SHARE 赛尔

Larger Sensor, Mechanical Shutter,

Precision in Point Clouds.

SHARE SLAM S20

Handheld SLAM 3D LiDAR Scanner

Reporter:

Date：2025

SHARE 赛尔

Part 01

Product Introduction

Device Introduction

SHARE 赛尔

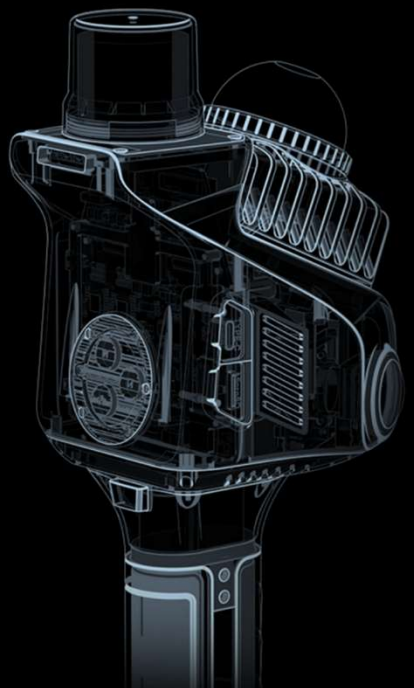
S20 upgrades and continues S10's pioneering design

SHARE 赛尔

25-degree tilted LiDAR installation

Make better use of the scan field; won’t miss the information of the ground.

Integrated RTK design



Relatively fixed in position with LiDAR and cameras to ensure data accuracy.

Real-time color point cloud

Real-time inspection during the scanning to promptly identify missing areas.

Standard magnetic mobile phone holder

Suitable for all kind of mobiles, give a more free operation experience.

Pioneering design of S20

SHARE 赛尔

- One-inch ultra-wide-angle camera:

Better noise control, wider dynamic range, and more complete preservation of details in both bright and dark areas.

- Use mechanical shutters:

Better control of global exposure and effective avoidance of jelly effect.

- Open SDK - open raw data and post-processing data format:

Data can be directly used for modeling, such as 3DGS and MESH.

Upgrades of S20

SHARE 赛尔

Integrated
lightweight body

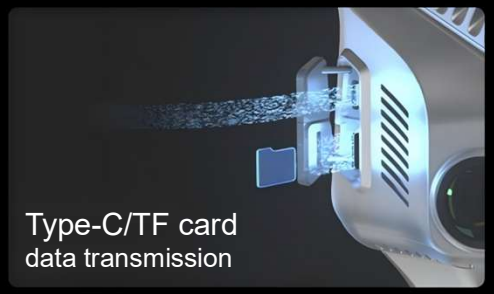
Type-C
fast charging

Aluminum alloy
material

Bluetooth + WIFI6

One-touch connection

Quick-dismantle
battery handle



Type-C/TF card
data transmission

Operation time up to
150 minutes

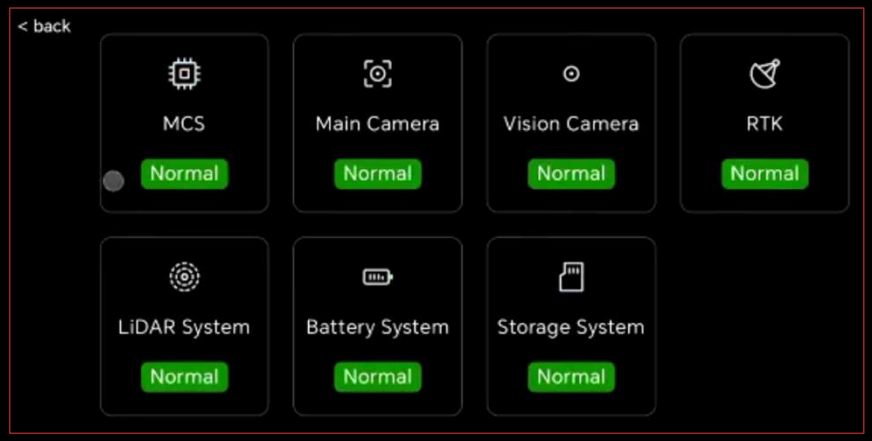
Newly upgraded
RTK antenna

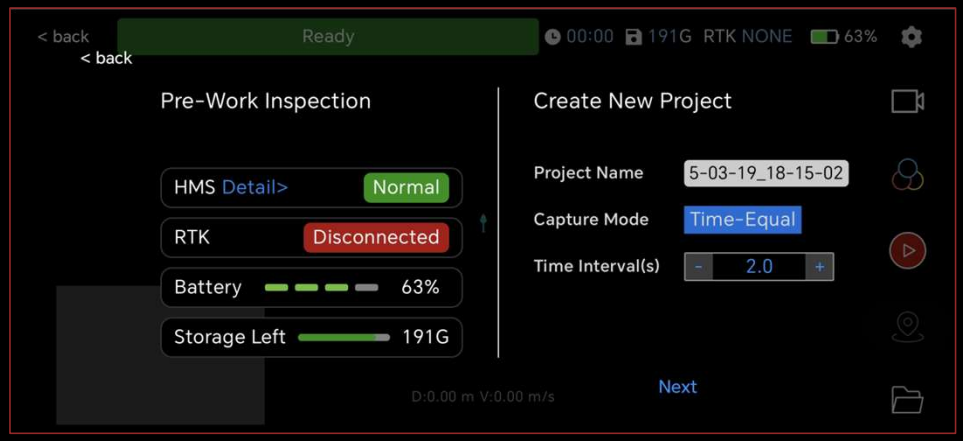
Centering rod

new reinforced
connection kit

Standard upgraded
positioning board for GCP

Mobile app optimization





Health Management System

Obtain the information of each part about their heath and working condition to check out if they could work normally.

Pre-work inspection improvement

Tell users weather the device is able to work normally before the project start, easily avoid useless work.

One-click processing generates point cloud results with geographic location

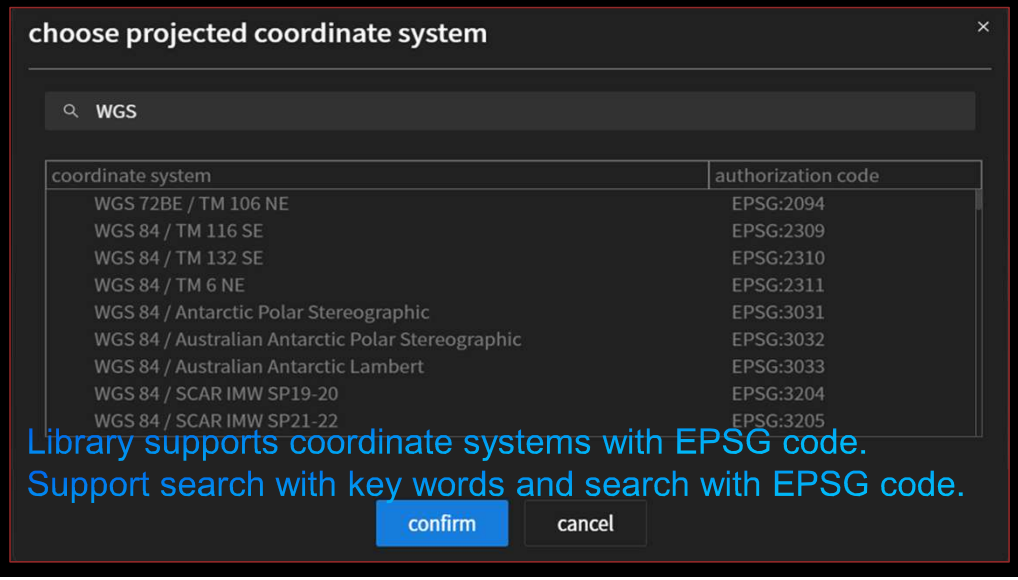
SHARE 赛尔

Supports one-click generation of point cloud data with geographic location information

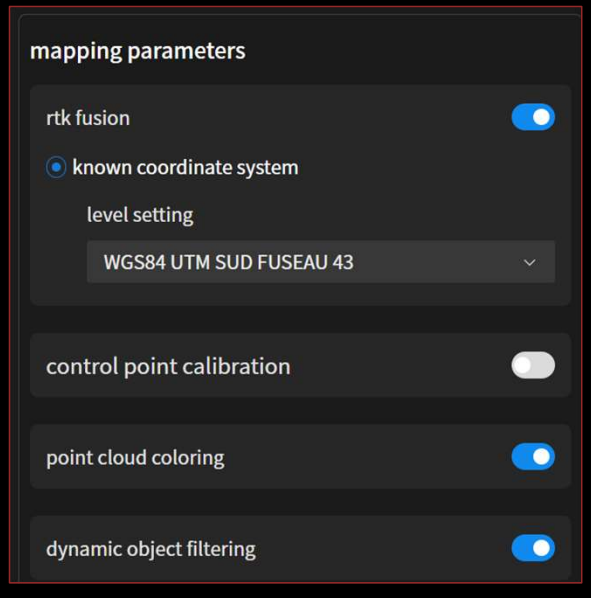
Comes with a common coordinate system library, supports custom local coordinate systems, and supports 7-parameter transformation.

Control points can be imported with one click and used immediately

When processing data, import control points to enable them, the algorithm will automatically integrate the control points and output point cloud data in the coordinate system of the control points.



Library supports coordinate systems with EPSG code.
Support search with key words and search with EPSG code.



Provides various formats of result data

SHARE 赛尔

Point cloud data

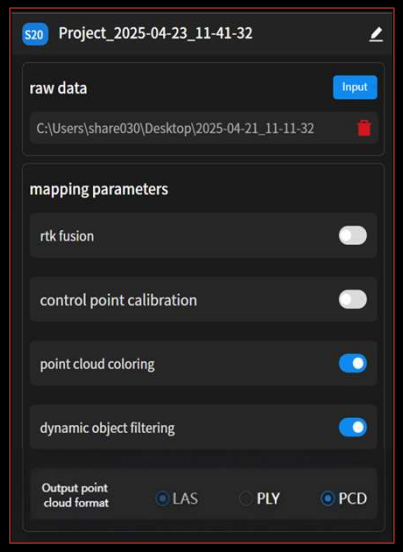
Supports the generation of uncolored and colored point clouds in PCD, PLY, and LAS formats;

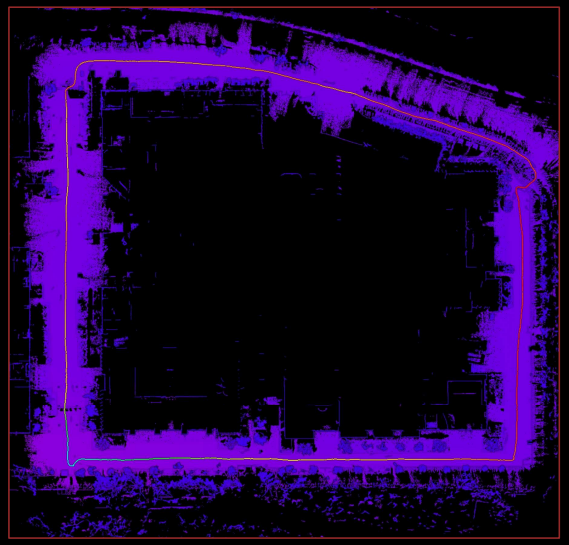
Provides trajectory information for point cloud data.

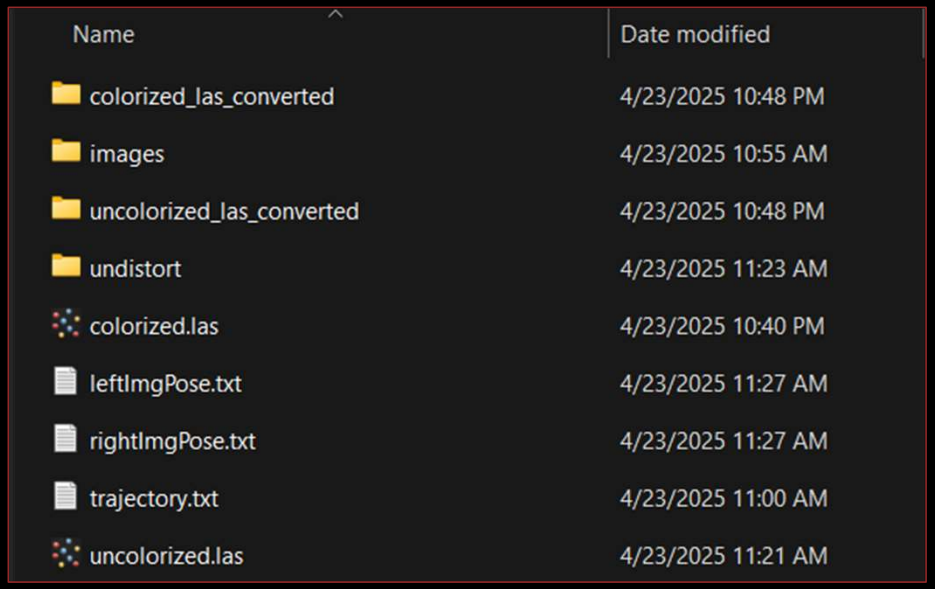
Photo data

Supports output of original images and undistorted images;

Supports output of images position information.







Part 02

Larger Sensor, Mechanical shutter, Precision in point clouds

Pioneering one-inch mechanical shutter ultra-wide-angle camera

SHARE 赛尔

Enhanced by SHARE's outstanding optical imaging technology

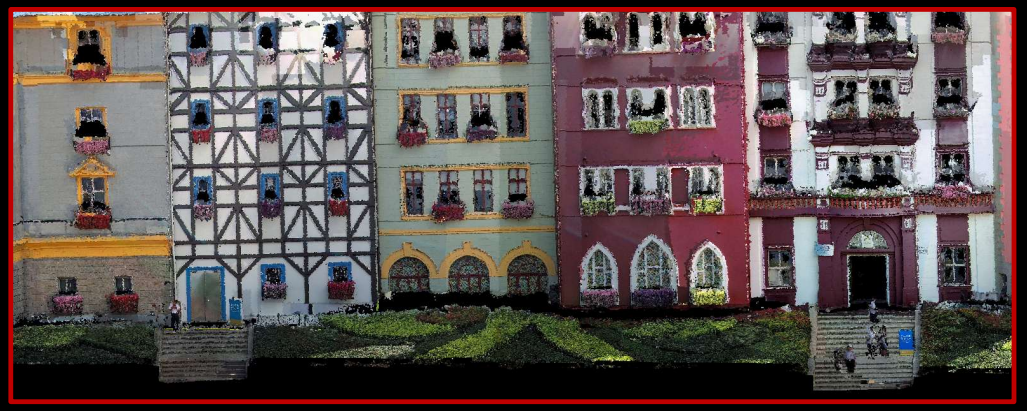
- ✓ Shutter: supports both mechanical and electronic shutters
- ✓ Sensor: one inch; 13.13*8.76mm; 2.4μm
- ✓ Reproduction accuracy: single lens with 16 million effective pixels; 3504*4672
- ✓ Lens field of view: single camera H: 200° V: 140°
- ✓ Installation angle of 2 lenses: 120°
- ✓ Minimum shooting interval: the mechanical shutter is 0.5 seconds(better images' quality), the electronic shutter is 0.3 seconds in full pixel mode(lower images' quality).

S10(electronic shutter) VS S20(mechanical shutter)

Colorized point clouds are clear and accurate

SHARE 赛尔

- The overall hardware time synchronization is more accurate;



Clear Color And High Fidelity

- The new SLAM algorithm optimizes the accuracy of photo poses;

Clear Texture Without Adhesion

Colored point clouds are clear and accurate

SHARE 赛尔

- The mechanical shutter shooting moment is more precise, and each shutter is calibrated at the factory;
- The LiDAR is calibrated twice to reduce its own error.

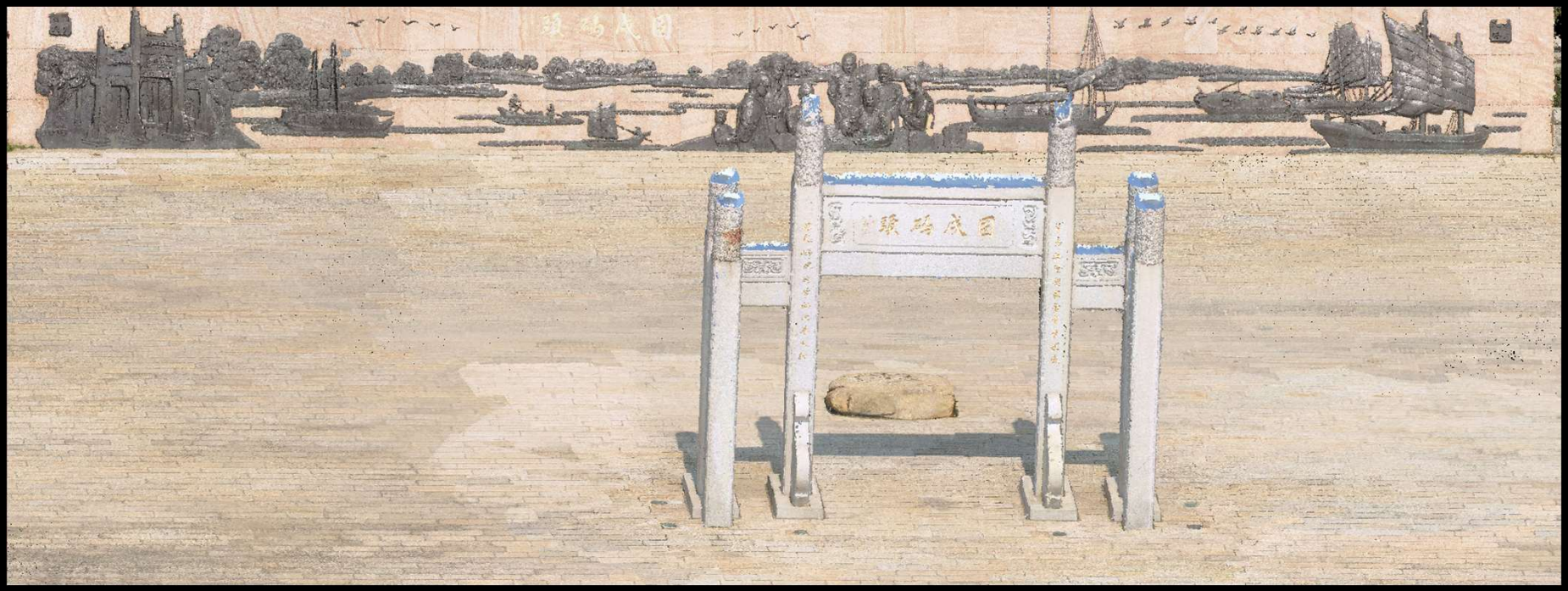
Jelly effect and motion blurred ghosting point cloud

Accurate point cloud without ghosting

Photos can be used directly for modeling

SHARE 赛尔

Images taken with the device can be directly imported into photogrammetry modeling software for 3D reconstruction and output of mesh models.



Photos can be used directly for modeling

SHARE 赛尔

Images taken with the device can be directly imported into photogrammetry modeling software for 3D reconstruction and output of mesh models.

Better 3DGS effect Gaussion Splatting

SHARE 赛尔

- The model has almost no noise and is very clear overall.
- The details of the items are clear and distinguishable, without any adhesion or misalignment.
- The wall is evenly colored without any shadows.
- The material of the items is visually close to reality.

SHARE 赛尔

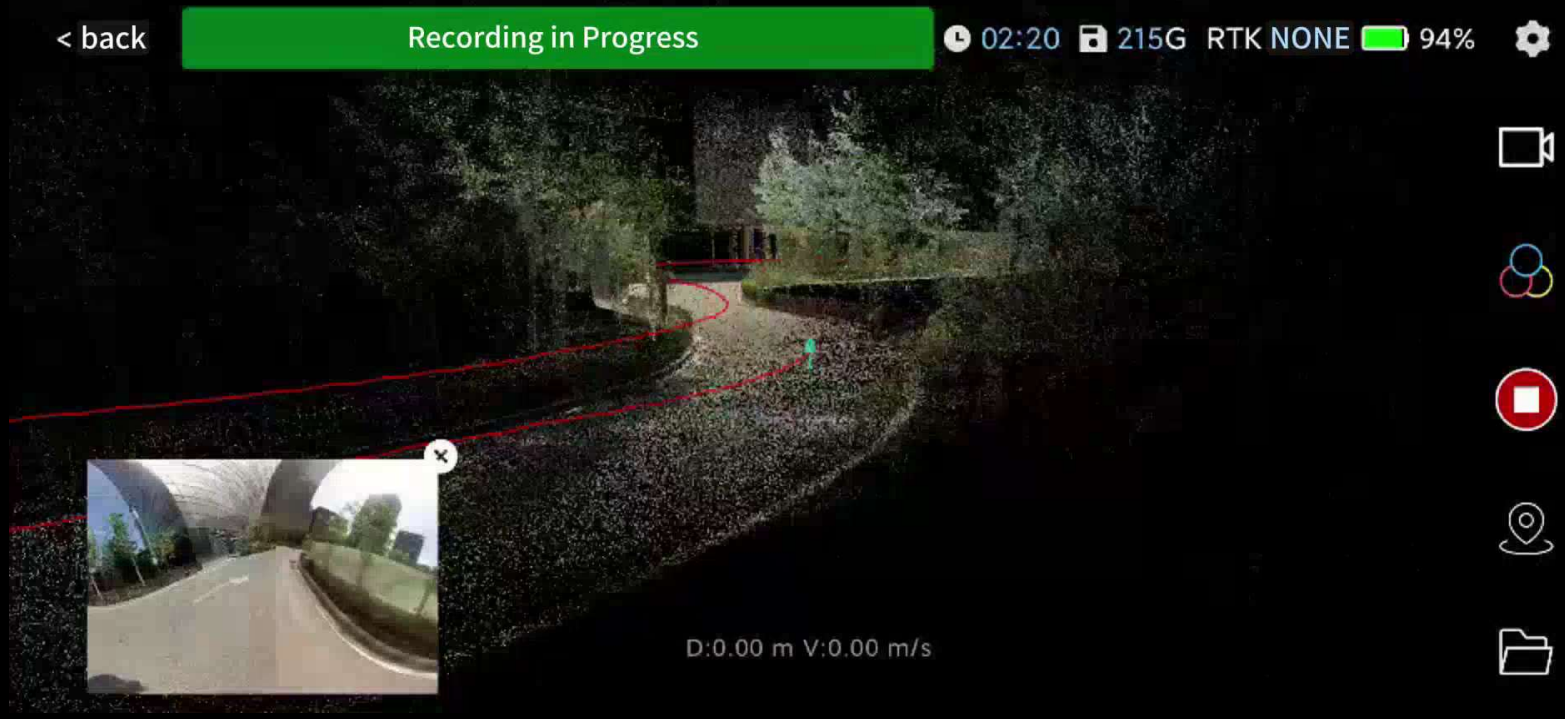
Part 03

SLAM Algorithm

Real-time SLAM algorithm

SHARE 赛尔

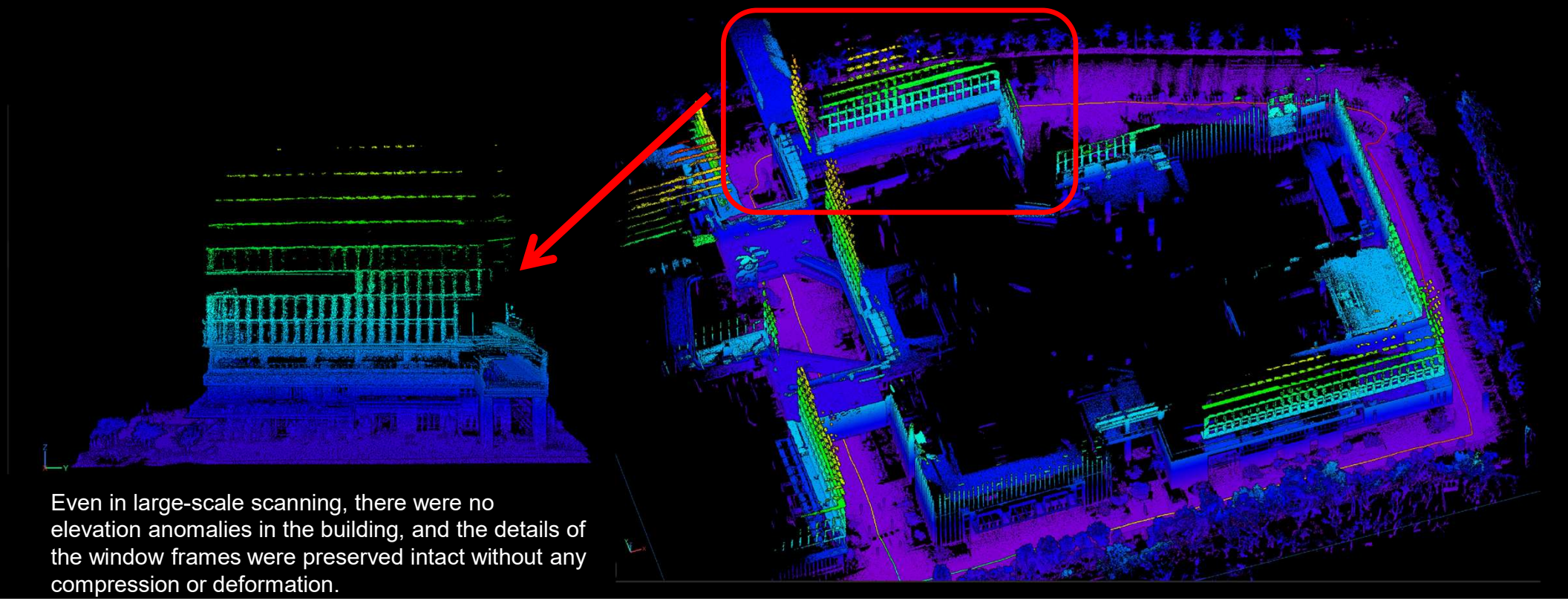
The fusion of visual SLAM real-time algorithms boosts higher robustness, better real-time coloring effects, higher density of real-time point clouds, and better coloring effects.
The video shows an outdoor strong light environment, but the point cloud remains stable and the coloring is still clear.



Large scene point cloud is not layered

SHARE 赛尔

The high-precision IMU, combined with algorithms and RTK position information, effectively suppresses SLAM deviations in the Z-axis direction, preventing data layering over long distances.



Even in large-scale scanning, there were no elevation anomalies in the building, and the details of the window frames were preserved intact without any compression or deformation.

Better point cloud filtering algorithm

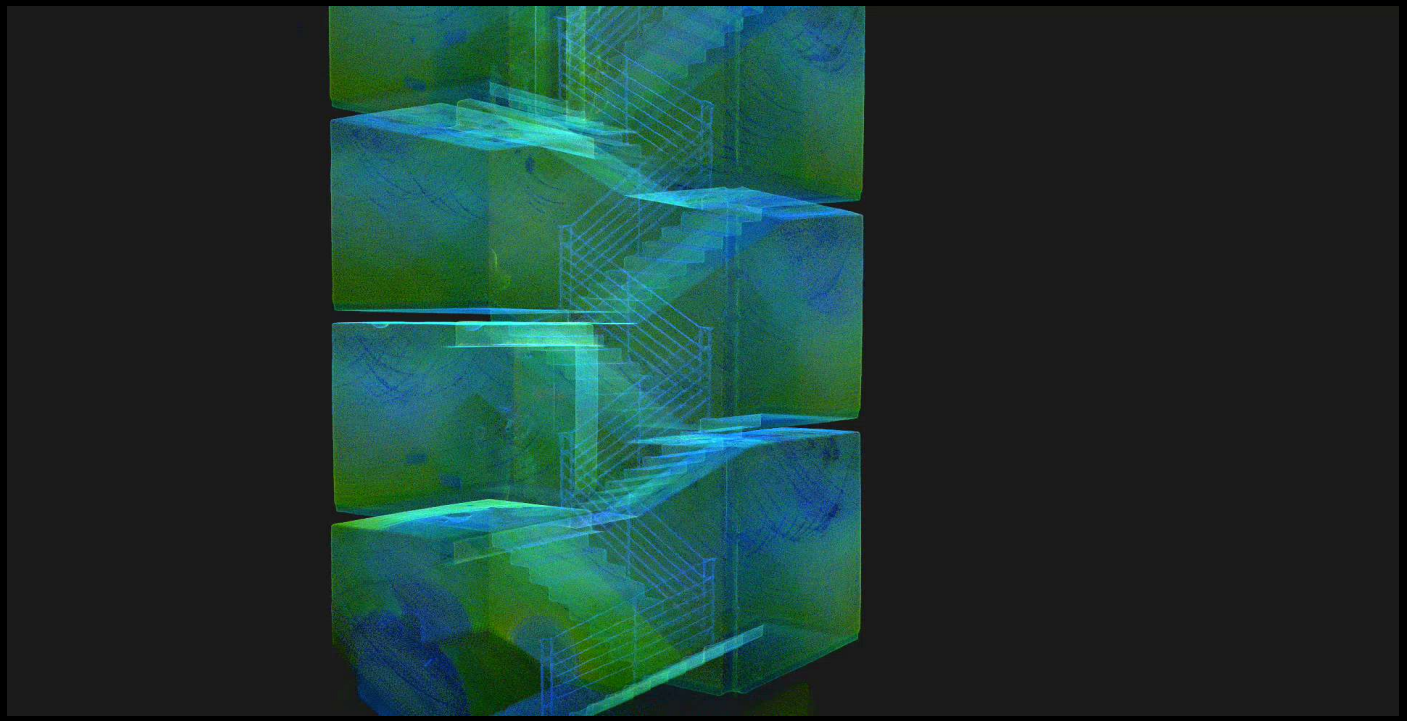
SHARE 赛尔

The algorithm filter the point cloud more accurately and can distinguish the sides of a walls as thin as 5 cm in computer-aided design software, making drawing works convenient and precise.

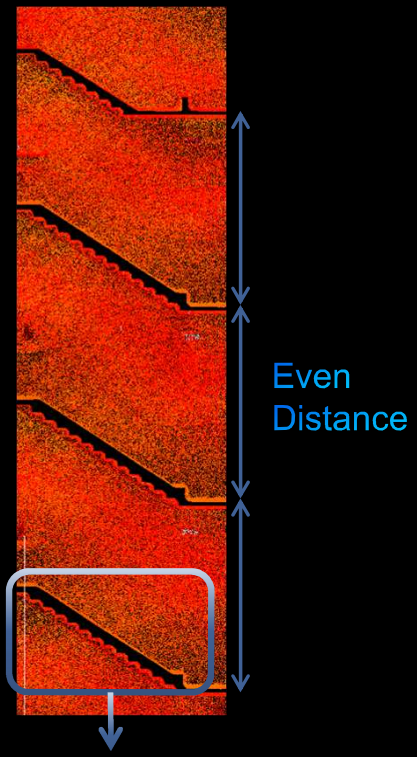
ex. If a device cannot recognize a thin wall with a thickness of about 5cm, when scanning, if there is a painting on the wall, it is likely to appear as if it will pass through this wall and be displayed on the point cloud of another wall.

Good performance in special scenarios

The high-precision IMU and new algorithms improve the processing of stair data, eliminating adhesion issues between stairs.



The staircase model as a whole did not show any skewness, and there was no compression or distortion between floors.

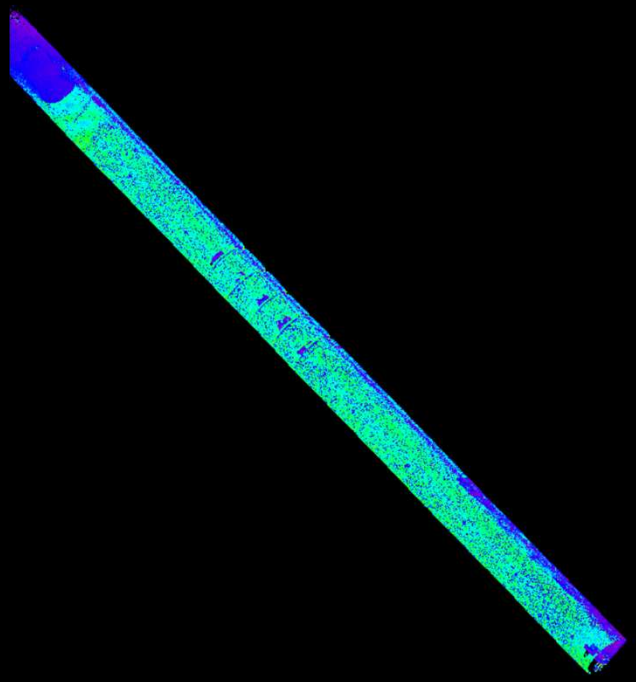


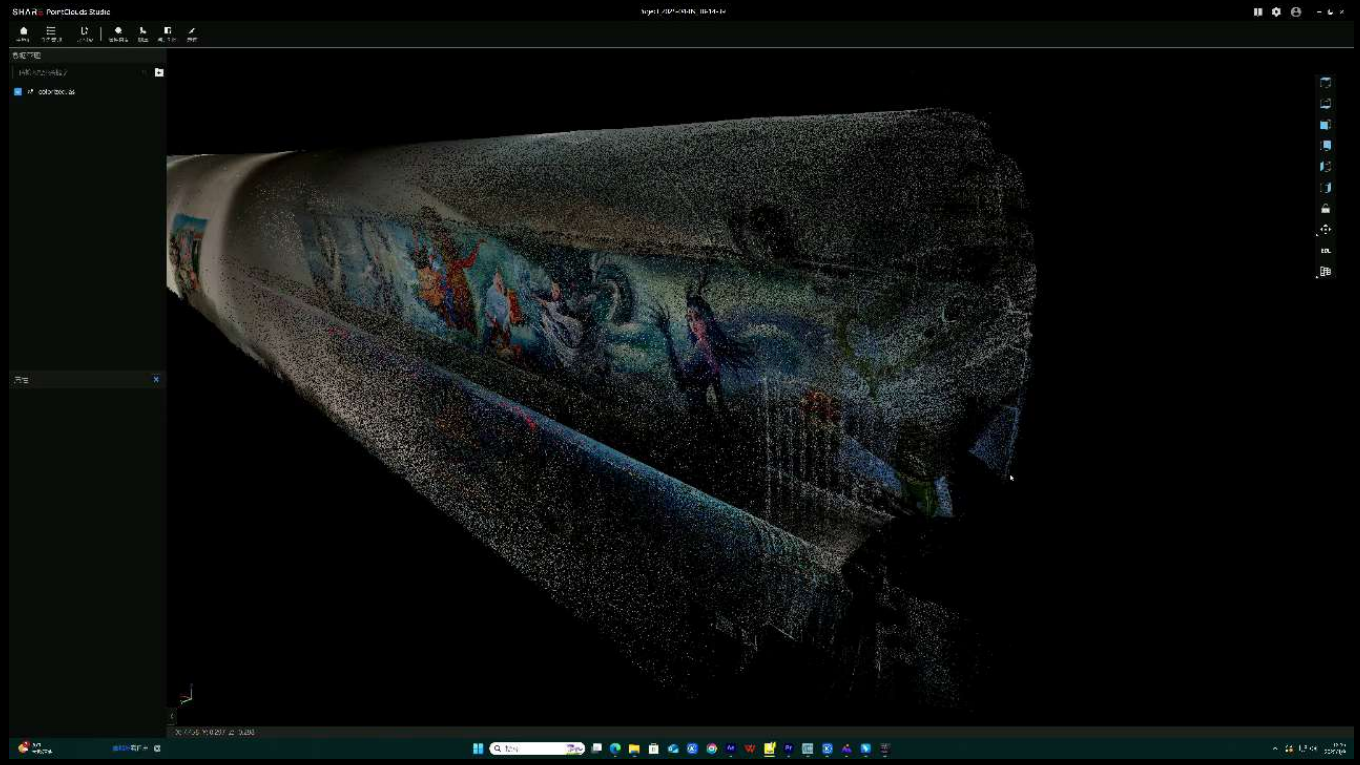
Each staircase can be clearly counted

Good performance in special scenarios

SHARE 赛尔

Visual SLAM enhances the robustness of data processing in low-texture environments.





The tunnel model is a straight line without deformation due to degenerative scenes.

Part 04

Open Ecosystem

Hardware interface is open

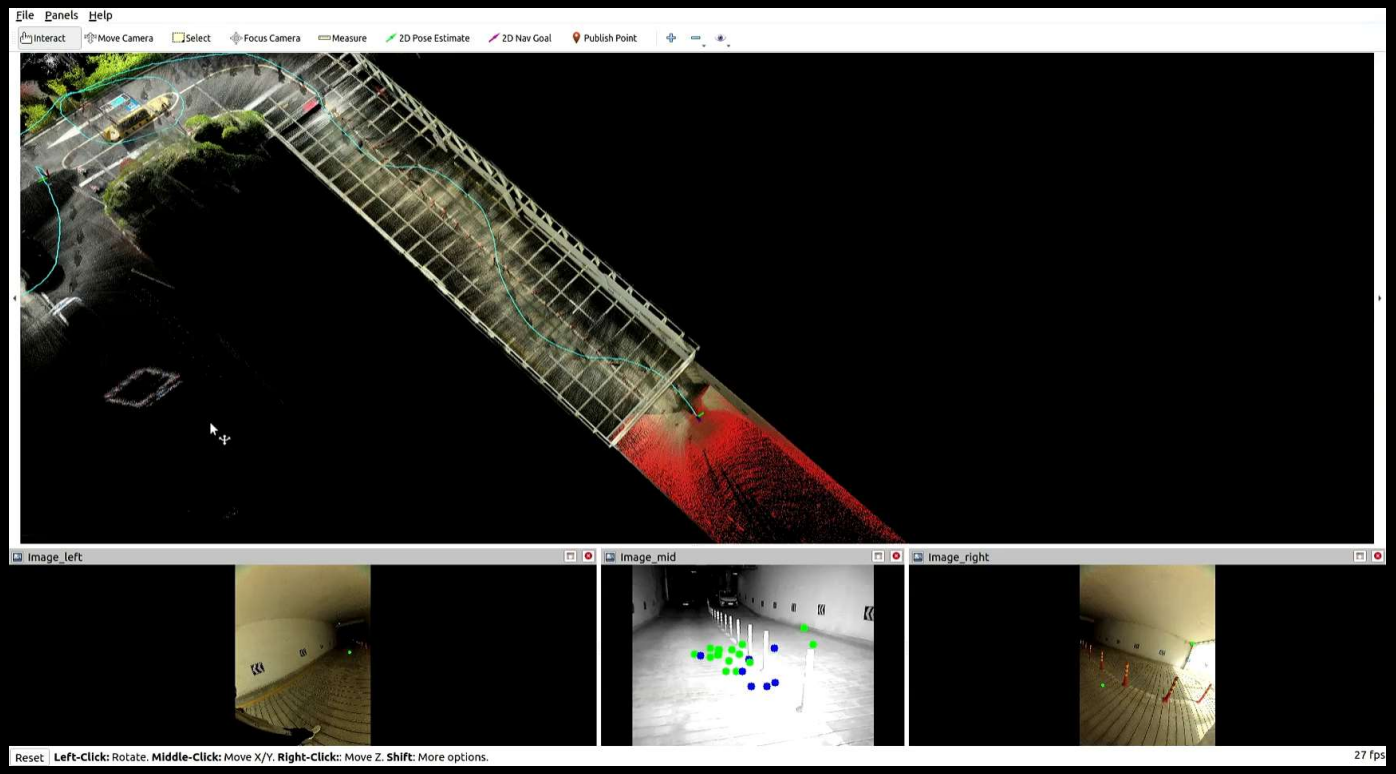
SHARE 赛尔

- The device's power supply interface support connections to other devices, for example, robot dogs, to expand working environment;
- Data can be transmitted via Type-C with cable, which means there would be no difficulty to get the raw data;
- The open SDK enables communication with the device, allowing for data transmission and device control functionalities.

Open raw data and result data

SHARE 赛尔

- The device provides open raw data, making it easy to adapt to maintream SLAM algorithms.
- The data processing results provide point cloud trajectories, raw images, pose information of photos, undistorted images, colorized and uncolorized point clouds in various formats.



Post-procssing partner platform

SHARE 赛尔

3DGS and modeling software


Lenovo Daystar


Smart3D


Daspatial


DJI Terra


Pix4D

Point cloud application


PCA

South CASS


3DNest

SHARE 赛尔

THANKS

www.shareuavtec.com

LinkedIn

YouTube