ISPRS Benchmark on Indoor Modelling
Report of Scientific Initiative 2017

Investigators [1]

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Project Goals

The aim of the ISPRS Benchmark on Indoor Modelling was to stimulate and promote research on automated indoor modelling from point clouds by providing a benchmark dataset and a framework for the evaluation and comparison of indoor modelling methods. These will enable comparative evaluation and benchmarking of algorithms for automated modelling of indoor environments.

Activities and Results

The project team collected five point clouds captured by different sensors in five indoor environments representing different levels of complexity. These data are made publically available via the ISPRS website: http://www2.isprs.org/commissions/comm4/wg5/benchmark-on-indoor-modelling.html.

We also generated reference models from the point clouds, and developed a comprehensive evaluation framework based on the reference models and appropriate quality evaluation criteria. Figure 1 shows the five point clouds and the corresponding reference models. A detailed description of the benchmark dataset, sensor specifications, reference models, and the evaluation framework is provided in a paper, which was presented at the Indoor 3D 2017 workshop in Wuhan (Khoshelham et al., 2017).

The ISPRS website for the benchmark dataset was set up in September 2017. Since then, the dataset has been downloaded by 50 researchers from 11 countries. Figure 2 shows the download statistics of the benchmark dataset.

As a follow-up activity of the scientific initiative, we aim to organise a benchmark test to evaluate and compare existing indoor modelling algorithms. To this end, we have issued a call for participation inviting interested researchers to participate in the benchmark test by applying their

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methods to the benchmark dataset and submitting the results for evaluation. We will evaluate the submitted models from a geometric, semantic and topologic point of view, and publish the results on the ISPRS website.
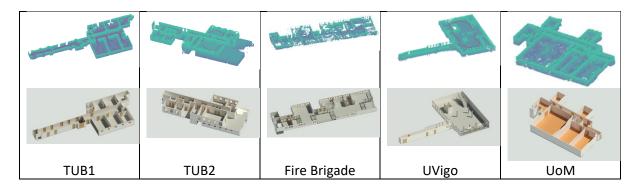

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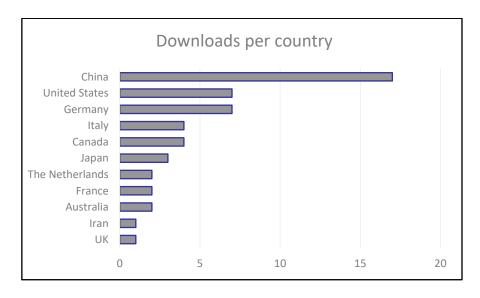Figure 1. The benchmark point clouds and the corresponding reference models.

Figure 2. Download statistics of the benchmark dataset.

Project Expenses

The total grant received from the ISPRS for this project was CHF 8,000.00. The following is a breakdown of the project expenses.

- Acquisition of point clouds   CHF 600.00
- Generation of reference models   CHF 5,100.00
- Evaluation software development   CHF 1,500.00
- Travel   CHF 800.00

Reference:

Khoshelham, K., Vilariño, L.D., Peter, M., Kang, Z., Acharya, D., 2017. The ISPRS Benchmark on Indoor Modelling. International Archives of the Photogrammetry, Remote Sensing & Spatial Information Sciences XLII-2/W7, 367-372.