

## **67. FUZZY CLUSTERING WITH A MODIFIED MRF ENERGY FUNCTION FOR CHANGE DETECTION IN SYNTHETIC APERTURE RADAR IMAGES**

S. POUNAMMAL, Ms.R.DIVYALAKSHMI,  
M.E, Department of Computer Science, Assistant Professor,  
Arunai Engineering College,  
Thiruvannamalai, India  
pounammalmecse@gmail.com

To detecting the changes from multi temporal SAR images of the same scene which is taken at the different times over the same geographical area by removing the speckle noise) using Modified MRF with FCM algorithm. The MRF energy function with an additional term is established to modify the membership of each pixel. The degree of the modification is determined by the relationship of the neighborhood pixels. To modifying the membership of each neighborhood pixel by introducing the information provided by spatial context (the neighbors of the central pixel as well as their relationship are concerned) instead of modifying the mean membership of the entire pixels in an image with considering whether the pixel is located in homogeneous region or heterogeneous region. In general, the main advantages of our proposed approach are it can detect the real changes in the images as well as it can reduce the effect of the speckle noise (removing the dot spots and patches) and it gives more low time complexity (The calculation of each step only includes the computation of some elementary functions and theoretical analysis). This method is basically built on the mathematical analysis such as the knowledge of elementary function and LSM. This approach is an unsupervised approach because it does not look at the prior knowledge about the scene but regards only the use of the gray level intensity.

Index terms: Fuzzy Clustering Algorithm, Markov Random Field (MRF), Synthetic Aperture Radar images (SAR), Image Change Detection, Difference Image (DI).