Automated Building detection using LiDAR data and digital aerial images

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Methodology

Steps:

1) Integration of digital aerial images(True ortho photos) with the LiDAR point cloud data to produce a coloured point cloud
2) Filtering the point cloud using Progressive densification algorithm to separate the ground and the non ground points
3) For further processing non ground point were only considered as the object of interest for the buildings
4) Colour based region growing algorithm was used to segment the point cloud data resulting in 3D segments
5) Spectral and geometrical features were extracted from the 3D segments
6) The features were classified using multiple classifier system into building (flat roof and gabbled roof class) and vegetation (Classification was done using a multiple classifier system rather than using single classifier alone as in previous submission)
7) The building points are extracted from the classified point cloud
8) In order to generate a 2D geotiff image, the 3D points were projected to a 2D surface
9) A morphological dialate and closing operator was applied to generated 2D maps in order to produce a continuous surface