

论文

基于脉冲耦合神经网络融合的压缩域运动目标分割方法

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摘要:

针对H.264压缩域内运动目标分割算法所存在的弱自适应性和抗噪能力差等问题,本文提出了一种基于脉冲耦合神经网络的压缩域运动目标分割方法.该方法采用时空域矢量均值滤波对运动矢量进行预处理,减少运动目标丢失率,并设计了前后向矢量累积方法,增强运动矢量的可靠性.基于脉冲耦合神经网络设计的融合模型可以将累积后的运动矢量和宏块模式进行融合处理,增强分割算法的抗噪能力,保证加快分割速度的同时兼顾运动区域的分割准确度.另外,采用最小交叉熵作为点火终止判断条件,实现了最佳分割模板的自适应获取.仿真实验表明,本文算法在自适应性和抗噪能力方面均有较好表现,可以准确分割出监控视频中的运动目标.

关键词: 运动目标分割 脉冲耦合神经网络融合模型 H.264压缩域 视频监控

Moving Object Segmentation Based on Fusion-PCNN in Compressed Domain

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Abstract:

Aiming to solve problems of the weak ability on adaptation and noise resistance in object segmentation, a novel PCNN based moving object segmentation method is presented in H.264/AVC compressed domain. First, a spatial-temporal vector filtering is used as the preprocessor to reduce the target loss rate. Then, a forward-backward vector cumulative method is proposed to enhance the reliability of motion vectors. Finally, a Fusion-PCNN model is designed to fuse the cumulative motion field and the macro-block coding mode, which enhances the ability of noise resistance in object segmentation and limits the complexity. Moreover, the minimum cross-entropy is used to determine the firing conditions for an optimal self-adaptive segmentation template. Experimental results show that the proposed algorithm is outperformance and has the ability of self-adaptation and noise resistance in object segmentation. More accurate results are presented by the surveillance video.

Keywords: Moving object segmentation Fusion-PCNN model H.264 compressed domain Video surveillance

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