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STUDY LAPLASIAN FILTER EFFECT OF STANDARD DEVIATION VALUE FOR SATELLITE IMAGE

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Abstract:
Filters effect is preparation data in feature space to growth the spectral coherence. Smoothing filter is applying at image to increase spatial coherence. Images in remote sensing produce information about target or phenomena on earth surface. These images have noises which give disappear information. Filters are solving this problem like Laplasian filter as this study. In this paper clear the std-dev was low in multispectral image then the std-dev high after filter applied on the same image .so the max and mean values are high after filter applied. the rate is 2.9 after filtering.

Keywords: laplasian filter, standard deviation, satellite image, multispectral image

INTRODUCTION

The filters effect is training data in feature space to upsurge the spectral coherence .Smoothing filter is applying at image to increase spatial coherence .The image have features ,these features have class labels. Spatial coherence assumed pixels in neighborhood in the image [1].The line construction detection have some works based on the egien analysis .The image is considering I_∂ smooth by standard deviation ∂, the line construction measured to orginal image I given as :

$$N_\gamma(I)= \partial^{2\gamma}.[(I_{\partial,xx}- I_{\partial,yy})^2+4. I_{\partial,xy}] \quad (1)$$

Where $I_{\partial,xx}$, $I_{\partial,yy}$: x and y derivatives of image I_∂ [2].

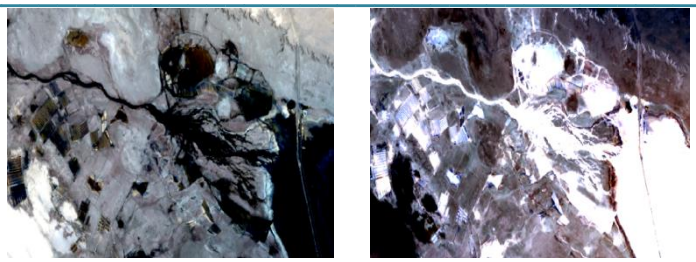
Image sensed by Very high resolution prove that fixed and details of view. The spatial knowledge in images used for whichever application needs details analysis of the scene . Some filters such as min ,max, Viterbi belong to class of pruning tactic , While direct one is non-pruning tactic .The filter rubrics might not proposal the best possible tactic .Image gray filtering without cumulative features , the districts details whose the filter vanish in background or composite with neighboring areas[3].More VHR images can be access and classification of the urban district doing important role in practical application . the shape of some building covered by trees cannot be detected , various blur and irregular are difficult classified[4]. The spatial resolution of remotely sensing scene became appear interest because neither pixels levels nor item based image evolution for supporting remotely sensing image to appreciate on sematic levels . The classification of unsupervised feature on large scale of land use scenes are unlabeled satellite image data [5].The system of imaging gets image ,this image have noises .there are steps involved image processing like transforming image in to frequency domain multiply frequency filter .The spatial filter is advanced model for image transformation for get better results. The linear filter uses the pixel value in support region .These values used in a form of linear such as filter matrix .filters reduced the noise level and contrast the image . the filters not all them provide the same results these based on the image noise level[6]. Many types of noise effect on remote sensing images . Remotely sensing image filtering provide the management scene data to get visual high quality scene every pixel have location and gray level values. The remotely image holding an enormous noise pixel level . The noise sources get from image gaining the sensors affected by some of factors like environment conditions ,light levels and sensor temperature [7]. The remotely sensing is using to get knowledge about aim or region by analysis which is found by sensor [8],[9]. Gaussian noise is PDF equal to normal distribution and its additive white noise ,its defined as noise with Gaussian amplitude distribution [10],[11],[12]

EXPERMINTAL WORK

The region between Al-anbar and Tikrit represents the study area, it located at the west of Iraq at longitude 169 and latitude 38. The data for this paper satellite image at 2013 "multispectral bands of land sat 8 operational land imager (OLI) and thermal infrared sensor" with spatial resolution 30m for 1to 7. this work done by application Arc GIS program.

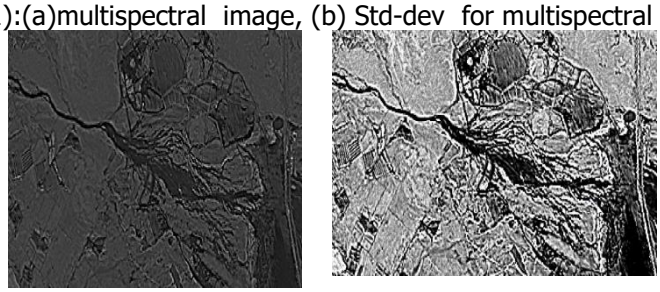
RESULTS AND DISCUSSION

The bands are composite to product multispectral image, calculate standard deviation as showed in fig (1). Laplasian filter is apply on the production image as showed in fig (2). Their histograms showed in fig (3). Table (1) shows statistics standard deviation, min, max and mean values for multispectral image and filtering multispectral view.



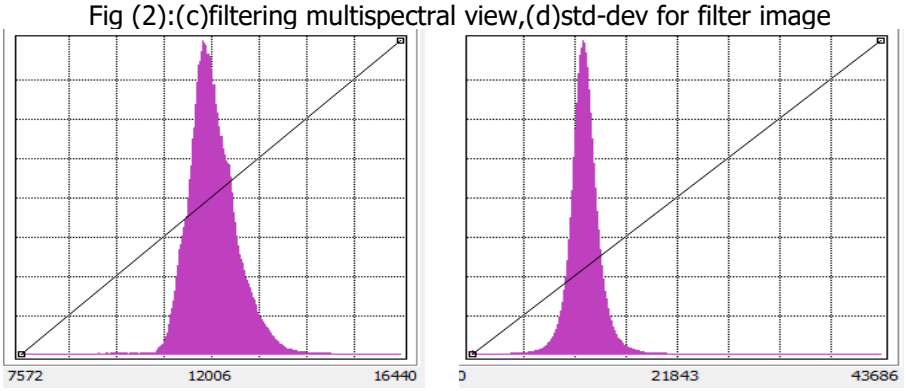
[a] [b]

Fig(1):(a)multispectral image, (b) Std-dev for multispectral view



[c] [d]

Fig (2):(c)filtering multispectral view,(d)std-dev for filter image



[e] [f]

Fig (3) : (e) histogram multispectral view,(f) histogram filtering multispectral image

Table (1) shows statistics standard deviation ,min , max and mean values for multispectral image and filtering multispectral image

Statistics	**multispectral image**	**filtering multispectral image**
Min	7572	0
Max	16440	43686
Mean	1270.212	12070.043
Std dev	569.105	1705.749

CONCLUSION

Images in remote sensing produce information about target or phenomena on earth surface. These images have noises which give disappear information. Filters are solving this problem like Laplasian filter as this study. In this paper clear the std-dev was low in multispectral image then the std-dev high after filter applied on the same image. So the max and mean values are high after filter applied. the rate is 2.9 after filtering.

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