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Generation of 3d Models Obtained with Low-Cost RGB and Thermal Sensors Mounted on Drones

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Abstract : Nowadays it is common to resort to aerial photography to carry out the prospection and/or exploration of archaeological sites. In this sense, the classic 3D models are being applied to investigate the direction towards which the generally subterranean structures of an archaeological site may continue and therefore, to help in making the decisions that define the location of new excavations. In recent years, Unmanned Aerial Vehicles (UAVs) have been applied as the vehicles that carry the sensor. This implies certain advantages, such as the possibility of including low-cost sensors, given that these vehicles can carry the sensor at relatively low altitudes. Due to this, low-cost dual sensors have recently begun to be used. This new equipment can collaborate with classic Digital Elevation Models (DEMs) in the exploration of archaeological sites, but this entails the need for a methodological setting to optimise the acquisition, processing and exploitation of the information provided by low-cost dual sensors. This research focuses on the design of an appropriate workflow to obtain 3D models with low-cost sensors carried on UAVs, both in the RGB and thermal domains. All the foregoing has been applied to the archaeological site of Juliobriga, located in Cantabria (Spain).

Keywords : process optimization, RGB models, thermal models, , UAV, workflow
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