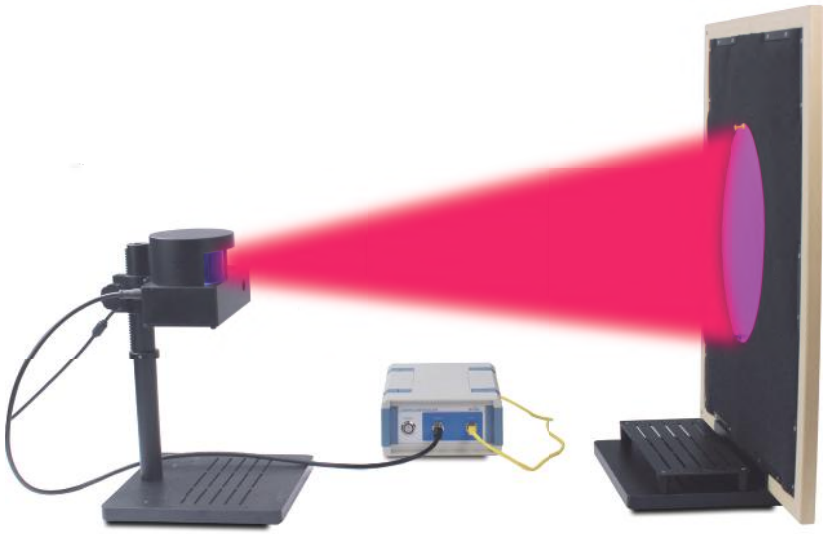
Lidar Experiment

BEX-8207

Summary

BEX-8207 is an experimental device that combines Lidar 3D scanning technology with infrared imaging detection technology. By testing different samples and designing multi-dimensional experimental operations, it can automatically collect and process point cloud images of the samples, and further obtain information such as distance, reflection intensity, and spatial coordinates. Thus, it enables learning and exploration of the relevant optical characteristics and applications of Lidar.

The software is powerful and can analyze and measure the distance, reflection intensity, etc. of the target object. It can also measure the vertical resolution and horizontal resolution.



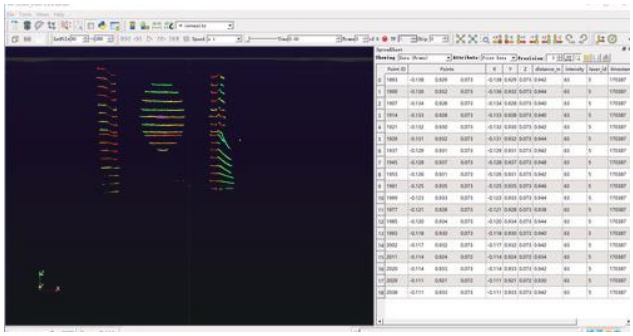
Features

1. Utilizing 3D Lidar, a large amount of information can be obtained, and multi-dimensional images of the target can be generated.
2. By adopting infrared cameras, the radar scanning path can be visualized.
3. A wide range of measurement samples are provided to assist students in completing experiments and enabling them to independently explore and conduct extension experiments.
4. The software is highly functional, capable of analyzing and measuring the distance, reflection intensity, etc. of the target object, as well as measuring the vertical resolution and horizontal resolution.

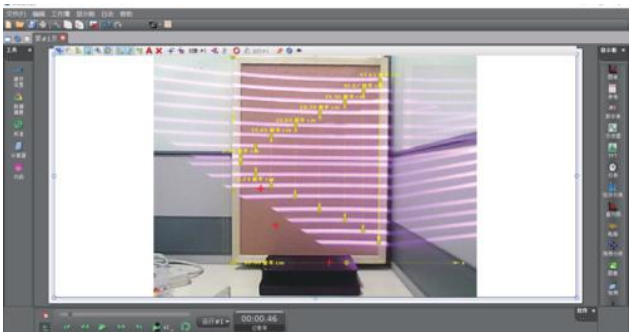
Main Experiment Contents

1. Understand the fundamental principles of Lidar imaging.
2. Perform 3D object recognition using the experimental setup.
3. Learn Time-of-Flight (TOF) measurement principles, including target position (distance) and relative distance between multiple objects.
4. Master various methods for measuring Lidar's vertical angular resolution.
5. Measure the horizontal angular resolution of Lidar at different rotation speeds.
6. Evaluate Lidar target discrimination capability at varying distances.
7. Study the algorithms used for calculating target spatial coordinates in Lidar.
8. Observe the effects of different media on Lidar imaging performance.

Experiment Contents and Typical Data



Target object graphic recognition



Vertical resolution measurement

Specifications

NO.	Part Name	Main Parameter
1	Lidar Apparatus	Radar: Adjustable height range: up to 120mm Scanning window size (horizontal): 90mm Laser wavelength: 905nm
2	measuring Assembly	Including the measuring plate, the fixed base and the ranging plate
3	Adjustable Slit and Base	With width adjustable continuously from 0 to 100mm
4	Measuring Accessory	Samples with various shapes of diffuse reflection, high reflection and specular reflection.

Configuration List

NO.	Part Name	Model	Qty.
1	Lidar Apparatus	BEM-5741	1
2	Lidar Controller	BEM-5736	1
3	Measuring Assembly	BEM-5744	1
4	Adjustable Slit and Base	BEM-5745	1
5	Measuring Accessory	BEM-5746	1
6	Power cable	BC-105075	1
7	USB cable	BC-105080	1
8	M12 data connection cable	BC-105320	1
9	Tape	SEM-5801	1