Public Abstract

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Title:Multi-scale Target Detection Based On Morphological Shared-weight Neural Network

In this work, an alternative method for object detection is developed. This method is called the morphological shared-weight neural network (MSNN). One popular method in object detection area, the convolutional neural network (CNN), is used as the baseline for the comparison. The experiments are designed towards the situation that the training data is limited. Two experiments are for the MSNN itself. According to the results of these two experiments, the structure of the MSNN is determined. Then the other three experiments are used to test the MSNN's ability of detecting multi-scale targets. In each of these three experiments, one CNN with a similar structure of the MSNN is used as the comparison. The true positive rate and the number of false alarms are used to judge the performance of the two networks. The experiment shows that the MSNN has a better performance compared to the CNN when detecting multi-scale targets. And the MSNN is more robust when the test data changes.