

LIDAR360MLS





SOFTWARE

Point Cloud Feature Intelligent Extraction and Analysis Software

LiDAR360MLS is a feature intelligent extraction and analysis software independently developed by GreenValley International, which supports the processing and analysis of LiDAR point cloud and image data obtained by mainstream vehiclemounted, backpack, or handheld mobile mapping systems on the market. It has a complete processing chain from point cloud data processing to GIS asset survey, architectural drawings, 3D vector mapping, road condition assessment, railway inspection, urban forestry inventory, digital twin, high definition map, 3D Gaussian Splatting and other industry results delivery.



Massive Data Loading and Processing



Multi-Source Data Fusion Processing, Mapping, Analysis, Modeling



Independently Developed Underlying Engine



Efficient and Friendly 3D Interactive Editing



Leading Artificial Intelligence Algorithm



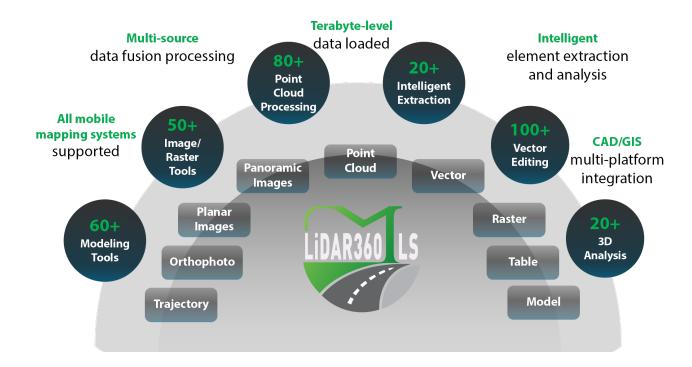
Integrated Management of Collection, Editing, Database Storage, etc.



Contents

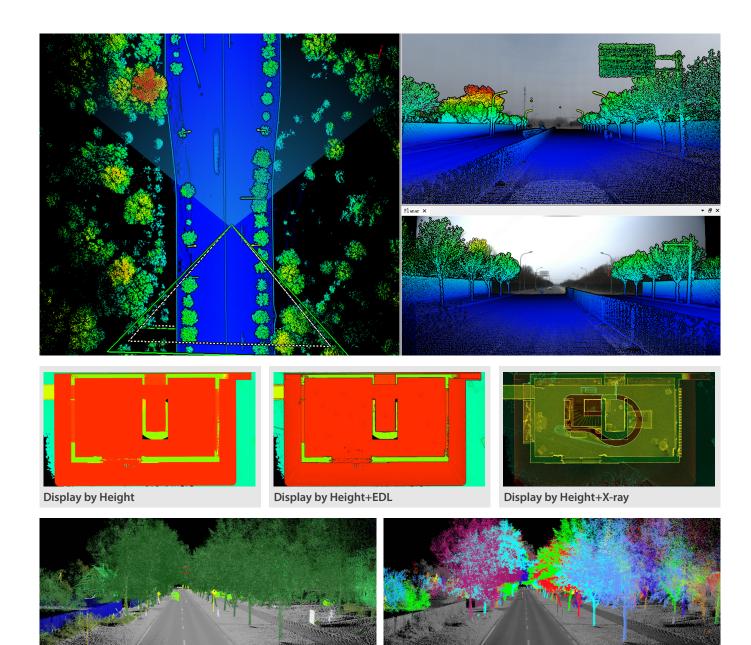
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Framework



Data Loading and Rendering

- Support point cloud and image data from various mobile mapping systems.
- All functions support units such as feet.
- Support overlap display of multiple planar cameras, panoramic camera and point cloud data, measurement and boresight calibration, assist data acquisition and editing.
- Combination display of multiple attributes, with additional attributes, to meet more application requirements.
- Rich point cloud snap tools, support automatic snap of feature points such as planes, ridges, and corners.

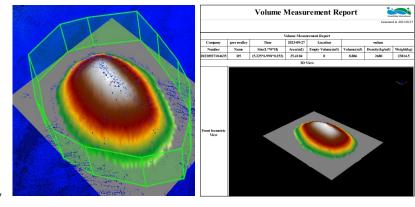


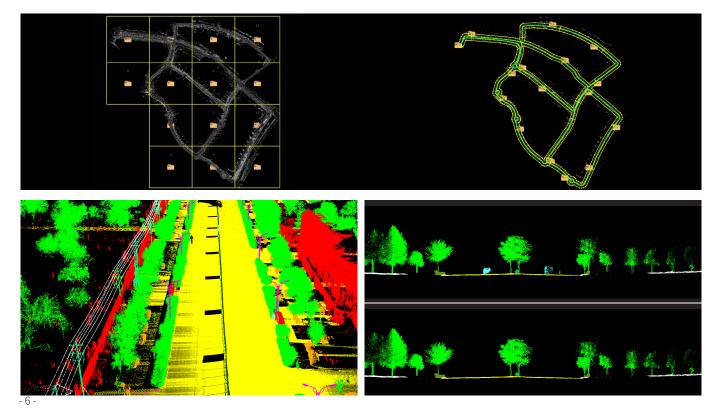
Display by Classification+Intensity

Display by TreeID+Intensity

All-in-One Data Processing Tools

- Support volume measurement and twophase volume change analysis using Grid and TIN methods.
- Point cloud processing: extraction, registration, export, classification, projection/coordinate transformation, selection/clipping, and measurement.
- Support point cloud slicing based on scale, strips, and multi-mode, with slice editing capabilities.
- Raster processing: measurement, surface analysis, raster calculator, format conversion, and projection transformation.





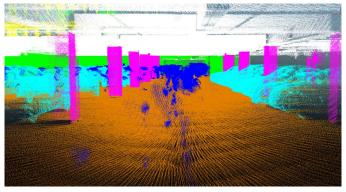
Intelligent Point Cloud and Imagery Processing

- Al-based point cloud classification algorithm, which can quickly obtain high-precision results and accelerate the efficiency of subsequent production analysis.
- Support classification pre-training models for indoor and outdoor scene point cloud data obtained by SLAM device.
- Support customized point cloud deep learning classification, users can train models suitable for their own data, and also support a few-sample learning model.
- A complete AI pipeline for point cloud and image data from annotation, training to inference.
- Image labeling assisted by the SAM model.
- Al-based Plates and Faces blurring.



Al-based Plates and Faces Blurring

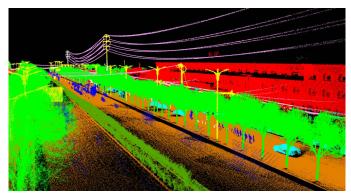




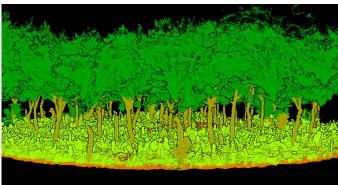
Scene 1: Underground Parking Garage



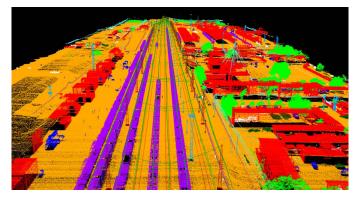
Scene 2: Shopping Mall



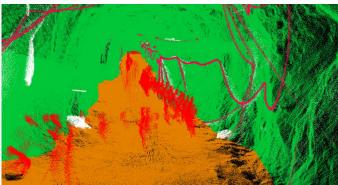
Scene 3: Urban Road



Scene 4: Forestry



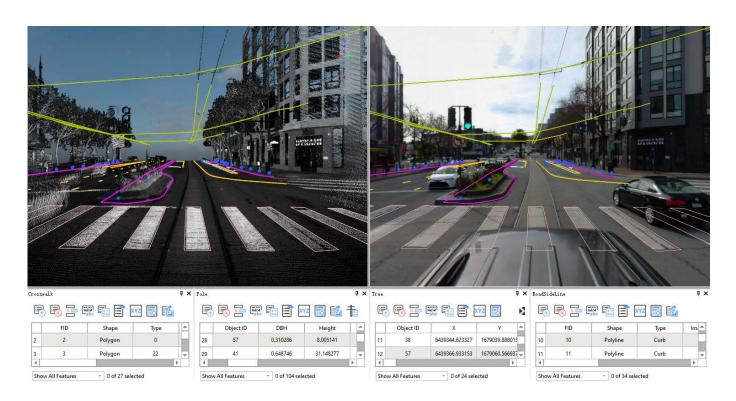
Scene 5: Railway



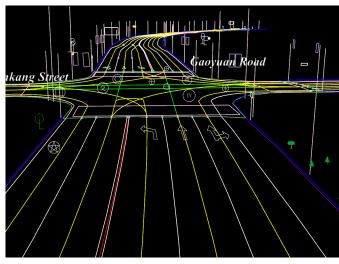
Scene 6: Mine Tunnel

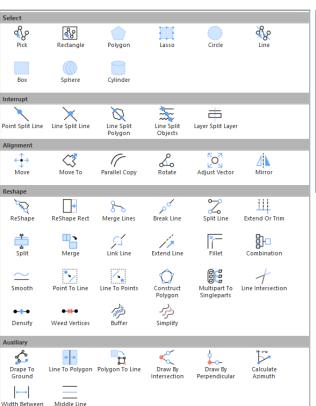
Vector & Attribute Editing

- Vector mapping with multi-source data fusion.
- 2D horizontal/vertical section mapping.
- Support 100+ vector operations: drawing, editing, type conversion, extraction analysis, overlay analysis, proximity analysis, and projection transformation.
- Support Point, Line, Polygon, MultiPoint, MultiLine, MultiPolygon.
- Multiple vector node snapping and editing modes.
- Vecotry layer and attribute management, support attribute table template configuration.
- Support field calculator and object photo database storage. The field calculator includes over 300 built-in functions and provides Python scripting tool.
- · Built-in national standard road asset symbol library and general symbol library.
- Support adding annotation to point cloud, features, vertices/edges multi-level data.



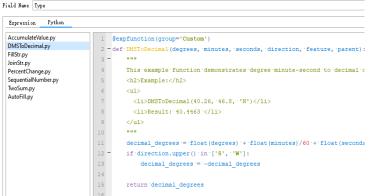








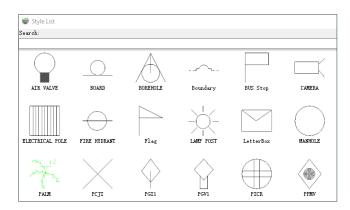
₩ RoadMarking - Field Calculator

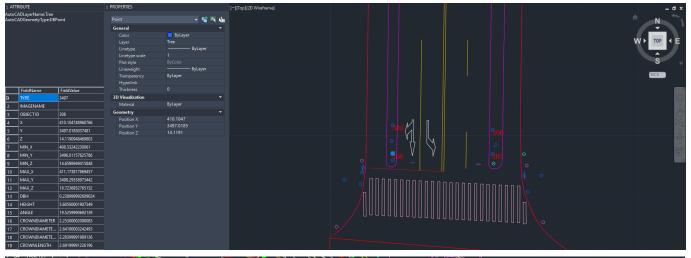


Lines

AutoCAD Plugin

- Zero-configuration one-click installation, compatible with multiple CAD software versions.
- Seamless CAD integration for geometry, attributes, annotations, and styles.
- Support import/export of GPKG, SHP, DXF, JSON, GeoJSON, table, and raster.
- Enables attribute queries with symbolic style management, definition, and editing.
- Multi-mode batch symbolization capabilities.





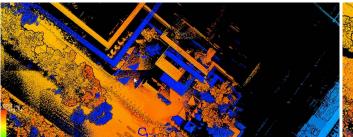


BP Module

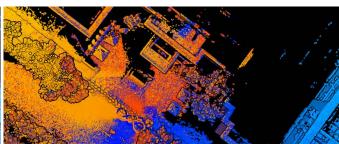
- One-click batch project creation and processing of LiGrip and LiBackpack.
- Support point cloud generation in the meters, feet, and yards coordinate system.
- Support PPK processing and export of PPK trajectory quality reports.
- Support base station data in RINEX, NovAtel, and RTCM3 formats.
- Support coordinate transformation options including seven parameters, geoid model, linear offset, projection to specified elevation, etc.
- Support custom ellipsoid, projection coordinate system, vertical coordinate system, etc.
- Support one-click MESH model export.
- Support one-click AI classification.
- Support GCP import and selection, enabling georeferencing and improved point cloud accuracy.
- Support LiGrip in outputting high-density point cloud data for more realistic results.
- Support registration and editing tools between single/multiple projects.
- Support SLAM closed-loop editing tools.
- Support SLAM calibration parameter updates.
- Support quality inspection and accuracy improvement.
- Support moving object removal.







Before Closed-Loop Editing



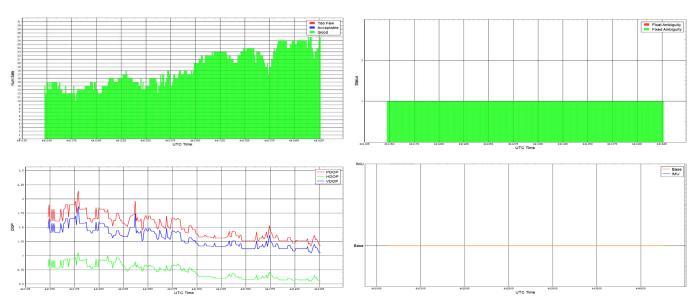
After Closed-Loop Editing



Before Moving Objects Removal



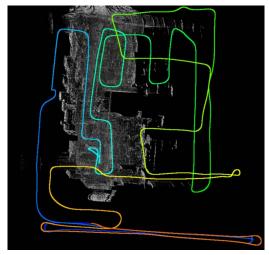
After Moving Objects Removal



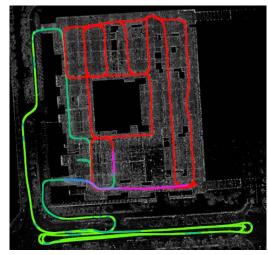
PPK Quality Report

Geo Module

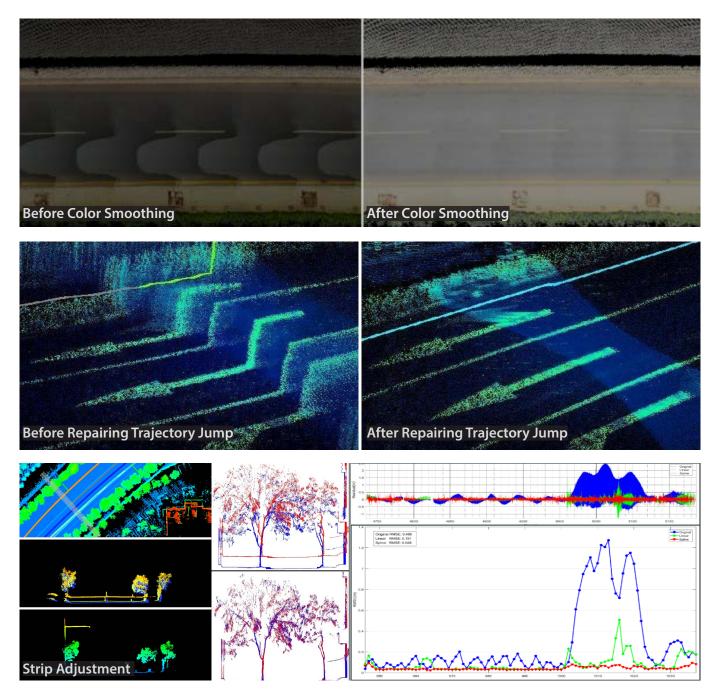
- Support intelligent data quality inspection and copying, automatically generating raw data quality reports (including camera, laser, and IMU statistics).
- New data processing workflow to continuously improve algorithms and data quality.
- One click point cloud generation for LiMobile.
- Support point cloud generation in the meters, feet, and yards coordinate system.
- Support LiMobile data SLAM processing, effectively optimizing trajectory in GPS-denied but feature-rich environments such as underground parking lots.
- Multi-source data registration for complex scenarios.
- Support quality inspection and accuracy improvement.
- Support point cloud boresight calibration, panoramic or planar camera extrinsic calibration, the mapping system does not need to be returned to the factory for calibration.
- Support point cloud and trajectory accuracy analysis, automatically identify and repair abnormal conditions such as trajectory jumps.
- Optimized the coloring algorithm with enhanced sky color optimization and smoother color transitions.
- Support relative alignment of MLS point cloud data, global optimization of multiple projects with control points, and output detailed accuracy reports to provide high-precision data support for subsequent applications.
- Support moving object removal.



Integrated Navigation Trajectory

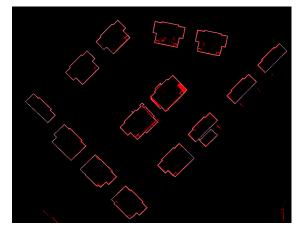


Integrated Navigation + SLAM Trajectory

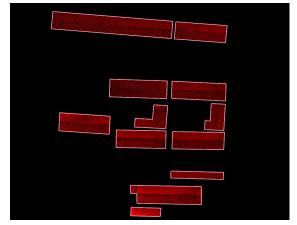


Asset Extraction

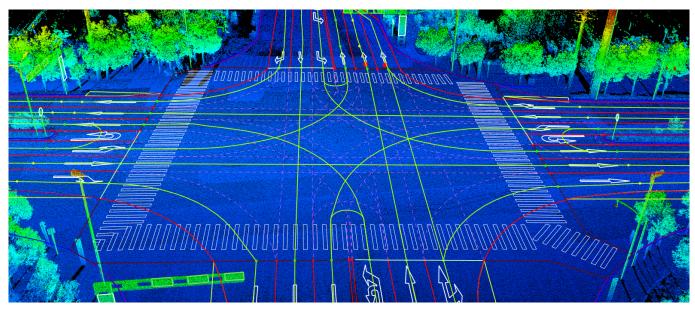
- Built-in fully automatic road marking extraction model.
- Support North American road marking AI model.
- Customized road marking extraction model training based on synthetic samples.
- Provide a rich sample libraries, support external import of sample vector contours in dxf, shp and other formats.
- Intelligent extraction of road facility, supporting custom Al models.
- Localized training and inference of custom road facility extraction models based on synthetic samples.
- Customizable road element symbol library, 100% fit in the drawing effect.
- Support the drawing of special symbols such as characters and letters, and enrich the achievement database.
- Interactive automatic multi-element detection improves mapping efficiency.
- Rich road element templates, drag and drop with one-click.
- Support customization of linear facility template to achieve batch extraction of linear elements.
- Support batch extraction of existing railroads and central lines.
- Support individual segmentation and parameter extraction of road facilities such as poles and vehicles.
- Support one-click extraction of building exterior contours.



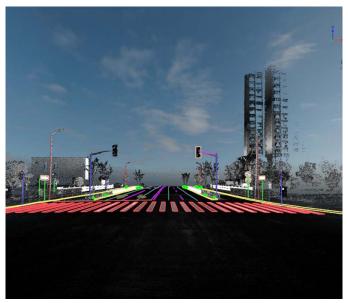
Building exterior contour extraction results from handheld data



Building exterior contour extraction results from airborne data

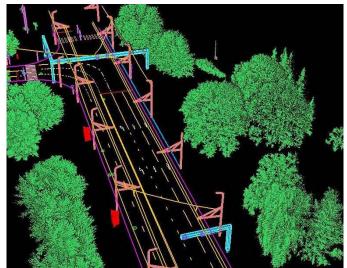


Al-based Road Marking Extraction

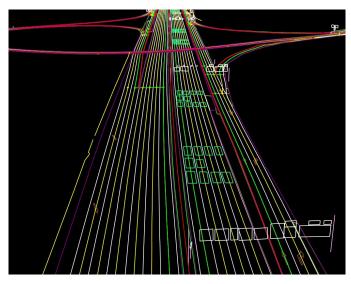




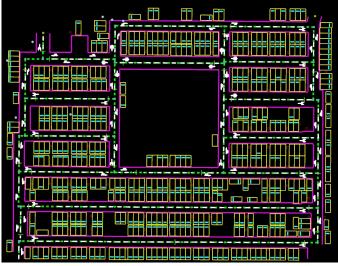
Al-based Road Facility Extraction



Urban Road Scene

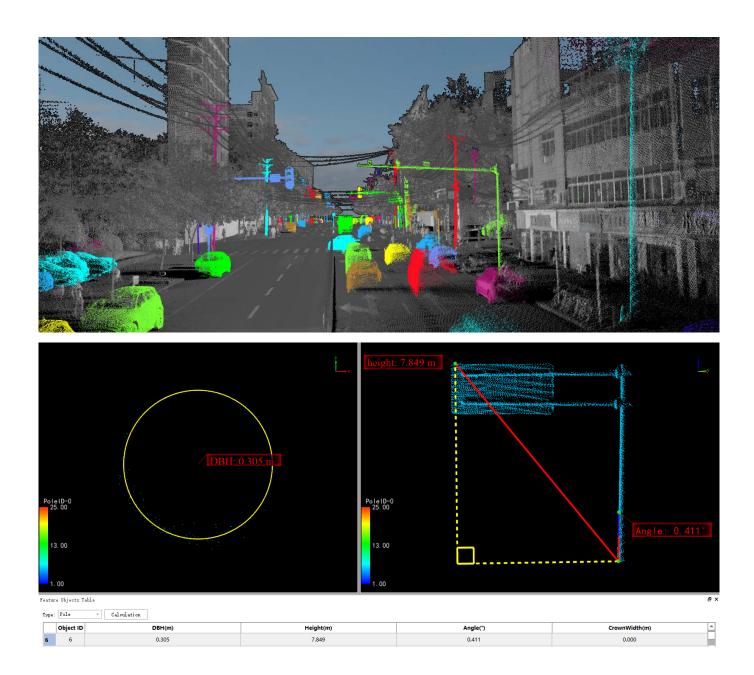


Overpass Scene



Highway Scene

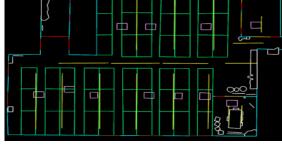
Underground Parking Garage Scene

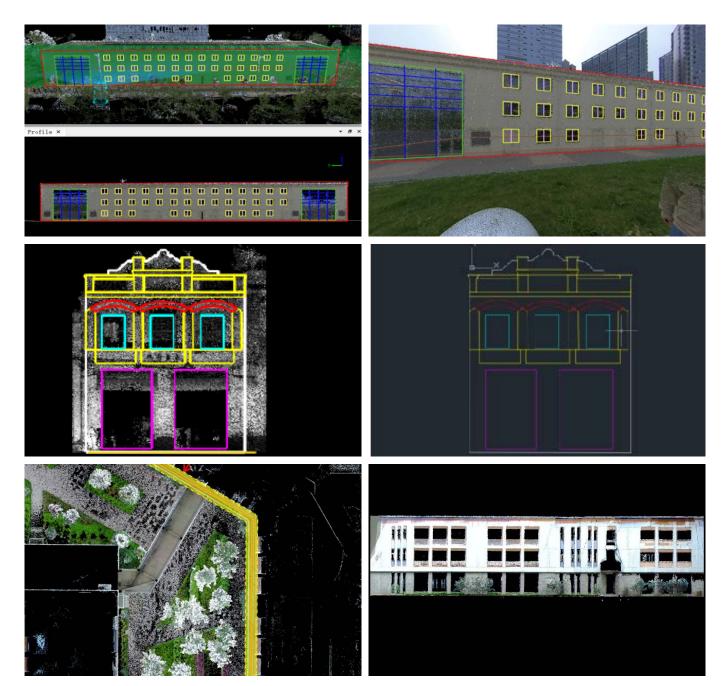


Architectural Drawings

- Seamlessly import LiGrip/LiBackpack/LiMobile point cloud and image data without format conversion and coordinate system definition.
- Provide automatic vectorization function for floor plans.
- Provide a multi-mode baseline collection method to adapt to various types of facade structures, and accurately locate side facade information.
- Provide point cloud polygonal/curved/cylindrical section unrolling function.
- Provide convenient drawing tools such as construction lines, grouping arrays, line intersection, etc., to speed up production efficiency.
- Using panoramic images to assist architectural drawings, making the drawing of elements more complete and accurate.
- Provide accurate length and area calculation functions, and support exporting tables in other formats.
- Support exporting DXF, Orthophoto, BluePrint result data, etc.





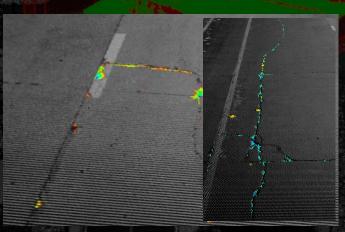


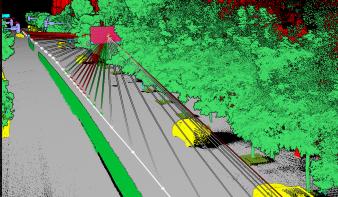
Road Condition

- Al-based pavement damage detection and support for pavement condition index(PCI) calculation.
- Support for multi-source data fusion in road damage editing.
- Support 3D space analysis methods such as clearance analysis, viewshed analysis, bridge height limit analysis, vehicle collision simulation analysis, railway inspection, etc.
- Support road section analysis, compare and analyze multi-phase data and generate standard comparison reports.
- Generate high-precision terrain based on crosssectional key points, support road section analysis and parameter calculation.
- Support the calculation of various road section parameters to assist in the analysis of road construction and other operations.



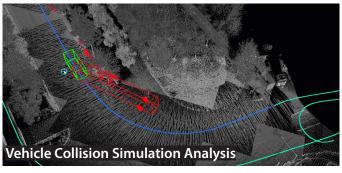
Al-based Pavement Damage Detection

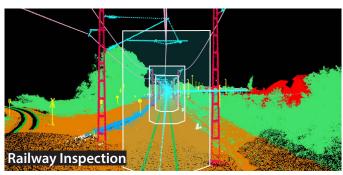


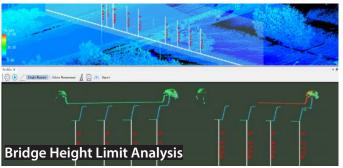


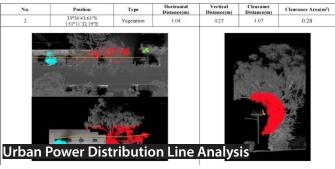
Road Pavement Analysis

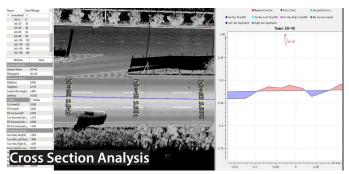
Viewshed Analysis Based on Target Point

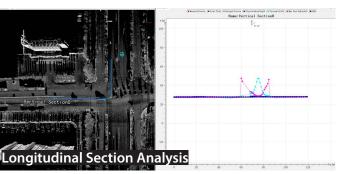


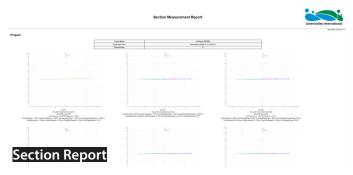


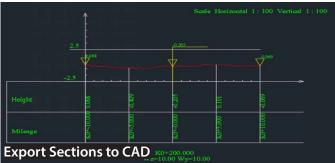






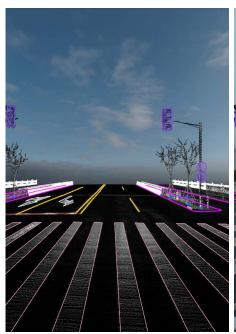






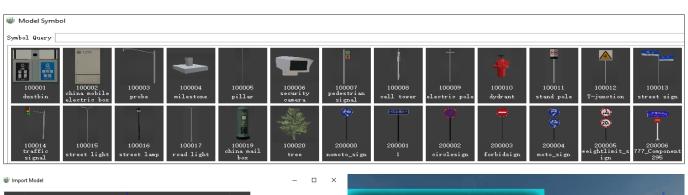
Road Scene

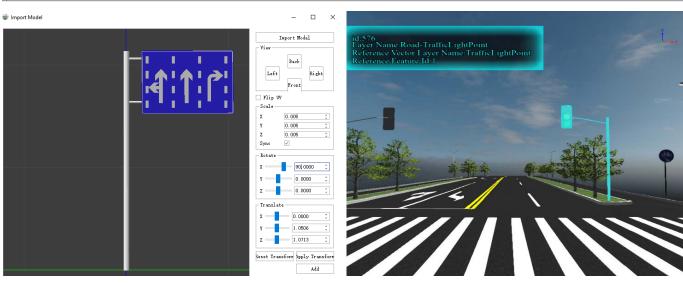
- Generate component-level 3D real scene with one click.
- Support automated quality inspection.
- Support model library expansion and customized configuration of model textures, with more than ten model editing tools.
- Support model export to OBJ and OSGB format.

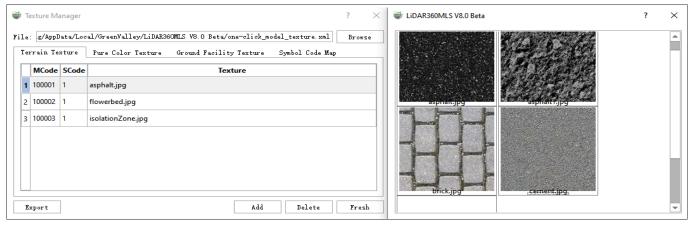






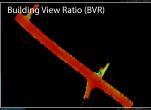




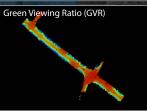


Forestry

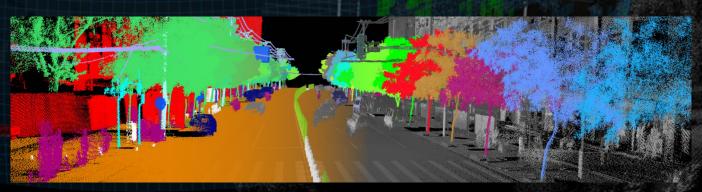
- Al-based point cloud classification.
- Seed point extraction, supporting single point, batch and global modes.
- Individual tree segmentation and parameter extraction.
- Individual tree editor and parameter measurement.
- Support measurement of parameters including DBH, Height, Crown Width,
 Crown Length, Crown Diameter, Crown Diameter SN, Crown Diameter EW, CBH,
 Angle, Area, etc.
- Individual tree management with parameters and photos.
- Ecological landscape thematic map.
- Simulation analysis of Green Viewing Ratio(GVR), Green Volume, Sky View
 Factor(SVF), etc.
- Expand batch processing mode for ecological landscape analysis to meet the needs of large-scale scene analysis.

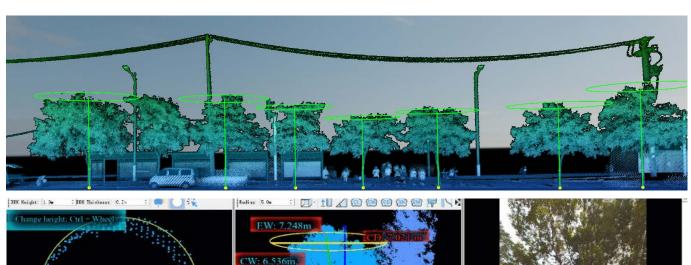




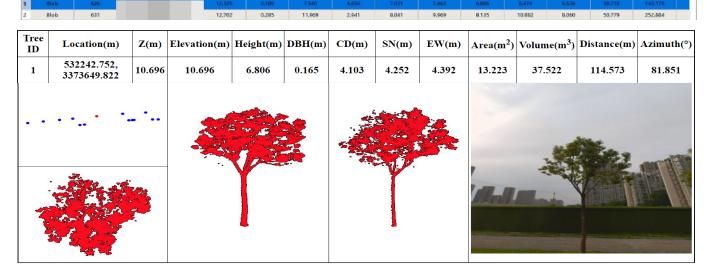












GSReconstruction

- Support Gaussian reconstruction based on LiGrip O1 Lite, LiGrip O2 Lite and LiGrip H300 series device data.
- Support importing PLY and LiSplat Gaussian models and displaying roaming view.
- Support third-person perspective mode with immersive data exploration capabilities.
- · Support Gaussian model superimposed point cloud rendering, as well as linkage between GS data and Point Cloud.
- Support linkage between GS data and Panorama.
- Support single-point, multi-point, length, height, area, angle, and other measurements based on Gaussian data.
- Support Gaussian model editing and provide a variety of options for cutting tools and exporting data after cutting.
- Support viewing cross-sectional data of Gaussian models.
- Support exporting data in both LiSplat and PLY formats.
- Support browsing Gaussian data based on camera or trajectory.
- Support 3D mapping on Gaussian data.





Panorama-linked Gaussian



3D Measurement



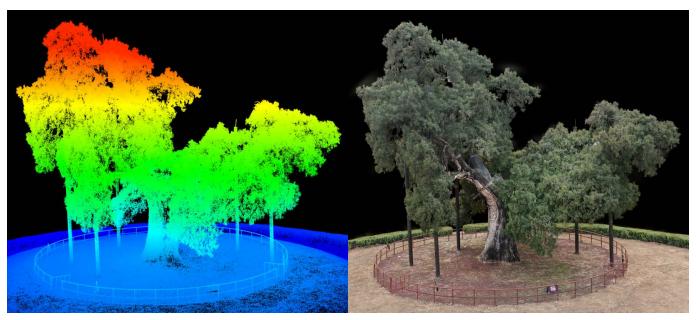
Substation Scene



Sculpture Scene



Architectural Facade Scene



Ancient Tree

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www.greenvalleyintl.com info@greenvalleyintl.com 729 Heinz Avenue, Suite 9, Berkeley, California 94710, USA