

以圓形格點校正相機之研究

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摘要

A dot target with a $N \times N$ array of circular dots is used to erect a world coordinate system and M calibration points with known world position coordinates. Using the M calibration points in the space and their corresponding image points in the image plane, the stereo vision is calibrated to extract the intrinsic and extrinsic camera parameters. In the paper the centers of the circular dots are taken as the calibration points. The projections of the circular dots onto the image plane will become circles or ellipses. A subpixel localization technique is developed to accurately find the positions of the edge points for the circular or elliptical dots. Fitting a conical section to the obtained edge points to locate the centers of the circular and elliptical dots, the calibration points in the space and their corresponding image points in the image plane are acquired. After camera calibration, a rigid body translation test is performed to evaluate the baseline measurement errors of the stereo vision.

關鍵字 : Circular grid, camera calibration, subpixel localization, conic section