

TECHNIQUE OF AUTOMATIC MOBILE LASER SCANNING DATA ADJUSTMENT

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Adjustment is a main step in the preliminary processing of mobile laser scanning (MLS) data. As a result of this step, a point cloud is generated in a certain coordinate system. The modern software, provided with the corresponding surveying system, is capable of performing in automatic mode most stages of MLS data adjustment obtained for territories with different quantity of buildings. With a sufficient number of vertically arranged planar objects, such as building walls, the algorithms embedded in the software provide a high accuracy of relative adjustment, which consists in calculating and applying corrections for trajectories obtained with re-scanning the same area. Absolute adjustment can also be carried out automatically, subject to the rules for placing control points in order to automatically detect them. This kind of adjustment involves transforming a point cloud with using control point coordinates measured with more accurate surveying methods. The accuracy of automatic relative adjustment can be significantly reduced with the almost complete absence of vertical flat objects. In this case, it is necessary to develop additional adjustment techniques capable of using not only flat objects of a large area, but also vertical objects, such as road signs and poles. Comprehensive technique of MLS data adjustment, which can use information on the position of road signs and poles for territories with an insufficient number of vertical flat objects is proposed. The accuracy estimation of both the relative and absolute MLS data adjustment according to the proposed technique was carried out. The choice of the required control point density for territories with different quantity of buildings is explained.

Keywords: mobile laser scanning, data adjustment, vertical objects, control points, accuracy estimation

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