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Building detection from laser scanning data for its integration with GIS

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Laser scanning systems being an important data source for GIS is generally used to generate Digital Surface Model (DSM). Airborne laser scanning (LIDAR) technology, ability to collect data very fast in a short time and measure the various objects types like bare earth and aboveground objects, is a critical method. This technology has high accurately been used in many application areas, which are needed 3D urban model data, such as urban planning, telecommunication, environmental monitoring, traffic and safety. Nowadays, automatic feature extraction from laser data or images has been an important research topic. With laser scanning technology, either digital surface and terrain models (DSM and DTM) or off-terrain objects such as buildings and trees are possible to have been classified and extracted as well classification of this data the objects like building and tree or bare earth can be determined. Buildings which are effecting the changing in urban areas are very important for 3D modeling so that these objects have effectively been determined very fast. On those days, these requirements have been accomplished by many system used image and laser data. In this study, using airborne laser scanning data buildings were automatically extracted. Stuttgart city center was selected as study area and the laser data, which are utilized before to evaluation of filtering techniques by ISPRS Commission III, belonging to this area was used. First pulse data were selected from the data produced as first and last pulse. B/W and intensity images were produced for study area using point clouds data. To do this, Surfer 8 software were employed. Building details were extracted from the images produce before using MATLAB Image processing Toolbox. Buildings were classified and driven theirs boundaries. Produced buildings were compared with the

DTM belonging to the same area. In this study, it was shown that the objects like building and trees can quickly be extracted from laser data; as well vector building details can be integrated with GIS. As a result, laser data have been presented as an important technique aspects fast production and automatic evaluation. Because of the fact that the result products is being digital, it has been used in many applications areas such as 3D modeling, presentation and orientation 3D data, integration 3D data with GIS.