UNIVERSITY OF LIFE SCIENCES ”KING MIHAI I” FROM TIMISOARA
”YOUNG PEOPLE AND MULTIDISCIPLINARY RESEARCH IN APPLIED LIFE SCIENCES”

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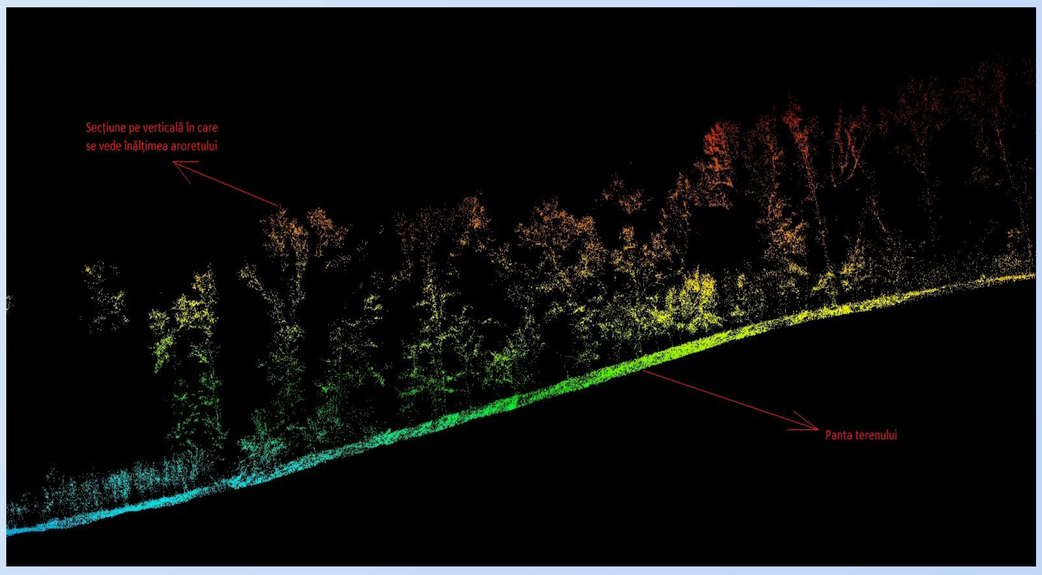
USE OF LiDAR TECHNOLOGY FOR SURVEYING FORESTED LAND: A CASE STUDY IN BOGDA COMMUNE, TIMIȘ COUNTY, ROMANIA

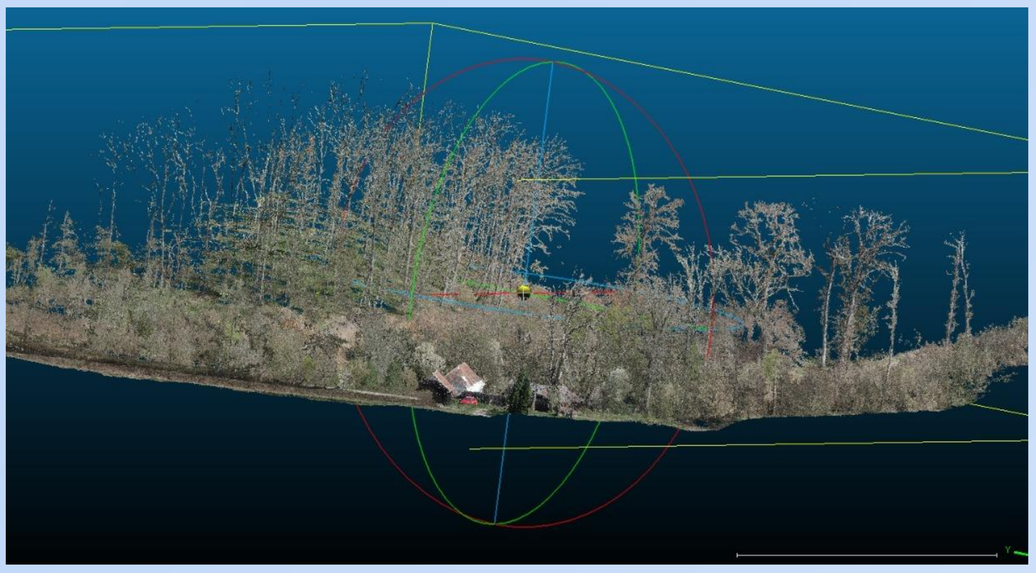
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Abstract: *Surveying forested land is challenging because of uneven terrain, dense vegetation and limited access. This study presents a LiDAR-based workflow for documenting a forested area in Bogda Commune, Timiș County, Romania. Data were acquired using a DJI Matrice 300 RTK drone equipped with a GeoSLAM ZEB Horizon RT laser-scanning system. The data were processed using CoPre and DJI Terra to generate a three-dimensional point cloud and derived products, including a digital terrain model, slope representation and vertical tree cross-sections. The results demonstrate the potential of LiDAR for representing terrain, vegetation and infrastructure in a common three-dimensional environment.*

• Introduction

Forested terrain is difficult to survey because vegetation can obscure the ground and access may be limited. LiDAR technology provides three-dimensional information that supports topographic analysis and forest documentation.Objective: To examine the use of LiDAR data for surveying and representing forested land in Bogda Commune, Timiș County.





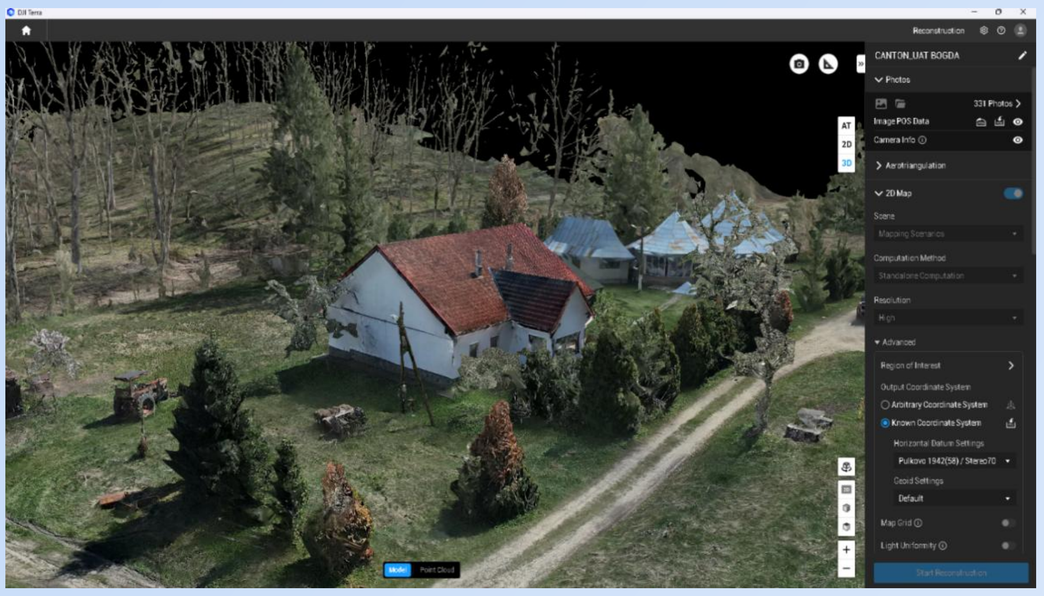






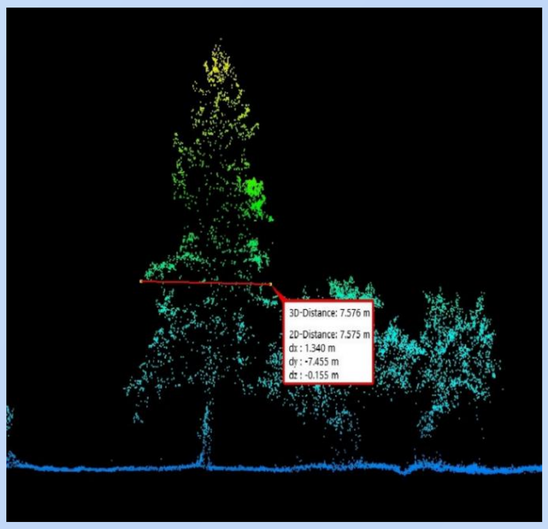
• Material and method

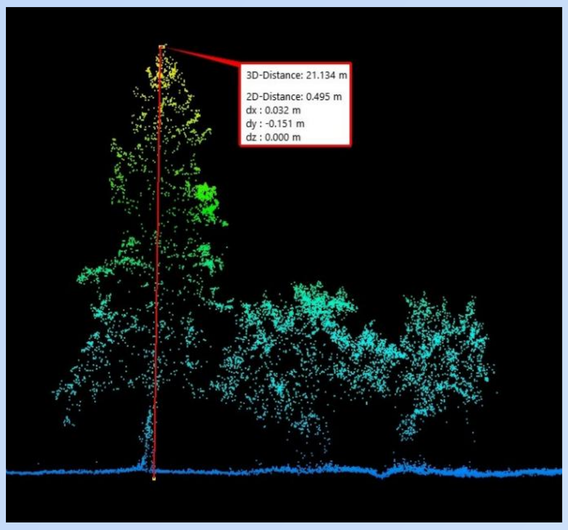
-Study area: Bogda Commune, Timiș County, Romania.
-Equipment: DJI Matrice 300 RTK UAV, GeoSLAM ZEB Horizon RT laser scanner and CHCNAV i93 GNSS receiver.
-Workflow: Field data acquisition, processing in CoPre and generation of LiDAR-derived products in DJI Terra.
-Main outputs: 3D point cloud, digital terrain model, slope representation and vertical cross-sections through individual trees.

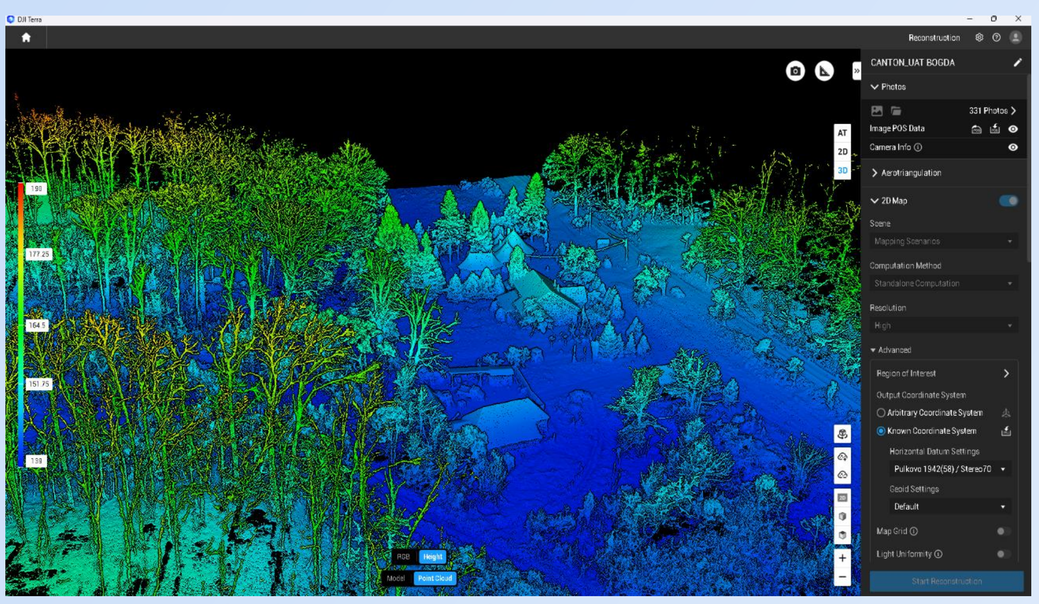


• Results and discussions

The LiDAR point cloud provides a three-dimensional view of the surveyed area and allows terrain, vegetation and built features to be examined from different perspectives.The digital terrain model and slope representation describe variations in elevation and surface inclination. Vertical cross-sections through trees support the visual examination of tree height and crown width.The 3D model also represents buildings and nearby infrastructure, demonstrating the value of a unified spatial dataset. Point visibility and density may vary with scanning conditions and vegetation structure.







• Conclusions

The workflow combining LiDAR acquisition, CoPre and DJI Terra produced digital products useful for surveying forested land. The point cloud, terrain model, slope representation and tree cross-sections support topographic interpretation and further forestry analysis. Independent control data and explicit calculation methods are required to quantify accuracy and validate forestry indicators..

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