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Automatic extraction of power lines from aerial LIDAR in the PNOA-LIDAR project

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Spanish National Geographic Institute directs and coordinates PNOA-LiDAR Project. The aim of this project is measuring the whole Spanish territory by an aerial laser scanner (ALS) every 6 years. This project started in 2008 and in 2015 the first national coverage was completed. Currently, the second coverage is being measured. The density of the registered 3D point clouds is around 1 point/m2, with a precision of 20cm in z component.

In the National Geographic Institute an automatic methodology to extract height lines from PNOA LIDAR ALS point clouds has been developed. Both power lines and catenary wires are present in urban, forestry and agriculture environment. The knowledge of its location is important due to they are a potential source of forest fires. For this reason it is of great importance to have updated cartography about its location, as well as the forest masses in the surrounding areas. The proposed methodology uses a series of geometric variables, as density and roughness among others, that allow the isolation of those points that represent wiring of the rest of the points in the cloud. The province of Valencia has been used as test zone and the results have been compared with the National Topographic Base 1: 25,000 (BTN25) and PNOA orthophotos.