



Processing UAV data for Digital Terrain Model generation and tree detection

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This paper presents a method for processing point cloud data obtained from UAV flights in order to generate Digital Terrain Models (DTM) and to detect fine-scale objects (trees) in a complex sub-urban environment. The processing workflow is based on integrating tools from LAStools, SAGA GIS software and R into the ArcGIS Platform. The point cloud data is first obtained in Drone2Map by fotogrammetric processing. Further, by using the ground classification (lasground) module from LAStools software, an inital sample of ground points is classified. This step is improved by applying smoothing and thresholding spatial filters on the points in SAGA and R in order to enhance the classification of ground points. The final classified points are interpolated into a DTM surface with superior precision. A method for tree detection by combining circular and rectangular spatial filters is presented, that uses the obtained DTM surface as a basis for the Canopy Height Model (CHM) calculation. A case study is presented for a sub-urban area of Bucharest, the city of Mogosoaia