

# A Method for Oriented Small Ship Target Detection in SAR Based on Axial Large Kernels and Dynamic Convolution

## ABSTRACT

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The present invention proposes a method for oriented small ship target detection in SAR based on axial large kernels and dynamic convolution, which is modified based on the YOLOv11-OBB framework. The main network introduces DynamicConv and embeds the Axiom module to enhance the adaptability of feature extraction and strengthen the long-range modeling of slender ships; the neck adopts GateDySample upsampling to achieve adaptive fusion of multi-scale features. This method achieves an mAP50 of 99.19% and 96.95% on the SSDD+ and HRSID-R datasets, with significant improvements in accuracy and recall rate, and a reduction in parameter quantity, making it suitable for complex sea condition engineering deployment.

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Drawing 1