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Position measurement of ground control points and its accuracy with UAV photogrammetry

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It is sometimes possible to measure surface position in the spatial density of a few cm by SfM (Structure from Motion) - MVS (Multi-view Stereo) techniques using photographs taken by UAV (Unmanned Aerial Vehicle) at low altitude. The higher the accuracy is, the more diverse the field will be in the fields of geoscience, geospace, and disaster prevention.

The accuracy of the estimated positions highly depends on the camera, camera model, quality of photos, flight altitude, overlap, position accuracy of the drone, analysis software, and conditions of the analysis.

We installed ground markers in the site of Geospatial Information Authority, Tsukuba and took nadir and oblique images with a multicopter. Comparisons of estimated positions varying some of the parameters will be reported.

Keywords: UAV, Ground Control Point, SfM, MVS, Drone