

VEHICLE DETECTION USING MORPHOLOGICAL SHARED-WEIGHT NEURAL NETWORK IN THE MULTIPLE INSTANCE LEARNING FRAMEWORK

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ABSTRACT

In this thesis, we design and implement an algorithm for object detection in aerial images based on the morphological shared-weight neural network (MSNN). The multiple instance learning (MIL) framework is used to avoid the labeling problem required in a supervised learning framework. Using the MIL, each image was given a single label. We rely on the MSNN's ability to detect objects, and on the methodology used to generate bags to find our target. Two multiple-instance MSNN structures are developed. The performance of this framework is compared with the performance of a convolutional neural network (CNN) in the same condition.