

Cultural heritage survey

ARCHITECTURAL SURVEYING OF A HISTORICAL BUILDING

Dr. Sun Yat-Sen's Memorial Hall, Guangzhou (CHN)



Fig1_Dr. Sun Yat-Sen's Memorial Hall: point cloud orthographic view

NEEDS AND GOALS

- Recording details and conditions of structure and decoration.
- Creation of fine 3D file of the historical building.
- Creation of fine 3D dataset including point clouds, CAD, photos, etc.
- Providing 3D point cloud models for displaying and disseminate.
- Providing online 3D model for promotion.

JRC 3D RECONSTRUCTOR®_BENEFITS

- Fast 3D point cloud models generation
- Fast point clouds automatic registration
- Easy and quick key points generation: accurate sections of structure and details (structures, high-value elements, etc.)

RESULTS

- Full colored point cloud of the whole building (inside and outside, view on multi-platform)
- AutoCAD® drawings for plans, elevations, sections in a 1:100-1:50 scale
- Point cloud slice showing structural deformation and damage status



Guangzhou SIKAN Surveying & Mapping Technology Co., Ltd. | SCUT

Technical consultant company dedicated to providing survey and supporting services for the reconstruction of historic buildings, renovation of old cities, and renovation of cultural relics with the aim to provide effective and reliable 3D data and archives for today's urban construction.

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Dr. Sun Yat-Sen's Memorial Hall, Guangzhou (CHN)

The Dr. Sun Yat-Sen's Memorial Hall is located in Guangzhou, China. It was built in 1929 in honor of Mr. Sun Yat-Sen (the forerunner of the great democratic revolution in China) and designed by the famous architect Lu Yanzhi (1894-1929). The building has an octagonal structure and it is a combination of the Chinese traditional palace style and the Western modern space and structure design method.

The two goals of the project were:

1. To conduct comprehensive digital survey and acquisition of the 3D information of the historical building.
2. To create a fine 3D file with all the information of the preservation status of structure, decoration and equipment.

This huge building was used for many years and is full of precarious equipment, structures, and decorative components, which caused lots of difficulties both for laser scanning activities and point cloud post-processing.

The Gexcel's software allowed to extract from the point cloud the building's plans, elevations and sections, necessary to generate the CAD drawings in a 1:100 scale.

“ Thanks to JRC 3D Reconstructor® we obtained the registration of more than 500 scans quickly and accurately.

Prof. Yangting

SCUT | South China University of Technology

With a highly collaborative group and AutoCAD® integration, a final 3D database of the Dr. Sun Yat-Sen's Memorial Hall was established for follow-up research, displaying and promotional activities. The work was successfully completed in 2 weeks.

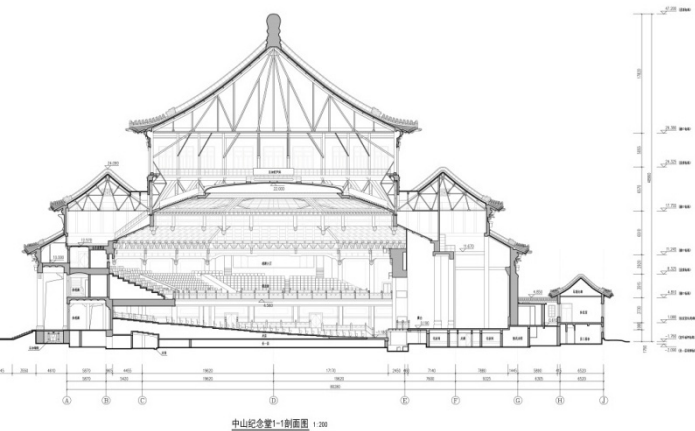


Fig2_AutoCAD® drawings of the details and conditions of deformations and damages

TECHNICAL DETAILS

- SURVEYING SYSTEM:
 - FARO X130
 - FARO X330 with RICOH THETA V
- SURVEYING AREA:
8.700 sqm
- PROCESSING SOFTWARE:
 - JRC 3D Reconstructor® Heritage-Architectural
 - AutoCAD®
- SURVEYING TIME:
3 days
- PROCESSING TIME:
15 days