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论文

基于部件的自动目标检测方法研究

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摘要
该文提出了一种新的自动目标检测算法，实现对自然场景图像及高分辨率遥感图像中结构相对复杂的人造目标的自动检测。该方法基于组成物体的几何部件处理问题，降低了对训练样本数量的需求。首先选择两类典型特征，基于机器学习训练对应的分类器，有效地减少了背景中某些物体与前景目标部分特性相似对检测方法准确率的影响；然后利用标值点过程对问题建模，以对目标分布的先验约束和分类器的响应作为数据能量，自顶向下地自动检测目标。实验结果表明，该方法准确率高、鲁棒性好，具有较强的实际应用价值。

关键词 目标检测 基于部件 协方差矩阵 标值点过程

分类号 TP751

An Automatic Method for Targets Detection Using a Component-Based Model

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Abstract
A novel target automatic detection algorithm is proposed in this paper, and it is mainly used for the processing of the man-made targets with a relatively complex structure in natural scenes images and high-resolution remote sensing images. Based on each geometric component of objects, this method needs less training samples. First of all, it selects two sorts of typical features and trains classifiers by machine learning correspondingly, which can effectively prevent the decrease of accuracy for the similarities between interest objects and some objects in background. Then the method detects targets top-down and automatically with the marked point process model, whose data terms consist of the priori constraint on the objects distribution and respondences of trained classifiers. The experimental results demonstrate the precision, robustness, and effectiveness of the proposed method.

Key words Object detection Component-based Covariance matrix Marked point process

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