

图形、图像、模式识别

基于EM算法的多椭圆形目标检测

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摘要 提出了一种椭圆形多目标检测算法。根据椭圆形目标在形状上与高斯分布相对应的特点, 计算目标的特征均值和协方差矩阵, 采用主元素法来描述椭圆形目标的大小、位置及主轴。对于包含多个目标的重叠区域, 设计了一种加权的EM迭代算法, 从而精确计算该区域的目标数、各椭圆的统计特性及位置、形状和大小。把该算法应用于水果及运动目标检测, 获得稳定、精确的分割结果。

关键词 [多椭圆形目标](#) [主元素分析](#) [加权的EM](#) [统计模型](#)

分类号

Multi-elliptic target detection based on EM algorithm

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Abstract

A multiple elliptic target detection algorithm based on EM algorithm is proposed in this paper. Because elliptic target coincides with Gaussian distribution on shape, its mean and variance matrix can be calculated by employing statistical method. So the principle component analysis is used to describe their size, position and main axis. For an overlapped multi-target region, a weighted EM iterative algorithm is constructed to calculate the number of targets in it, the statistical and geometric properties of every ellipse. This algorithm is employed to fruits and moving target detection. The result is stable and accurate.

Key words [multi-elliptic target](#) [principle component analysis](#) [weighted EM](#) [statistical model](#)

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