



[Volume XL-3/W2](#)

Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XL-3/W2, 73-79, 2015
www.int-arch-photogramm-remote-sens-spatial-inf-sci.net/XL-3-W2/73/2015/
doi: 10.5194/isprsarchives-XL-3-W2-73-2015
© Author(s) 2015. This work is distributed
under the Creative Commons Attribution 3.0 License.

USE OF AERIAL IMAGES FOR REGULAR UPDATES OF BUILDINGS IN THE FUNDAMENTAL BASE OF GEOGRAPHIC DATA OF THE CZECH REPUBLIC

V. Hron and L. Halounova

Department of Geomatics, Faculty of Civil Engineering, Czech Technical University in Prague, Thákurova 7, 166 29 Prague 6, Czech Republic

Keywords: Aerial Image, Image Matching, Point Cloud, Digital Surface Model, Spectral Classification

Abstract. Digital aerial images (DAI) include position, elevation and also spectral information (visible bands and near-infrared band) about the captured area. The aim of this paper is to present the possibilities of automatic analysis of DAI for updating of the Fundamental Base of Geographic Data of the Czech Republic with a focus on buildings. Regular updates of buildings (automatic detection of new and demolished buildings) are based on the analysis of coloured point clouds created by an automatic image matching technique from each time period. The created approach compares point clouds from different time periods to each other. The advantage of this solution is that it is independent of the manner of keeping the buildings in the database. It does not matter whether the buildings in the database have correct positions and their footprints correspond to the roof shapes or external walls. The involved method is robust because a digital surface model generated by image matching techniques can contain numerous errors. Shaded areas and objects with blurred textures are problematic for automatic image correlation algorithms and lead to false results. For this reason, derived layers containing additional information are used. Shadow masks (layers with modelled shadows) are used for the verification of indications and to filter out errors in the shaded areas using a contextual evaluation. Furthermore, additional information about the road and railway networks and morphological operations of opening and closing were used to achieve more accurate results. All these information sources are then evaluated using decision logic, which uses the generally applicable rules that are available for different datasets without the need for modification. The method was tested on different datasets with various types of buildings (villages, suburbs and city centres) which cover more than 20 square kilometres. The developed solution leads to very promising results without the need of acquiring new data.

[Conference Paper](#) (PDF, 12941 KB)

Citation: Hron, V. and Halounova, L.: USE OF AERIAL IMAGES FOR REGULAR UPDATES OF BUILDINGS IN THE FUNDAMENTAL BASE OF GEOGRAPHIC DATA OF THE CZECH REPUBLIC, Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XL-3/W2, 73-79, doi: 10.5194/isprsarchives-XL-3-W2-73-2015, 2015.

[an error occurred while processing this directive]