LIDAR IN SMART CITY DEVELOPMENT

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Abstract:

A smart city is an urban area that uses different types of electronic data collection/sensors to supply information used to manage assets and resources efficiently. Smart city is the one of the major projects that India is determined for developing sophisticated infrastructure. LiDAR and Photogrammetry plays vital role for smart city development and several phases of urban planning. LiDAR which stands for "Light Detection and Ranging" is a remote sensing technology that measures distance by illuminating a target with a laser & analyzing the reflected light. LIDAR data collection relies on an aircraft or UAV mounted, computer controlled laser that records high precision distance measurements, synchronized with a precision survey grade Global Positioning System (GPS) unit and inertia measurement system. With the help of LiDAR, an accurate topography of land can be mapped and proper designing and planning for a city can be executed. Photogrammetry retrieves the geometrical shapes and textures of urban built up areas.

This paper presents to find comprehensive solution for LiDAR & image data acquisition, stereoscopic 3D GIS interface for digitising spatial objects & finding spatial data with highest accuracy. The obtained data is processed to generate DTM, DSM and DEM for analysing the terrain models, which can facilitate the further planning of city. LiDAR data is analysed using software's like FUSION, LASTools and ArcGIS for generating and visualizing the point cloud. The derived results like DSM, DTM and DEM are used for developing the 3D models of city. This innovative technology will help to achieve more accurate maps of the city within stipulated time.

(keywords: Smart City, LiDAR, Photogrammetry, Topography, 3D models)