

论文与报告

基于一维标定物的多摄像机标定

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摘要

一维标定物是由三个或三个以上彼此距离已知的共线点构成的. 现有文献指出只有当一维标定物做平面运动或者绕固定点转动时, 才能实现摄像机的标定. 本文的研究结果表明, 当多个摄像机同时观察作任意刚体运动的一维标定物时, 则该摄像机组能被线性地标定. 本文给出一种线性标定算法, 并使用最大似然准则对线性算法结果进行精化. 模拟实验和真实图像实验都表明本文的算法是有效可行的.

关键词 [一维标定物](#) [多摄像机标定](#) [任意刚体运动](#)

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Multi-Camera Calibration Based on 1D Calibration Object

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Abstract

A one-dimensional calibration object consists of three or more collinear points with known relative positions. It is generally believed that a camera can be calibrated only when a 1D calibration object is in planar motion or rotates around a fixed point. In this paper, it is proved that when a multi-camera is observing a 1D object undergoing general rigid motions synchronously, the camera set can be linearly calibrated. A linear algorithm for the camera set calibration is proposed, and then the linear estimation is further re-fined using the maximum likelihood criteria. The simulated and real image experiments show that the proposed algorithm is valid and robust.

Key words [1D calibration object](#) [multiple cameras calibration](#) [general rigid motion](#)

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