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Choice of Activation Function in Convolutional Neural Networks for Person Re-Identification in Video Surveillance Systems

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Abstract

In this paper, we improve the accuracy of person re-identification in images obtained from distributed video surveillance systems by choosing activation functions for convolutional neural networks. The most popular activation functions used for object detection, namely, ReLU, Leaky-ReLU, PReLU, RReLU, ELU, SELU, GELU, Swish, and Mish, are analyzed based on the following metrics: Rank1, Rank5, Rank10, mAP, and training time. For feature extraction, ResNet-50, DenseNet-121, and DarkNet-53 architectures are employed. The experimental study is carried out on open datasets Market1501 and PolReID. The accuracy of person re-identification is assessed after thrice-repeated training and testing with different activation functions, neural network architectures, and datasets by averaging the values of the selected metrics.

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Ethics declarations

The authors declare that they have no conflicts of interest.

Additional information

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