Volume XXXIX-B5

Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XXXIX-B5, 369-373, 2012
www.int-arch-photogramm-remote-sens-spatial-inf-sci.net/XXXIX-B5/369/2012/
doi:10.5194/isprsarchives-XXXIX-B5-369-2012

ASSISTED CONTROL POINT MEASUREMENT FOR CLOSE RANGE PHOTOGRAMMETRY.

E. Mata, M. A. Hernandez, J. Cardenal, and J. L. Perez
Department of Cartography Engineering, Geodesy and Photogrammetry. University of Jaen. Spain

Keywords: Automation, Close Range, Software, Georeferencing, Instruments, Registration

Abstract. This paper describes the automation and optimization in control points measurement and elaboration of sketches in Close Range Photogrammetry. The system can be controlled by an operator alone and it integrates a robotized and reflectorless total station, two digital cameras, a laptop computer and the control software. The measured data with the station are registered and the control point will get associated to their marks in the images. So, it is possible to eliminate the handmade sketches since the marking of control points in the image is instantaneously made. The sketch includes object images with enlargements so the point is clearly identified and marked with the support of a virtual reticle. Also the sketch includes object coordinates, image coordinates, identification code (ID) and some additional information about the point. The use of the system by only one operator allows the reduction of costs, organization and time in control point surveying. Different tests have been made in order to check the system. TDC: this test has been made in close range conditions with targets and artificial illumination. EDIF: in this case the test includes long range conditions and control points targeted at natural points in building façade. The tests have allowed several analyses to study the feasibility and the improvement of the system. So we have made in situ tests by comparing direct observations with and without the camera telescope, with targets and natural points, close and long distances and different conditions of illumination. Moreover in one of these tests we include the observation and sketch realization with a manual method. With respect to the use of the aiming eyepiece camera, the tests (TDC) realized in laboratory (close distance -4 m- and good light conditions) show very small spatial differences (below the nominal precision of the total station) comparing the direct aim through the telescope without camera. Other test (EDIF) made over longer distance (130 m) and natural targets show differences of few centimeters. Hence, the appending of the eyepiece camera does not involve an excessive aiming error. On the other hand, the improvement of the system is relevant in the observation, measurement and registration of control points. Hence, the decrease of tasks involved and the use the system by an operator reduce the total time employed in two thirds. Although the aim is not completely accurate, the approximation is enough so the final aim is quickly achieved and the lost of time is negligible. After these tests, this system has shown to be an affordable and fully operational method that optimize and reduce the cost and time of control point measurements.

Conference Paper (PDF, 1440 KB)

Citation: Mata, E., Hernandez, M. A., Cardenal, J., and Perez, J. L.: ASSISTED CONTROL POINT MEASUREMENT FOR CLOSE

RANGE PHOTOGRAMMETRY., Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XXXIX-B5, 369-373, doi:10.5194/isprsarchives-XXXIX-B5-369-2012, 2012.