



[Volume XXXIX-B1](#)

Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XXXIX-B1, 463-467, 2012
www.int-arch-photogramm-remote-sens-spatial-inf-sci.net/XXXIX-B1/463/2012/
doi: 10.5194/isprsarchives-XXXIX-B1-463-2012
© Author(s) 2012. This work is distributed
under the Creative Commons Attribution 3.0 License.

RELATIVE ORIENTATION IN LOW ALTITUDE PHOTOGRAMMETRY SURVEY

J. Wang¹, Z. Lin², and C. Ren¹

¹School of Remote Sensing and Information Engineering, Wuhan University, 129 Luoyu Road, Wuhan 430079, China,

²Chinese Academy of Surveying and Mapping, 16 Beitaijing Road, Haidian District, Beijing 100039, China,

Keywords: Relative orientation, UAV, Eight-point method, RANSAC, DCR

Abstract. Relative orientation is always considered as a key technique, not only in traditional photogrammetry, but also in low altitude photogrammetry. Low altitude images are mainly obtained by general digital cameras on UAV, they have characteristics of small format, large tilt angle and high-overlap in sequence. These distinctions from traditional images urgently call for a new reliable way to recover the relative pose between two adjacent images. For example, better initial values of relative orientation elements are required in the iteration process due to the large roll angle and yaw angle. Also, a more stable and efficient adjustment method should be proposed for the high-overlap images. In this paper, the Direct (D) relative orientation method is firstly used to get coarse values of the relative orientation parameters, then the Conventional (C) relative orientation process is implemented, using the coarse values as initial values in the first iterative calculation. And RANSAC (R) algorithm is finally applied in locating and extracting gross errors in relative orientation. The three steps above form our execution—DCR—to solve relative orientation problem in low altitude photogrammetry. Practical images have been used later to test the DCR method on accuracy and precision of the relative orientation parameters. Our experimental results show that the proposed approach is feasible and can achieve more reliable relative orientation results than the conventional approach.

[Conference Paper](#) (PDF, 442 KB)

Citation: Wang, J., Lin, Z., and Ren, C.: RELATIVE ORIENTATION IN LOW ALTITUDE PHOTOGRAMMETRY SURVEY, Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XXXIX-B1, 463-467, doi: 10.5194/isprsarchives-XXXIX-B1-463-2012, 2012.

[Bibtex](#) [EndNote](#) [Reference Manager](#) [XML](#)

