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论文

改进的SAR图像双参数CFAR舰船检测算法

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摘要
双参数CFAR检测中设置了目标窗口、保护窗口和背景窗口3个窗口，并且窗口的大小，滑动步长都要进行经验训练得到，效率低，对距离很近的舰船SAR图像会产生漏检。针对这些不足，该文提出了一种改进的双参数CFAR检测算法，该算法只取目标窗口和背景窗口，通过把泄露到背景窗口中的舰船部分去除并对背景窗口中的剩余部分进行均值和方差估计来检测舰船，并且将窗口滑动步长取为目标窗口尺寸。相对双参数CFAR算法，结构得到了简化，检测结果的虚警率减小，对距离很近的舰船不会产生漏检，计算效率得到了改善。仿真结果表明了方法的有效性。

关键词 舰船检测 双参数 恒虚警 背景杂波提取

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Improved Two Parameter CFAR Ship Detection Algorithm in SAR Images

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Abstract
In all the algorithms of the ship detection of SAR images, two parameter CFAR detector uses three moving windows: target window, protect window and background window, the sizes of the three windows and the moving step need to be trained, So it is quite inefficient and will cause targets undetected when they are too close. The improved two parameter CFAR detector delivered in this paper only uses a target window and a background window, By using special methods to remove the leaked ship pixels in the background window and estimate the remaining pixels in the background window which are sea clutter to get the local window's clutter gray mean and variance. The moving step is the same as the length of the target window, Compared with two parameter CFAR detector, the structure is simplified and the detection result's false alarms is less, targets too close can also be detected, furthermore, the computing efficiency is improved. The simulation results prove the algorithm's effectiveness.

Key words Ship detection Two parameter detector Constant False Alarm Rate (CFAR) Clutter extraction in the background window

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