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论文与技术报告

SAR图像的ROI特征配准方法

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摘要: SAR图像配准是SAR图像处理的关键技术,对SAR图像的融合、拼接等有着深刻影响。SAR图像的配准中基于区域的配准方法往往存在区域提取困难,受相干斑影响较大等缺陷。本文提出了一种基于ROI特征的SAR图像自动配准方法。该方法提取SAR图像中的ROI特征作为配准基元,将行、列匹配概率系数与不变矩最小距离测度相结合进行特征匹配,利用所有正确匹配的ROI特征对的质心坐标和最小二乘算法估计仿射变换模型参数。用实际SAR图像测试该方法,并与多种已有的方法进行比较,实验结果表明:该方法具有很好的适应性和配准精度。

关键词: 合成孔径雷达(SAR); 图像配准; 感兴趣区域(ROI); 复合不变矩; 匹配概率系数

A ROI Features Registration Method for SAR Images

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Abstract: The method of SAR image registration is a key point of SAR image processing. It has a great influence on the fusion and mosaicking of SAR image. The SAR image registration method based on region often has such defects as area extraction difficulty, great influence by speckle, etc. As a result an automated registration method for SAR images based on ROI features is presented in this paper. In this method, the ROI features in SAR images were extracted as matching units, feature matching was carried out by combining the row\column matching likelihood coefficients and the minimum distance measure of invariant moment together. As all the correct matching features of ROI were gained, the least squares method was employed to estimate parameter of affine transformation with the centroid of ROI. The real SAR images are used to demonstrate its performance. Compared with some existing methods, the proposed method has very good adaptability and accuracy of registration.

Keywords: synthetic aperture radar(SAR) image registration region of interest(ROI) composite invariant moments matching likelihood coefficients

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