

# Sectional corner matching for automatic relative orientation

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## Abstract

This paper describes a corner matching technique for automatic relative orientation. Automatically matched corner points from stereo aerial images are used to a data set and help to improve automation of relative orientation process. A general corner matching process of overall image to image has very heavy operation and repetitive computation, so very time-consuming. But aerial stereo images are approximately seventy percent overlapped and little rotated. Based this hypothesis, we designed a sectional corner matching technique calculating correlation section by section between stereo images. Although the overlap information is not accurate, if we know it approximately, the matching process can be lighter. Since the size of aerial image is very large, corner extraction process is performed hierarchically by creating image pyramid, and corners extracted are refined at the higher level image. Extracted corners at the final step are matched section by section. Matched corners are filtered using positional information and their relation and distribution. Filtering process is applied over several steps because the thing affecting to get good result-good relative orientation parameter- is not the number of matched corner points but the accuracy of them. Filtered data is filtered one more during the process calculating relative orientation parameters. When the process is finished, we can get the well matched corner points and the refined Von-Gruber areas besides relative orientation parameters. This sectional corner matching technique is efficient by decreasing unnecessarily repetitive operations and contributes to improve automation for relative orientation.