirm

Auto-Alignment

Manual Adjustment