

Matching Performance and Accuracy of Aero-Triangulation on NIR Images

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Abstract: With multispectral sensors, information of invisible near infrared (NIR) light can be unveiled to human eyes. Generally, NIR images are used for interpretative applications, such as classification. It is wondered if the NIR images can also bring pleasing results to metric applications.

Two image sets are acquired in this research. Nature color (NC) images are taken by a Canon EKPH 110 HS camera, and NIR-G-B images are taken by a modified Canon EKPH 110 HS camera, where NIR sensor substitutes Red sensor.

With sufficient GCPs and tie points, the interior parameters of camera and 3-D positions of conjugate points can be solved simultaneously through self-calibrating bundle adjustment.

Processed through SIFT matching algorithm and aero-triangulation, quantity of correct matches and accuracy of aero-triangulation on NC images and on NIR images were analyzed respectively.

According to the preliminary results, NIR images should have high potential to metric applications.

Keyword: Near Infrared image, Photogrammetry, point-cloud, self-calibrating bundle adjustment