

Generalized Mean Shift Speckle Filter

Speckle Filter

Input Directory:

Output Directory: /

Init Row: End Row: Init Col: End Col:

Output Format:

☒ [S2] >> [T3] ☐ [S2] >> [C3] ☐ [S2] >> [T4] ☐ [S2] >> [C4]

Number of Look: Window Size (Target):

Convergence Threshold: Window Size (Filter):

Shape Parameter: Sigma:

Spatial Domain - Kernel Selection:

☐ Uniform ☐ Epanechnikov ☒ Gaussian

Range Domain - Kernel Selection:

☐ Uniform ☐ Epanechnikov ☒ Gaussian

Center Pixel estimation:

☐ Pixel itself ☐ Mean value ☒ M.M.S.E value

☐ Mean + mean-shift value ☐ M.M.S.E + mean-shift value

Truncation Parameter:

Spatial domain: Range domain:

Description:

This function is used to apply a Polarimetric Speckle filtering on polarimetric raw binary data.

The proposed polarimetric Speckle Filter is :

- Generalized Mean Shift filter.

According to the input data format, indicated in the widget, different compatible output data formats are proposed according the following table:

Input Data Format	Output Data Format
(2x2) Sinclair matrix [S2]	[T3], [T4], [C3], [C4]
(3x3) Coherency matrix [T3]	[T3]
(4x4) Coherency matrix [T4]	[T4]
(2x2) Covariance matrix [C2]	[C2]
(3x3) Covariance matrix [C3]	[C3]
(4x4) Covariance matrix [C4]	[C4]
Dual Polarimetric Elements (Sxx, Sxy)	[C2]

Comments:

Parameters written in Red can be modified directly by the user from the keyboard.

Input/Output Arguments:

Input Directory Indicates the location of the considered **Main Directory (MD)** containing the polarimetric data sets to be filtered.

Output Directory Indicates the location of the filtered data output directory. The default value is set automatically to : **Main Directory_GMS / YY**, where **YY** is associated with the Output Data Format (**C2**, **C3**, **C4**, **T3** or **T4**).

Output Image Number of Rows/Columns:

The output image numbers of rows and columns are initialised to the input data set dimensions.

Users wishing to process a sub-part of the initial image can modify the **Init** and **End** values of the converted images rows and columns.

Note: init and end values have to remain within the range defined by the input image dimensions.

Filtering Parameters:

Window size Users have to set the size of the different sliding window used during the filtering process.

Number of Looks Users have to set the Input data equivalent number of looks used to compute the a priori input speckle noise variance. The default value of N is set to **1**.

**Other
parameters**

A complete description of the other parameters to be set can be found in :

*Mean-Shift-Based Speckle Filtering of Polarimetric SAR Data
IEEE TGRS vol 52, n°7, july 2014*

Fengkai Lang, Jie Yang, Deren Li, Lei Shi, Jujie Wei

Note : The Non Local Means filter functionality is a contribution by

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