

Application of Mobile Mapping System for Indoor Geospatial Information Visualization

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Abstract. Recently, Geospatial Information market has expanded and data acquiring techniques has developed. Mobile Mapping System is the process of collecting Geospatial data from a mobile vehicle, typically fitted with a range of photographic, LiDAR or any number of remote sensing devices. Such systems are composed of an integrated array of time synchronized navigation sensors and imaging sensors mounted on a mobile platform. The primary output from such systems includes GIS data, digital maps, and georeferenced images. In this study, Mobile Mapping System for construction of Indoor Geospatial Information was applied. As a result, Geospatial Information of target area was constructed effectively using the TIMMS and it showed utilization of indoor mobile mapping system. It is expected that TIMMS will shorten time that takes to establish indoor Geospatial Information significantly and various applications.

Keywords: Mobile Mapping System, Indoor Geospatial Information, Point Cloud, Panoramic Image

1 Introduction

Geospatial information, also known as location information, is information describing the location and names of features beneath, on or above the earth's surface[1][2]. At its simplest this can mean the basic topographical information found on a map. On a more complex level it can include different location-related datasets combined into layers that show information such as land use and population density[3][4]. Recently, Geospatial Information market has expanded and data acquiring techniques has developed and its range has expanded the indoor space. But it is lacking in research about construction of Geospatial Information on indoor space. So, the purpose of this study is to apply newest techniques for construction of indoor Geospatial Information and evaluate its utilization.

2 Indoor MMS and Data Acquisition

In this study, TIMMS(Trimble Indoor Mobile Mapping Solution) was used to acquire data. TIMMS was developed to acquire information on indoor space using various sensors such as IMU(Inertial Measurement Unit), DMI(Distance Measurement Unit), 3D laser scanner and panoramic camera. The TIMMS is the optimal fusion of technologies for capturing spatial data of indoor and other GNSS denied areas. It provides both LiDAR(Light Detection and Ranging) and panoramic camera, enabling the creation of accurate, real-life representations (maps, models) of interior spaces and all of its contents appear in the plan[5]. Fig. 1 shows TIMMS.



Fig. 1. TIMMS

Data acquired in TIMMS has post processed which is conducted in order of import of IMU and DMI data, creation of path information, creation of point cloud and creation of panorama image. Geospatial Information of target area was constructed effectively using the TIMMS and it showed utilization of indoor mobile mapping system as various deliverables. Fig. 2 show results of TIMMS.

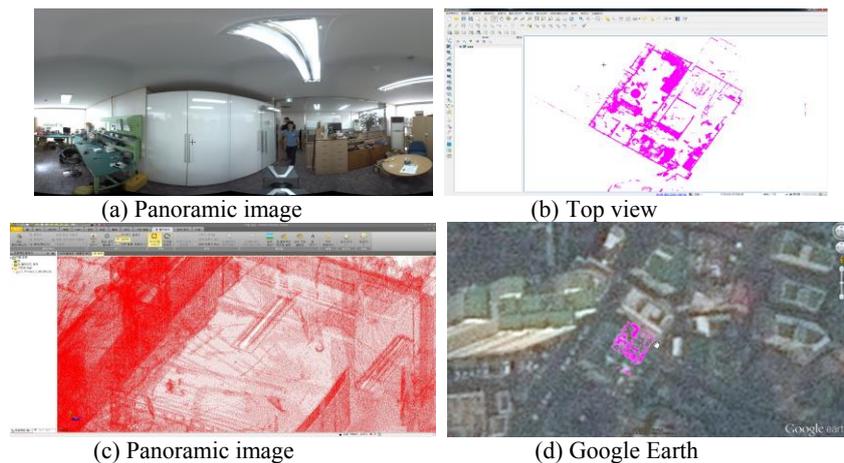


Fig. 2. Results of TIMMS

3 Conclusions

This study established Mobile Mapping System using integrated sensor for construction of Indoor Geospatial Information was applied. Conclusions of this study are as follows. Geospatial Information of target area was constructed effectively using the TIMMS and it showed utilization of indoor mobile mapping system by showing the various deliverables such as panoramic image, top view of target area, point cloud and result on Google Earth. It is expected that TIMMS will shorten time that takes to establish indoor Geospatial Information significantly and various applications.

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