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IMAGE REGISTRATION USING TERRAIN RELIEF CORRECTED RIGOROUS SENSOR MODELS

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Abstract. Multiple CCDs are used in space-borne camera system to have multiple images in one band. Due to design constraints, the multiple CCDs may be placed at different focal planes. In such case, each band or each CCD in a band has different look angle, and this causes "parallax effect" when registration between images from different CCD is required. Since the displacement of the target when the baseline is fixed, the displacement of each target for the registration depends on the height of each target in the images. Hence, the registration between images cannot be achieved using simple affine transform, and rather requires higher order polynomial warping. In this paper, we suggest the band registration method which includes the terrain relief sensor model with DEM data. Since the parallax effect is compensated in this approach, the registration can be adopted for the robustness of algorithm. In the proposed approach, the slave image geometry, which has same geometry with master image. In order to realize such approach, the slave image and DEM data were used. The difference of proposed approach with conventional approach is that the geometry of master image is kept. The experiment results demonstrated that the proposed approach can correct the displacement caused by parallax effect.

[Conference Paper](#) (PDF, 630 KB)

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