

Determination of Buildings Tilts on the Basis of UAV Photogrammetric Data

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SUMMARY

The report presents results of the study on accuracy of buildings tilts determination based on photogrammetric data acquired using unmanned aerial vehicles (UAVs). Over thirty buildings located in the area under influence of underground hard coal mining were analysed. The research was performed on the basis of UAV-based data acquired during five series in the period from July 2019 to November 2020. In the proposed solution, the change in the building tilt was calculated on the basis of the values of horizontal displacements of the ground floor and the top of the object which were determined using multi-temporal UAV-based orthomosaics. Taking into account the height of the building, its tilt was calculated. The accuracy of the determined tilts was analysed on the basis of the reference data collected using the terrestrial laser scanning. The results confirmed the possibility of determining changes in the buildings tilts on the basis of UAV imagery and constitute the basis for further research on the application of UAV photogrammetric data to monitor the displacement of the land surface and objects located on it.

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