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学术探讨

基于联合评估网络的虹膜图像实时预评估

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摘要 实际的虹膜识别系统会遇到因为各种原因产生的不同类型的坏样本图像, 如果它们进入系统的识别进程, 常常会增加系统的注册失败率, 也会导致定位或者识别的错误。而现有的图像质量评估方法是在完成虹膜定位或者粗定位之后, 根据虹膜部分的清晰度和分辨率来判定是否为坏样本。因此实际上只能处理部分类型的坏样本, 而且计算耗费大。论文详细分析了坏样本产生的原因和特点, 提出了一种基于联合评估网络的实时预评估方法, 在定位或粗定位开始之前, 检测暂时存储的样本图像, 根据预评估网络的输出结果来决定是进入下一步处理还是重新采集。试验结果表明, 该方法可以检测出大部分类型的坏样本, 检测速度快, 而且检测的错误率相当低, 能够满足实时虹膜识别系统的评估实时性和准确性的要求。

关键词 图像预评估 实时虹膜识别系统 联合评估网络 坏样本

分类号

Iris image real-time pre-estimation based on associated network

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Abstract

There are different types of bad images when an iris identification application system captured iris images.It is well known that these bad images usually result in localization or identification errors and increase the failure rate to enrollment if they are imported into the identification processing.Because previous image quality evaluation methods estimate it whether bad or else by the resolution and the definition of the iris part after having calculated the iris location of an input image,they just can deal with few types among them.This paper proposes an idea of real-time pre-estimation using the associated estimation network,based on the detailed and objective analysis of reasons resulting in the bad-image,in which it pre-estimates images temporarily saved in memory before the localization or rough localization process and decides the system whether captures an iris sample again or turns into the next step by the output of the network.The experimental result is shown that the method can detects most types of the bad-image with comparatively low false rate and fairly large throughput.It should satisfy the pre-estimation requirement of a real-time iris identification system.

Key words image pre-estimation real-time iris identification system associated pre-estimation network bad-image

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