**A NOVEL GCP MATCHING MODEL FOR IMAGE GEOMETRIC CORRECTION BY BIOLOGICAL SEQUENCE ALGORITHMS**

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**ABSTRACT:** The present study develops a novel partly automatic ground control point (GCP) matching model, which can resolve the problem of GCP matching when carrying out geometric correction for two digital aerial images (DAI). The study uses two DAIs taken at different periods as its cases. The first image is the base image, while the second image is the warp image. We first use the Needleman-Wunsch algorithm (NWA) as a global object alignment technique to match objects in the two images. After we have identified objects that can be successfully matched, we then use the Smith-Waterman algorithm (SWA) as a local features alignment technique to extract the GCPs of the successfully matched objects. At same times, we use the polynomial model method to carry out geometric correction and asses the merits of our model. Finally, the results show that appropriate GCPs can be automatically extracted from the images used in this study. Following geometric correction, the RMSE (Root-Mean-Square Error) value was 0.8611, appropriate for application on high-resolution images.

**Suggested topics:** Data Processing: Automatic Feature Extraction

**Proposed presenter:** Tsu-Chiang LEI

**Presenters’ preference:** Oral presentation