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Development and Validation of Satellite Image Registration Techniques[1] AZUBUIKE OKORIE, SOKRATIS MAKROGIANNIS, Delaware State Univ — In this work we studied and developed feature- and intensity-based registration techniques for satellite images. Image registration is the process of aligning two images of the same scene that may include viewpoint, temporal, or sensor variations. Registration of satellite images is very significant as results can be used for earth observation, change detection, urban planning, study of climate changes, meteorology and other applications. Our focus is on the application of image features and intensities for registration. We applied state-of-the-art feature detection, extraction and matching techniques to estimate the geometric transformation that would align two images of the same scene. We also used intensity-based methods to register pairs of misaligned images of the same scene. We used Ground Truth data to validate the results of registration from both methods by computing the pixel error. Qualitative and quantitative comparisons suggest that the utilization of features may improve registration accuracy compared to intensity-based approaches especially for multi-sensor registration. Preliminary results indicate that automated image registration may be used for remote sensing applications.

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