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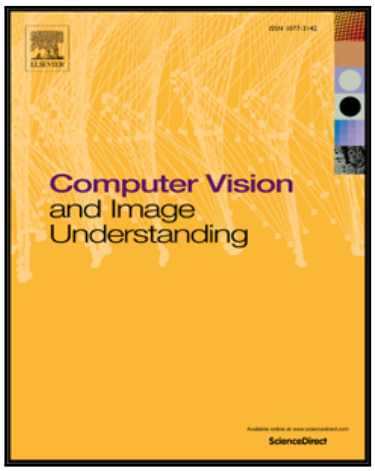

Improved Gait Recognition Based on Specialized Deep Convolutional Neural Network

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Improved Gait Recognition Based on Specialized Deep Convolutional Neural Network

Munif Alotaibi [1,*], Ausif Mahmood[2]

Abstract

Gait recognition is a biometric technique used in determining the identity of humans based on the style and the manner of their walk. Its performance is often degraded by covariate factors such as carrying condition changes, clothing condition changes, and viewing angle variations. Recently, machine learning based techniques have produced promising results for challenging classification problems. Since, a deep convolutional neural network (CNN) is one of the most advanced machine learning techniques with the ability to approximate complex non-linear functions, we develop a specialized deep CNN architecture for Gait Recognition. The proposed architecture is less sensitive to several cases of the common variations and occlusions that affect and degrade gait recognition performance. It can also handle relatively small data sets without using any augmentation or fine-tuning techniques. The majority of previous approaches to gait recognition have used subspace learning methods which have several shortcomings that we avoid. Our specialized deep CNN model can obtain competitive performance when tested on the CASIA-B large gait dataset.

Keywords: convolutional neural networks, gait recognition, deep learning

1. INTRUDCUTION

"Biometrics" refers to the use of intrinsic physical or behavioral traits in order to identify humans. Human gait recognition is a biometric technique used to label, de-

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