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Business Domain

GIS and Geospatial

Project Type

Data Collection automation platform

The Platform for Extracting Features From LiDAR Data Decreased the Manual Processing Time by 60%

Client

The Client is a diverse company offering utility engineering, GIS data management services, and subsurface utility engineering. One of the Client's project lines is Powerline management and inspection.

Project

The Client's projects demand precise and highly detailed end products.

Objective

The Client's aimed to create a relational database with multiple attributes for hydropoles using LiDAR mobile data. The main goal was to optimize feature extraction for urban planning and create automated algorithms for attribute calculation. It was important to minimize delivery time.

Team Reinforcement

The Client approached Intetics to find and mark hydropoles, additional equipment and create a detailed database with associated attributes based on mobile LiDAR point clouds. The task includes extracting a set of features from LiDAR mobile data, providing certain calculations for each feature and automatically calculate the heights of all objects.

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Challenge

The Client is a diverse company offering utility engineering, GIS data management services, and subsurface utility engineering.

The Client had no in-house engineers to develop a smooth automated data processing pipeline for Utility Engineering.

There were several challenges for this project:
- High number of attributes for each pole (height of transformers & streetlight, span guy, anchors, etc.);
- The need to quickly identify all parts of the poles. For example, span guy, type of circuits, and dip lines;
- Finding heights of all connected parts, preferably in semi-automated mode.

Quick Facts

✓ Intetics' solution decreased the manual processing time by 60%

✓ The developed algorithm can be used to obtain a similar database for other types of objects

✓ Highly detailed surface models were used for automated height calculation

✓ Classification algorithms are ready to implement in other urban planning projects

Technologies
PostGIS / GlobalMapper

Solution

★ 01

With the help of the highly detailed surface models, the Intetics team automatically calculated all height parameters for all objects.

★ 02

To detect small objects on the LiDAR cloud, the Intetics engineers connected GPS data to images and implemented them in processing software, using a custom script.

★ 03

After a thorough inspection of all available sources, the Team created a catalog of examples to help identify all parts of the poles more quickly and accurately.

★ 04

Automatic classification of trees significantly increased the process of extraction, but without the use of specialized software, the calculation of additional attributes (trunk width at breast height, canopy width/drip line) considerably complicated the process. For this task, several scripts to fully automate calculation were developed.

★ 05

Intetics' solution decreased the manual processing time by 50%, and QC algorithms helped to provide precise and detailed data.

Client Reference

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Intetics' solution decreased the manual processing time by 60% and developed the process of creation and maintenance of powerline inspection database.

Head of Data Processing Department

Benefits and Results

★ Intetics' solution decreased the manual processing time by 60%, and QC algorithms helped to provide precise and detailed data.

★ Such an approach could be implemented and adjusted for any other feature extraction project based on mobile LiDAR data.

★ Creating highly detailed surface models allows for the automatic calculation the necessary parameters.

★ To optimize the process of marking all attributes, the Team created a flexible tool with the help of Excel capabilities.

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