

3D SCANNING OF HISTORICAL MONUMENTS

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Abstract. In this article, the purposes of using terrestrial laser devices, the sequence of their use, the precautions to be taken when using them, the sequence of creating a 3D format of historical monuments and buildings with the help of a laser, and the current role of this 3D laser in our time are considered.

Currently, technical devices are developing, as a result of which surface lasers create a lot of convenience in working with the ground. The sequence of 3D scanning of historical monuments and buildings using a terrestrial laser is as follows:

1. Preparation: Identify the object to be scanned and make sure you have all the necessary equipment. This includes a surface laser scanner, a tripod or stand for installing the scanner, a computer for data processing, and software for working with 3D models.
2. Scanner Installation: Placing the surface laser scanner on a tripod or stand and making sure that it works stably and safely.
3. Adjust scan settings: Adjust scan parameters such as resolution, scan speed, etc. using the software. This may vary depending on the required accuracy and size of the monument.
4. Scanning: Start the scanning process by moving the ground scanner around the monument to cover all its aspects and details. A laser scanner creates data points in a point cloud format that represent the shape and surface of the monument.
5. Data processing: Using point cloud processing software to transfer scan data to a computer and create a 3D model of the monument. It is possible to clean the data of noise and unwanted elements, combine different scans of different aspects of the monument and combine them into a single model.
6. Model optimization and completion: post-processing of the 3D model, smoothing of surfaces, smoothing of planes and correction of errors that occurred during scanning. Textures and colors can be added from memorial photos for a more accurate display.
7. Results: After the data processing and optimization is complete, export the 3D model of the monument in suitable formats such as STL or OBJ so that it can be used for various purposes such as virtual tours, 3D printing or archiving.

This is just a general sequence of steps that can be used to scan historical sites with a terrestrial laser. Note that each monument may present unique challenges and requirements, so some steps and settings may vary depending on the situation.

3D scanning with ground-based lasers provides extensive and accurate building information with speed and efficiency. It is based on the principle of measuring distances and angles using special laser emitters that scan the environment. Next, the received data is processed and converted into a three-dimensional model using special software.

REFERENCES

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