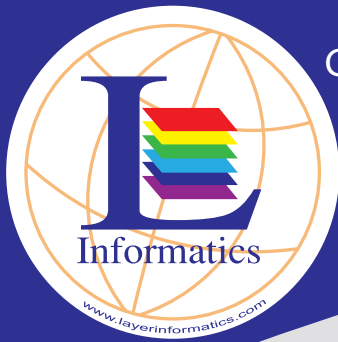




CLASSIFICATION OF FEATURES AND MODELING OF TRANSMISSION LINE OVER A POWER LINE CORRIDOR USING LIDAR POINT CLOUDS

A Case Study



CHALLENGES:

- Certain features such as moving objects, buildings were difficult to identify inside the vegetation class. They were identified with the help of Google Earth and orthos as a backdrop.
- Automatic classifications by routines were not completely successful and hence the missing points were manually classified with the help of the editable surface model.
- There was a little difficulty in obtaining a smooth ground and an accurate building class as the terrain was completely built-up with significant undulations and hence additional efforts were put to ensure that the accuracy levels are met.

Head Office:

Layer Informatics Pvt.Ltd.
#48/49, Sathyams, 3rd
Floor, 9th Cross, Sarakki
Main Road, J.P Nagar, 1st
Phase, Bangalore-560078.

INTRODUCTION:

The objective of the project was to extract features and model the transmission lines from Lidar Point clouds. The scope included the classification of features and modeling the Power line along a corridor of 500Km*300m dimensions using Lidar point clouds. The features classified were Ground, Vegetation, Buildings, Towers, Transmission lines, Insulators, Tower cross, Cable cross, Mast, Catenaries, Poles, Antennae, Panels, Tower lifts, Cable Lifts and moving Objects. The Transmission lines were then modeled over the corridor.

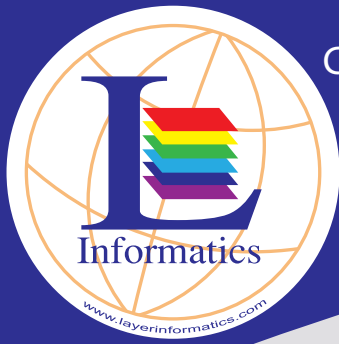
KEY ASPECTS:

- Automatic classification of Ground, Vegetation, Building and Noise points followed by manual editing.
- Manual classification of other features.
- Transmission line modeling.

METHODOLOGY:

➤ Feature classification

- Automatic routines were run to extract the ground from the supplied point clouds. A surface model of the ground was created and was manually checked and edited for any irregularities in the ground. Bridges and Low points were moved to respective classes.
- Routines were run to classify the points at a height of 2m and above from the ground to a high vegetation class.
- Automatic routines were run on the high vegetation class to classify the Building Points.
- A surface model of Ground and High vegetation was created to classify the missing buildings. Together, the other features such as Towers, Transmission lines, Insulators, Tower cross, Cable cross, Mast, Catenaries, Poles, Antennae, Panels, Tower lifts, Cable Lifts and moving Objects were classified to the respective classes.
- A surface model of ground and buildings were created to classify any missing high vegetation points.
- The above steps ensured that the Lidar point clouds were classified to relevant classes. As a final step, automatic routine was run on high vegetation class to classify points at the range of 2m to 3.99 m elevation to medium vegetation.



CLASSIFICATION OF FEATURES AND MODELING OF TRANSMISSION LINE OVER A POWER LINE CORRIDOR USING LIDAR POINT CLOUDS

Page 2



TESTIMONIALS:

I was very happy with your work. Your performance was very efficient and you hit deadlines, right on target.

► Power line Modeling

- The towers and the transmission lines along with the ground points over the entire corridor were selected for display whereas the other classes were turned off.
- A cross section was taken to display the transmission lines in a front view.
- The start point and the end point of a transmission line between consecutive towers along with three additional vertices distributed over the length of the line were selected to ensure that a line is vectorized automatically along the point clouds representing the transmission line. A similar approach was carried for all the transmission lines over the corridor.
- A front view cross section was taken over the tower. A line ranging from the ground to the top of a tower was placed manually to model the tower. Similar lines were placed to model the tower arm and the attachments.
- The transmission lines were then manually attached to the tower attachments.

► Deliverables

- Classified points clouds in Las formats.
- A regular grid of points in XYZ formats each for a DTM and DSM.
- Contours at 1m interval in Cad format.

TECHNOLOGY:

- Microstation
- Terrascan
- Terramodel

APPLICATION:

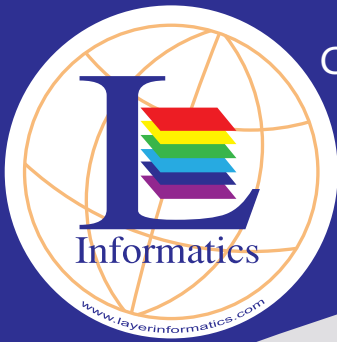
- Urban Modeling
- Orthorectification
- Engineering Survey
- Forestry

UK Office:

Edinburgh EH2 4AT,
Scotland, UK.



Layer Informatics Pvt. Ltd.
Vision Through Mapping

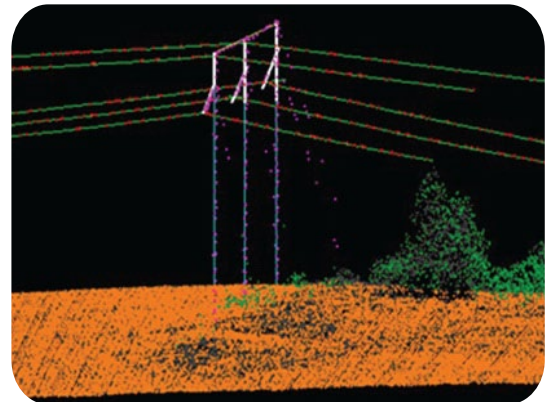
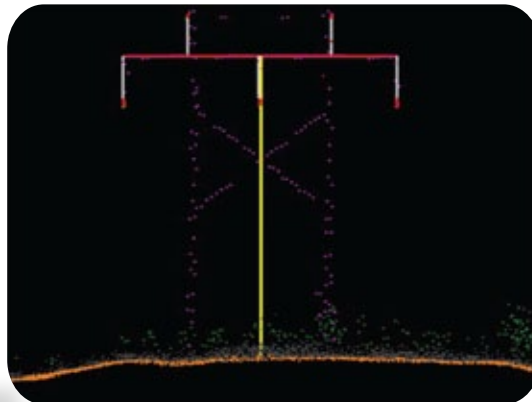
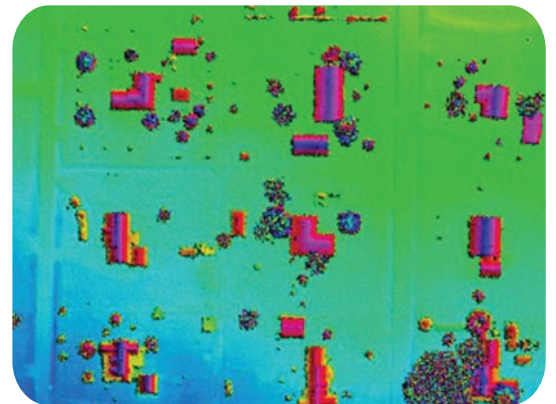
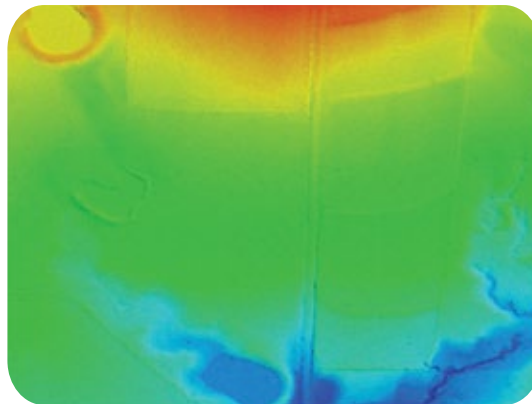


CLASSIFICATION OF FEATURES AND MODELING OF TRANSMISSION LINE OVER A POWER LINE CORRIDOR USING LIDAR POINT CLOUDS

Page 3



SCREEN SHOTS:



US Office:

Scranton, PA 18505

Middle East Office:

Doha, Qatar.



Layer Informatics Pvt. Ltd.
Vision Through Mapping