

## **Automated Building detection using LiDAR data and digital aerial images by supervoxels method**

Email: [amramiya@gmail.com](mailto:amramiya@gmail.com) / [ramiya@iist.ac.in](mailto:ramiya@iist.ac.in) , [rao@iist.ac.in](mailto:rao@iist.ac.in)

Authors: Anandakumar M Ramiya , Rama Rao Nidamanuri, Ramakrishnan Krishnan

Indian Institute of Space Science and Technology, India

### ***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 considered as the object of interest are the buildings
- 4) Supervoxels based segmentation approach was used to segment the point cloud data resulting in 3D segments
- 5) Spectral and geometrical features are extracted from the 3D segments
- 6) The features are classified using machine learning algorithms into building (flat roof and gabled roof class ) and vegetation
- 7) The building points are extracted from the classified point cloud
- 8) In order to generate a 2D geotiff image, the 3D points are projected to a 2D surface
- 9) A morphological closing operator is applied to generated 2D maps to produce a continuous surface