

机器学习与数据挖掘

面向监控视频的行为模式挖掘

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摘要:

行为模式挖掘技术是监控视频语义分析的重要组成,由于先验知识的缺乏与特征维数约束,难以准确定义参数化挖掘模型的结构复杂度,通过非参数化的无限高斯混合聚类运动特征得到原子行为模式,并估计其持续时间分布,使用局部特征维测试验证了挖掘模型的运动相似性假设。结果表明所得到的行为模式集准确刻画了场景的潜在运动语义,而通过行为中存在的时间多形态分布进一步发现了隐藏运动知识。

关键词: 视觉监控 场景分析 无限高斯混合模型 行为模式挖掘

An activity mining model for surveillance video

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Abstract:

The activity pattern mining technique is the key component of semantic analysis for surveillance video. Because of the lack of prior and high dimensional feature constraints, the complexity of the model structure of the parametric mining model is difficult to be precisely defined. Non parametric clustering of motion feature by infinite Gaussian mixture was used to get the elementary activity patterns, based on which duration distribution was estimated. The partial-dimension test for feature validated the motion similarity hypothesis existing in the mining model. The results showed that the obtained activity patterns precisely reflected motion semantics of the scene, and that the multi-modality temporal distribution existing in activity can be further used to discover the hidden knowledge of motion.

Keywords: visual surveillance scene analysis infinite Gaussian mixture model activity pattern mining

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