

LiDAR360

Point Cloud Post-Processing Software

LiDAR360 is a comprehensive point cloud post-processing software that includes a variety of toolsets to efficiently visualize, manipulate and generate meaningful geospatial products from point cloud data.

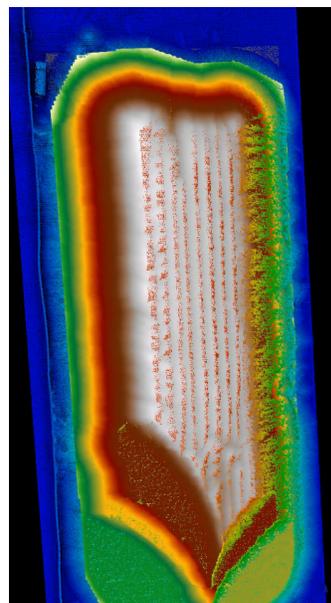
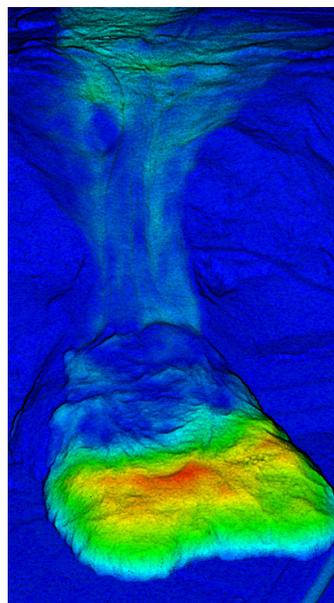
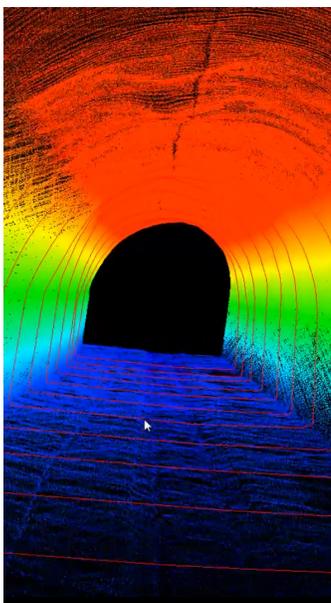
Framework

The LiDAR360 Framework lays the foundation for the entire software suite. With TB-level processing power, the Framework contains tools required for effectively interacting and manipulating LiDAR point cloud data. Functions include data management, automatic strip alignment, and point cloud classification. It also allows users to upgrade to application-specific modules such as terrain, ALS/ TLS Forestry, and Geological Analysis. In the latest version 5.0, the powerline module is added to LiDAR360. Users can conduct professional analysis on powerline data, such as classification, danger point detection, and so on.



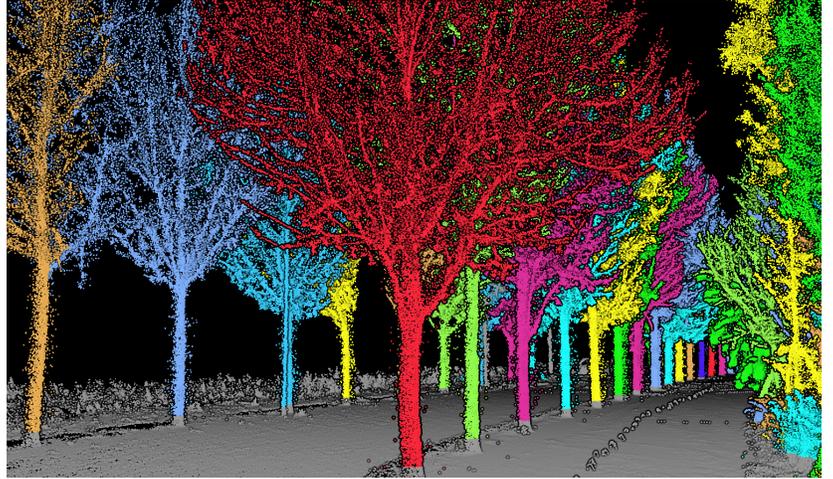
Terrain

The terrain model provides a series of automatic and manual-editing tools for classifying ground points from LiDAR point clouds. It also provides a set of GIS tools for interpolating surface models (e.g., digital elevation model/DEM, digital surface model/DSM), and visualizing and editing them in 3D. Additionally, it contains tools for repairing surface models from spikes and holes. Furthermore, It allows users to analyze the terrain model to generate derivatives from the surface models, e.g. slope, aspect, and roughness. In the latest version, the change detection and deviation analysis functions to better support users' needs in different fields, e.g., disaster monitoring, land-use change analysis.



ALS/TLS Forestry

The forestry module contains tools to process point cloud data acquired from aerial laser scanning (ALS) systems (e.g., LiAir, LiEagle), terrestrial laser scanning (TLS) systems (e.g., LiBackpack), and mobile laser scanning systems (e.g., LiMobile). This module provides effective individual tree segmentation and editing tools for all kinds of point cloud data. And users can recover the topographic information with denormalization tool after the segmentation and editing.



— Individual Tree Segmentation

Segment individual trees based on point cloud from both aerial and terrestrial LiDAR systems. Supports both CHM-based and point cloud based segmentation algorithms. After the segmentation, users can manually modify the segmentation result to improve accuracy. And then recalculate the individual tree metrics based on the modified result.

— Forest Metrics

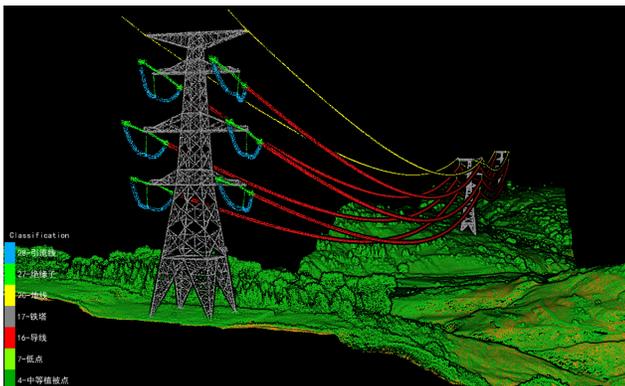
Automatically calculate forest metrics including elevation, intensity, canopy cover, LAI, etc., and provide regression tools to derive parameters of forests that cannot be directly extracted from LiDAR point clouds, such as biomass and stem volume.

— Tree Parameters Extraction

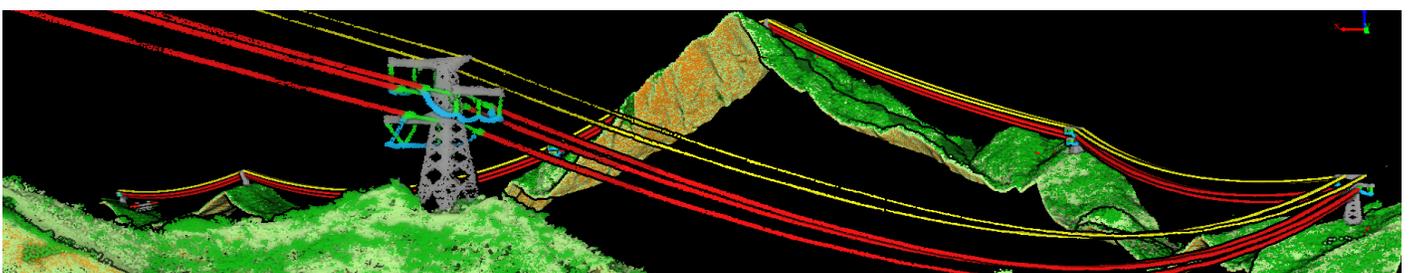
Automatically calculate individual tree parameters based on the segmented point cloud including tree location, tree height, diameter at breast height (DBH), crown area, crown diameter, crown area and so on.

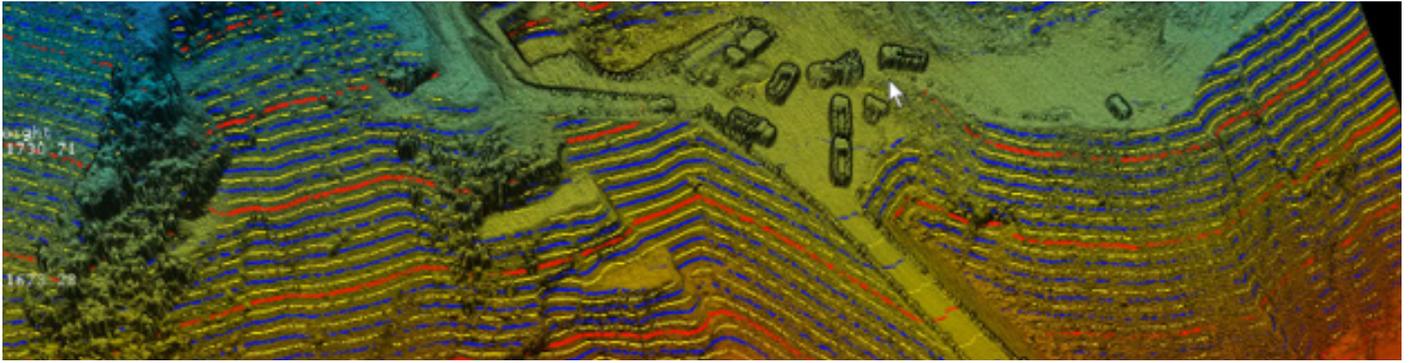
Powerline Inspection and Analysis

LiDAR360 can automatically classify power line/tower point clouds, perform real-time power line analysis, establish a sample library of machine learning classification algorithms, reproduce the terrain, landforms, and ground features in the transmission line corridor accurately and effectively. Through the LiDAR360 software, the data can be managed in a unified manner and combined with the relevant operating procedures of the transmission line to analyze the crossing, tree barriers, geology, etc. of the line, complete the three-dimensional visualization of the transmission line corridor, and achieve fast and efficient power line hazard detection and investigation in the grid system.



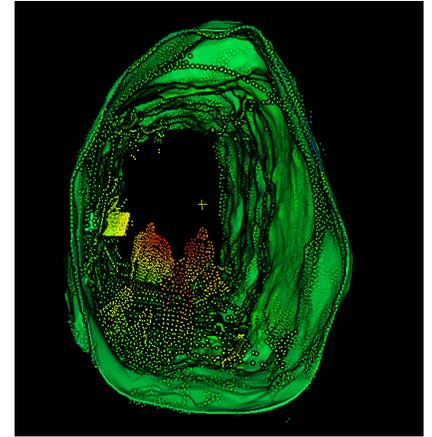
- Accurate and precise 3D modeling of towers, wires and ground features.
- Analyze defects such as tree barriers and crossovers in the line channel, quickly detect dangerous trees that exceed the safe distance of the transmission line, and accurately calculate the hidden dangers in the channel network.
- Supports tree segmentation along the power transmission channels, quickly detects the number, location, height, crown width and other information of hidden tree hazards, accurately calculates the amount of felling, and provide guidance for the field work of hazard investigation in the power grid industry.





Mine Surveying

Based on the real-time 3D point cloud data of mine on multi-platform, such as aerial and backpacks, the LiDAR360 measurement and terrain analysis modules can realize the mining path change detection of the open-pit mine, the quantitative analysis of the mining operation volume and the auxiliary decision-making of mining planning. At the same time, regular inspection and the analysis of the underground mine tunnel can be achieved to assist accident early warning and decision-making.



— **Economic and Environmental Evaluation of Mine Subsidence Area**

Accurately measure the development of soil erosion on slopes and the volume of sand dunes.

— **Tunnel section analysis**

Based on the point cloud data, highly accurate and precise 3D models of the tunnel will be generated in LiDAR360, and the differences between the standard (reference) section and the scan (point cloud derived) section are compared to monitor the tunnel deformation.

— **Mine pile volume measurement**

The 3D laser scanning system is used to observe the deposits and quickly obtain the 3D coordinates of the surface points of a large number of mine piles. The software can accurately calculate the volume of the mine piles based on the principles of calculus.

Geological Analysis

Based on the results from terrain module, the geological analysis module provides the toolsets with the function of structural plane analysis, section analysis, and landslide analysis for the geological industry. Moreover, the software can automatically generate the analysis report.

