

机器学习与数据挖掘

融合多特征的异源视频复制-粘贴篡改检测

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摘要:

相比传统的视频帧插入或帧删除以及视频双压缩等篡改方式,复制-粘贴篡改更能直接的改变视频内容。因此,本研究提出一种融合多特征的异源视频复制-粘贴篡改检测方法。对于经过帧内复制-粘贴篡改的视频,其视频帧内会引入一些尖锐的变化,比如线条、边缘和角点等,而二维相位一致性可以很好的检测出这些变化。同时,来自异源视频帧复制的区域块会使得帧内引入不同的模式噪声,可以利用模式噪声和二维相位一致性提取视频帧的特征,然后将特征融合进行SVM分类实验来检测篡改视频。实验表明该算法可以有效地检测异源复制-粘贴篡改的视频。

关键词: 复制-粘贴篡改 复制-粘贴检测 模式噪声 二维相位一致性 SVM(support vector machine)

Heterologous video copy-move forgery detection by fusing multiple features

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Abstract:

Compared with the conventional methods of video forgeries, such as frame insertion, frame deletion and double compression, copy-move forgery might change the content of a video directly. Therefore, a new algorithm was proposed to detect video copy-move forgery by fusing multiple features. For an intra frame copy-move tampered video, which may introduce a number of sharp transitions in frames such as lines, edges and corners. Phase congruency was known as a sensitive measure of these sharp transitions and hence was proposed as features for video forgery detection. Meanwhile, the duplicated blocks from the heterologous video could introduce different pattern noise. Therefore, the proposed algorithm could extract features of video frames from the pattern noise and 2-D phase congruency for video forgery detection, and then the merged multiple features were experimented with the support vector machine (SVM). Experimental results demonstrated that the proposed algorithm could detect video of intra-frame copy-move forgery effectively.

Keywords: copy-move forgery copy-move detection pattern noise 2-D phase congruency support vector machine

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