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## 机器学习与数据挖掘

### 使用多尺度LBP特征和SVM的火焰识别算法

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摘要:

目前基于视频图像的火灾识别系统是大空间场景中预防火灾的有效方法。为了提高检测性能,基于火焰特定的纹理结构,使用多尺度纹理特征,以获得更全面的特征信息。首先使用火焰的明亮特性定位到疑似火焰区域;然后针对这些区域,采用局部二值模式(local binary patterns, LBP)方法提取多尺度纹理特征;最后将多尺度LBP纹理特征输入到支持向量机(support vector machine, SVM)中进行识别。实验结果表明,该方法计算简单,火焰的检测率较高,误警率较低。

关键词: 多尺度 统一LBP 旋转不变LBP 旋转不变统一LBP SVM

### Flame detection based on LBP features with multi scales and SVM

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Abstract:

Fire detection based on videos is an effective method to prevent fire in large spaces. The texture of flame is special. Multi scale texture features were extracted to improve the flame detection performance due to its much more discrimination information. The flame candidates were located by character of flame brightness at first. Then different patterns of LBP feature with different scales were extracted from these candidate areas. Finally, these features were put into SVM classification to recognize whether it was a flame or not. Experimental results showed that the method had a simple computation and could accurately recognize flame in video sequences and the false positive was low.

Keywords: multi scales uniform pattern LBP rotation invariant pattern LBP rotation invariant uniform pattern LBP SVM

收稿日期 2012-04-05 修回日期 网络版发布日期

DOI:

基金项目:

国家星火计划资助项目(2011GA690190);江苏省高校自然科学基金项目资助(11KJD520003);江苏省“333工程”、淮安市“533工程”、淮安市科技资助项目(HAG2010066,HAG2010030,HAG2011045,HAC201113)

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