

عنوان مقاله:

Spot Noise Removal of RADAR Images Based on Strict Thresholding of Curvelet Transform Coefficients and Location Domain Filters

محل انتشار:

دومین همایش بین المللی مهندسی کامپیوتر، برق و تکنولوژی (سال: 1402)

تعداد صفحات اصل مقاله: 14

نویسندگان:

.Kimia Taghipoor-Sarvestani - Department of Electrical Engineering, Islamic Azad University, Fasa Branch, Iran

.Farhad Bahadori-Jahromi - Assistant Professor, Department of Electrical Engineering, Islamic Azad University, Fasa Branch, Iran

خلاصه مقاله:

Due to the destructive effects of speckle noise in accessing information in radar images, removing the effect of this noise has always been the focus of researchers. The purpose of this research is to study the noise removal of radar images based on strict thresholding of the curvelet transform coefficients along with the use of filtering, among which nonlinear filters perform better than linear filters. In this article, in order to remove the speckle noise, a new algorithm has been used to estimate the threshold limit, and in the following, an improved combined median filter is introduced, then by using it along with the Wiener filter, the noise is removed. In determining this threshold, the statistical characteristics of the curvelet coefficients, such as the geometric and arithmetic mean, have been used. In this method, the speckle noise is first transformed into additive noise using logarithmic transformation and the resulting image is transferred to the curvelet space. Then, the threshold limit is determined according to the statistical information of the coefficients and this threshold limit is used in the hard thresholding of the curvelet coefficients in order to remove the noise coefficients. At the end, inverse curvelet transformation is applied and reduced noise image is obtained. Different evaluation criteria such as edge preservation criterion, number of equivalent views, mean square error, etc., were calculated to evaluate the results. In comparison with existing noise reduction methods such as Lee, Kuan, Gamma, Frost filters and filters based on hard thresholding of wavelet transform, the obtained experimental results show a great improvement (mean square error indices, mean square normalized error and the average absolute value of error have decreased by ۳۲%, ۳۲% and ۵% respectively). In addition, the investigated algorithm has been very capable in preserving the edges

کلمات کلیدی:

.Curvelet transform, hard thresholding of curvelet coefficients, speckle noise, combined median filter, wiener filter

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1939612>

