

A New Method of Camera Calibration for Large Field Videometrics

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Summary

A new method of camera calibration is presented for exact videometrics in large field. The camera to be calibrated and the control points used in the new method are both close to the ground. In the condition that the control points and the camera are approximately coplanar, the main point position, focus length, lens distortion coefficients and the camera's position and attitude parameters are calibrated precisely by the method. Two calibration images are taken by the camera to be calibrated in measurement state and vertical rotation state respectively. If the vertical tangent lens distortion can be neglected or the movement field of the targets to be measured are close to the ground, only the measurement state calibration image is needed to calibrate the camera's parameters except the vertical tangent lens distortion coefficients. To calibrate the camera's intrinsic parameters in laboratory in advance is not needed. The new method breaks the localization for the camera calibration in large field videometrics that control points must be distributed in space rationally for traditional methods.

