

The Possibility of Using AI Tools to the Inventory of Technical and Transportation Infrastructure Using Uav Data

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SUMMARY

In the article, the authors continue the presentation of the results of the project related to the methodology of UAV data application for the inventory of transport and power infrastructure. UAV images, orthophotos, and point clouds from both dense image matching and lidar data were used in the experiments. Modern AI tools using convolutional neural networks allowed the classification of selected infrastructure objects such as streetlamps, construction layers, rail sleepers, rail tracks, traction network power poles, and powerlines. The article presents the possibilities and types of data that can be used in the automatic inventory of road, rail, and power investments in surveying works. Photogrammetric and lidar products were processed with AI tools to automate the detection and recognition of apparatus. The obtained results provided accuracy for selected objects above 90%. Such high results also included using data from the CAD documentation including BIM project which allowed for spatial analyzes referring to the location of the expected object. The prepared algorithms have been developed for the partner's business portal as a service for investors and contractors of works related to the construction and reconstruction of technical and transportation infrastructure. It is an example of how modern IT solutions can be used by surveyors in their daily job to make the work faster and more automated.

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