

SAR图像港口区域舰船检测新方法

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A New Method for Ship Detection in Harbor Region of SAR Images

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摘要

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摘要 SAR图像港口内舰船检测是SAR图像海洋应用研究的重要方面。快速、准确地检测港口内舰船将大大提高SAR图像的自动解译能力。该文通过分析港口内舰船停靠特点,提出了一种新的SAR图像港口内舰船检测方法。首先基于港口岸线获取港口沿岸区域SAR图像,然后详细分析了港口沿岸区域SAR图像的杂波统计特性,进而采用基于 G^0 分布的CFAR(Constant False Alarm Rate)检测算法完成了港口内舰船检测。实验结果表明,新方法能有效地将不同形状的港口区域的舰船与绝大部分陆地分开,具有港口内舰船检测率高、虚警率低等特点。

关键词: SAR图像 港口检测 舰船检测 恒虚警率

Abstract: Ship detection in harbor region is an important aspect in SAR ocean application research. Fast and accurate ship detection can improve the ability of automatic SAR images interpretation greatly. By analyzing of the characteristics of ship berthing in harbor, a new method is proposed for ship detection in harbor region of SAR images. Firstly, the SAR image of the harbor coastwise region is acquired based on the harbor coastline. Then, a detailed analysis is presented on the clutter statistical properties of harbor coastwise region in SAR image. Further, the ship detection is completed based on the Constant False Alarm Rate (CFAR) detector with the G^0 distribution. The experimental results demonstrate that the novel method can separate the ships in harbor with various shapes from the land effectively, and is characterized by the high detection rate and the low false alarm rate.

Keywords: SAR image Harbor detection Ship detection Constant False Alarm Rate (CFAR)

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