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Person Re-identification in Video Surveillance Systems Using Deep Learning: Analysis of the Existing Methods

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Abstract

This paper is devoted to a multifaceted analysis of person re-identification (ReID) in video surveillance systems and modern solution methods using deep learning. The general principles and application of convolutional neural networks for this problem are considered. A classification of person ReID systems is proposed. The existing datasets for training deep neural architectures are studied and approaches to increasing the number of images in databases are described. Approaches to forming human image features are considered. The backbone models of convolutional neural network architectures used for person ReID are analyzed and their modifications as well as training methods are presented. The effectiveness of person ReID is examined on different datasets. Finally, the effectiveness of the existing approaches is estimated in different metrics and the corresponding results are given.

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