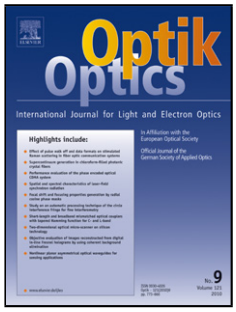

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Optimized CNN based image recognition through target region selection

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Abstract

Image recognition has plateaued in the last few years. According to this research field, some complicated models typically combined feature extraction and classification models effectively. Moreover, many classic models have already achieved realistic recognition. However, there are still some drawbacks of traditional methods. On the one hand, some unrelated regions of learning instances are often used leading to ignorance of effective features. On the other hand, traditional CNN model don't consider the weights of learning instances which reduces the accuracy of image recognition.

Aiming at the problems above, we proposed one optimized CNN based image recognition model. Firstly, target region selected by bottom-up region proposals contributes to retrieve the target region of each learning instance. Secondly, enhancement weight based model is used to optimize the CNN model contributing to make full use of different learning instances. At last, adequate experiments show our method's superiority, especially compared to some other traditional methods.

Keywords: image recognition; CNN; target region; bottom-up region; enhancement weight

1.Introduction

As one technique which is used to recognize the target object of image, image recognition[1,2] has been widely used in the last few years. In the traditional recognition process, some classic feature descriptors, such as SIFT[3], GIST[4] and HOG[5], could extract the features of images effectively. Moreover, some optimized feature descriptors[6-11] are also presented in the subsequent work. More importantly, compared to traditional feature descriptor, such as color histogram[12], texture histogram[13], they could extract the high-level semantic information from the target image. Within a long duration, SVM[14-16] combined with some high-level feature descriptors is considered as mainstream method of image recognition. Furthermore, image classification[17,18], image retrieval[19], and image