Detection service based on coherent point cloud analysis with AI methods using CENAGIS libraries

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Abstract:

The research aims to create a tool that, based on a loaded point cloud from airborne laser scanning (LIDAR), allows a reading of the heights of various objects, especially buildings, and an easy calculation of height differences. Usually, tools of this type operate on full 3D models and require advanced applications such as GIS or CAD class. In this case, it will be possible to analyze the point cloud in a 'perspective' (3D) view in conjunction with other data. The service, combined with the possibility of attractive geovisualisation, in the background of various geospatial data, e.g. aerial photographs, will facilitate geospatial analyses necessary for smart cities. It will be possible to work on integrated, large sets of point clouds. Also, the possibility of automatic detection of the type of indicated object in an automated manner, with the use of the Warsaw University of Technology's proprietary software library CENAGIS.SAND and the use of AI algorithms for this purpose, will be transferred.

Advances in AI show the possibility of creating classification algorithms that work on image data, like visualization of the point cloud, and on point cloud itself. During the experiment, it is necessary to analyze possible AI solutions to efficiently and accurately classify point cloud datasets and return the leading type of development and leading type of land cover on the analyzed area. The desired level of technology readiness is a fully automated method that can take point cloud and area as input, and return information about the leading type of development and leading type of land cover as a result.