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Title:	**Analysis of the measuring possibilities of aerial oblique images**

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Drawings	78
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Keywords: oblique images, orientation, bundle adjustment, dense image matching, accuracy

Oblique aerial images – captured with the camera's optical axis intentionally tilted from the vertical (usually by an angle between 30–45 degrees), make it possible to record elements that are typically not visible on nadir images – usually taken for photogrammetric purposes. This makes them increasingly popular, especially as a data source for urbanised areas. At the same time, the geometry of this type of imagery and a much larger number of images in a single block than previously encountered in aerial measurements result in challenges in regards to their processing and orientation, resulting in them being perceived as a less accurate spatial data source.

The aim of the dissertation is to propose an effective orientation method for this type of imagery and to determine the measurement accuracy of the point position that can be obtained from them. For this purpose, experiments were carried out on the orientation of oblique aerial images with methods based on Structure-from-Motion algorithms, particularly the influence on the orientation process of such factors as reduction of the number of tie points (observations) and self-calibration.

The proposed methodology based on the results of carried-out experiments was experimentally verified on six blocks of oblique aerial photographs. The results of the analyses confirmed the proposed methodology's effectiveness – allowing to obtain sub-pixel accuracy of the position of terrain points measured in the aerotriangulation process.

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