



UAV DTM / DSM, ORTHO & MAPPING

A Case Study



CHALLENGES:

- The project was a bit complex with significant locations of GCP points above ground.
- Certain feature such as poles and posts and other objects were difficult to identify and marked.
- Feature extraction at the road junction and under bridge areas became extremely difficult.

INTRODUCTION:

The objective of the project is to generation of Data models (DSM and DTM), contour lines, orthomosaic from UAV imagery and mapping of topographic features.

KEY ASPECTS:

- Generation of DSM and DTM.
- Generation of contour lines.
- Orthomosaic generation.
- Mapping of features like buildings, roads, curb top and bottom, road signs and markings.

METHODOLOGY:

➤ Pre Processing

- Setup of camera calibration parameters and image geo location for the inputs.
- Image matching were proceed with image key point extraction from automatic aerial triangulation.
- Automatic bundle block adjustment were computed the position and orientation of camera for the entire image.
- Dense ground point clouds were generated for better geometry.

➤ DTM & DSM Extraction

- DTM was generated from ground points and exported as ASCII points.
- DSM were generated for all classes using triangulated method which were used to interpolate between points and later it was exported as regular grid of ASCII points which comprised the DTM.

➤ Contour Line Generation

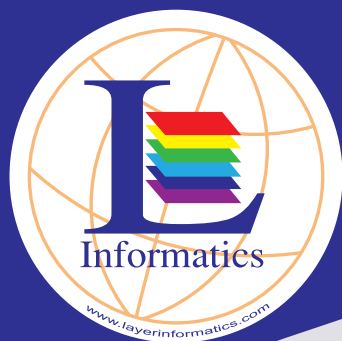
- Contours were generated at specified interval from the DTM.
- The contours were then checked for any crossings and edge mismatches between every tile and elevation interval, minimum line size were given based on project requirements.

➤ Orthomosaic Generation

- Geo-referenced orthomosaics were generated from DSM which is free from perspective distortions and different scale.
- Point clouds were interpolated to avoid holes and mesh building were done to represent the terrain in polygonal model.
- Building texture were adjusted to make the photo realistic and realistic.

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TESTIMONIALS:

- I've been very pleased with your firm each time we've done business.

➤ Mapping Topographic Features

- Mapping includes extraction of buildings, road shape, curb top and bottom, signs / marking, safety barriers and hydrographic features from UAV imagery.
- Features were analyzed based on its structure and were captured either in line string or shape.

➤ Deliverables

- DSM in GeoTIFF format.
- DTM in GeoTIFF format.
- Contour lines in SHP format.
- Ortho mosaic in TIFF format.
- Topographic features in DGN format

TECHNOLOGY:

- Microstation
- Terrascan
- Terramodel
- Pix 4D

APPLICATION:

- UAV Surveying and Mapping.
- Assets Management.
- Utilities Management.
- Bridge Inspection.
- Land cover mapping.

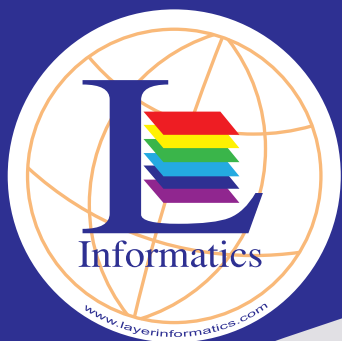
SCREEN SHOTS:



UK Office:
Edinburgh EH2 4AT,
Scotland, UK.

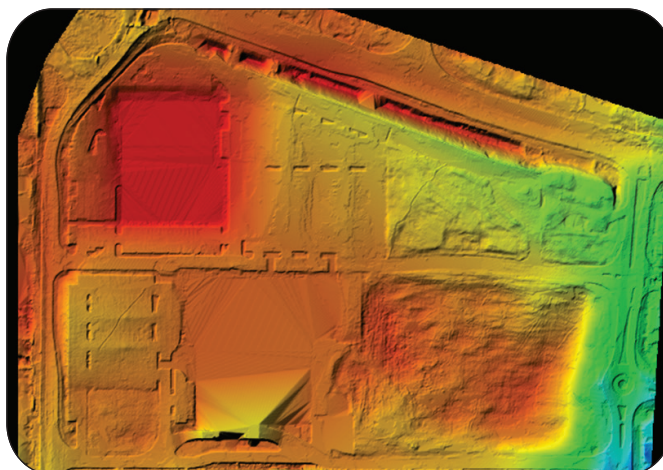
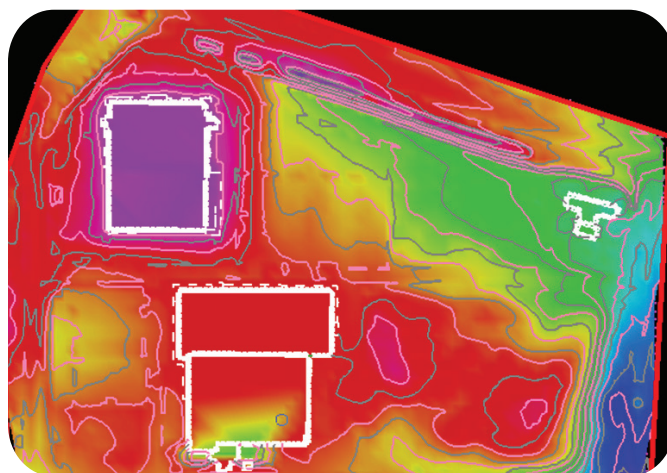
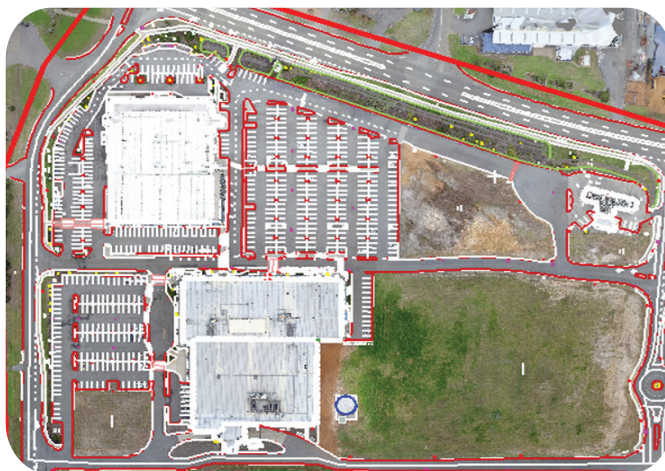


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