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Implementation of A Hybrid Technique using latest category algorithm that joins the Bayesian Network paradigm with the closed Neighbour algorithm.

Paramjeet[1] , **Amit Mahal**[2]

[1]M.Tech Student, Deptt. of Electronics & Communication Engineering, I.I.E.T., Kinana, Jind, Haryana, India
Email: - Jeetchahal619@gmail.com

[2]Head of Department (H.O.D.), Electronics & Communication Engineering, I.I.E.T., Kinana, Jind, Haryana, India
Email: - ad.indus@gmail.com

Abstract : For the transmission and enjoyment, Internet is a famous channel. Internet is the collection of huge amount of data like pictures and videos. Large amount of persons click huge amount of pictures and upload and share them with their friends on social media like twitter, facebook etc. Some time huge picture data suffer from many problems like low quality because of compression, imperfect camera, wrong camera target etc. .

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Blurriness causes low quality picture, blur is the aspect that reduce the nature of the picture. For high quality picture, blur feature has to be removed. In the area of actual time operation, like satellite transmission to complete the purpose of sending correct data, it is compulsory to enhance the picture quality and also find blur in right way.

In this paper a latest category algorithm that joins the Bayesian Network paradigm with the closed Neighbour algorithm is described. The Bayesian Network shape is gathered from the database in an automatic form with the help of K2 shape learning algorithm. In way to better calculate the classification power of the Bayesian Network approach, user use two distant net evaluation metrics in the information process and make comparison of results gathered by using each of them.

Proposed Method :

Classifier combination can fuse together distinguish data sources to maintain their alternative data. The sources can be multi-modal, such as speech and vision, but can also be transformations or partitions of the equal signal. In every case, combination can be generated appreciable gains, even when individual classifiers exhibit widely varying accuracies.

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Hybrid Technique: hybrid technique is the approach of reductionism, where typical trouble is calculated from stepwise decomposition. Intelligent hybrid technique includes specific levels of information explained in terms of concept granularity and corresponding interfaces. Particularly, the hierarchy would include connectionist and symbolic levels, with each level possibly consisting of ensemble architecture by itself, and with proper interfaces among levels.

Here, the optimized hyper plane will be defined between 'Benign' and 'Malignant' categories in the binary SVM 2. Then, the classification will be concluded based on the classification result.

Results and discussion

The designed technique is performed on the public dataset. The testing dataset is formed of 1000 pictures founded from internet. The ground-truth blur parts are given to all the 1000 pictures. The 1000 blurry pictures are decomposed into dataset I, mainly because of motion blur. First of all, the image is read from the dataset and then algorithms are applied on it to remove the blur that occurs due to some reason in the original image. The results so obtained are shown in fig.1.

Figure 1: Image of a droor

Above figure show the comparison of four classifiers on the 4 parameters. After reading the image, DCT features are extracted and the features are shown in the fig 2. The proposed method compares four different Classifiers for detection of blur in images. Training is also provided to

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train the dataset. The first and very popular Classifier DBDF "discriminative blur detection features" is used to check the blur feature in image. Four discriminative blur detection methods and a naive Bayesian classifier are adopted. In addition, a multistage inference parameter is generated to take care the scale variation. The experimental output on data taste displays that DBDF detect 25% blur features in the image. The 1000 blurry pictures are decomposed into dataset I, mainly because of motion blur. First of all, the image is read from the dataset and then algorithms are applied on it to remove the blur that occurs due to some reason in the original image. The four parameters used are Accuracy, SNR (signal to noise ratio), PSNR (peak signal to noise ratio), and MSE. Accuracy, SNR, PSNR should be high for best results and the value of MSE (mean square error) should be least. The value of hybrid classifier is highest for parameter SNR, PSNR, Accuracy and it provide lower value for MSE. Second better results are of SVM but provide less accuracy value than the Hybrid technique. After SVM, DBDF provide good results followed by KNN. The designed technique is performed on the public dataset. The testing dataset is formed of 1000 pictures founded from internet. The ground-truth blur parts are given to all the 1000 pictures. The 1000 blurry pictures are decomposed into dataset I, mainly because of motion blur. First of all, the image is read from the dataset and then algorithms are applied on it to remove the blur that occurs due to some reason in the original image. The results so obtained are shown in fig.4.1.

Four different images are used to detect the blur and the results are shown in the fig below. After the result of DBDF Classifier user going to compare other classifiers named SVM "Support vector machine"and K-NN "K-nearest neighbours". From the result of SVM, it is clear that SVM gives the result batter then the exciting DBDF which is 39%.

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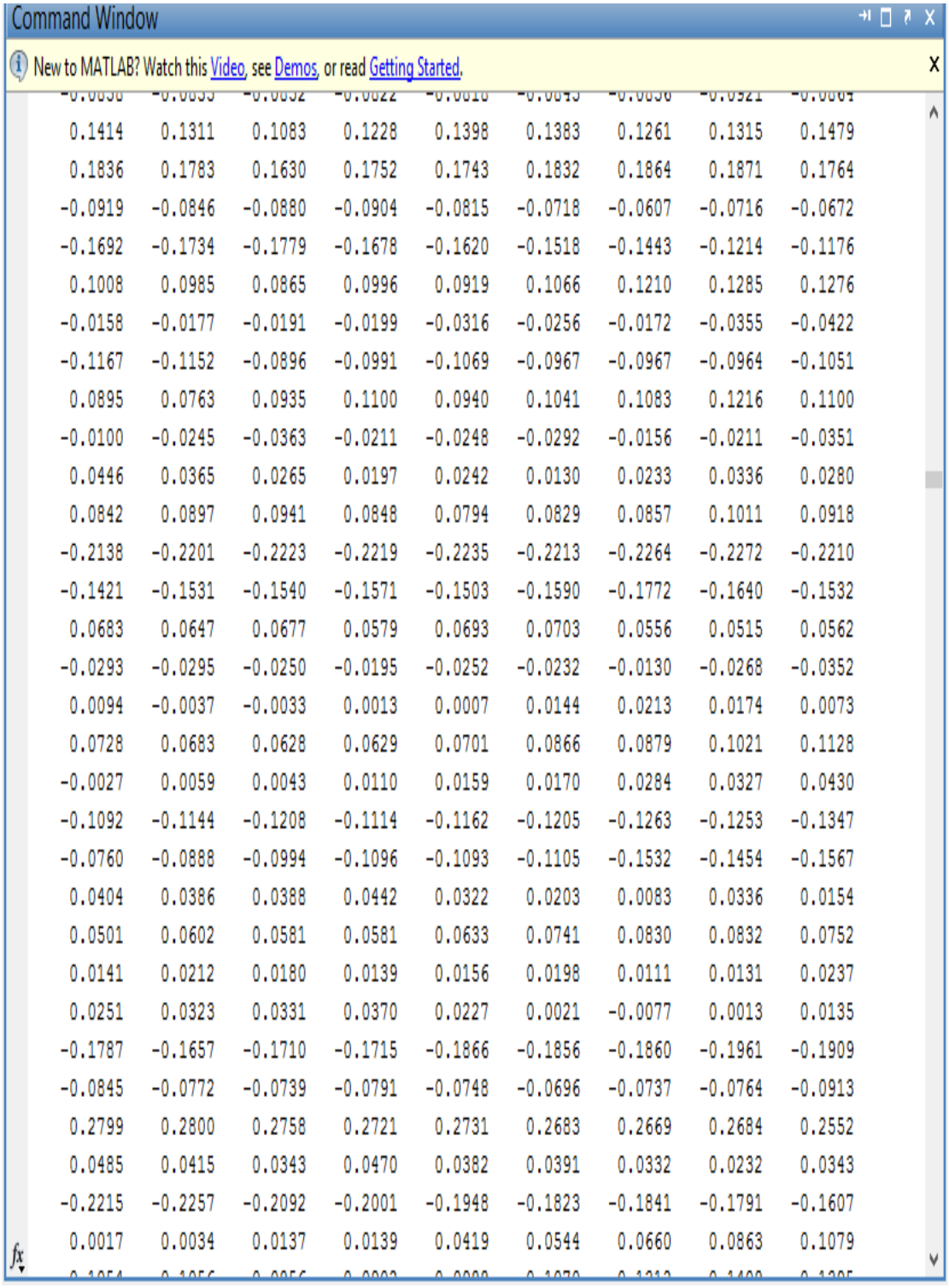

Figure 2: DCT Features

Four different images are used to detect the blur and the results are shown in the fig below. After the result of DBDF Classifier user going to compare other classifiers named SVM "Support

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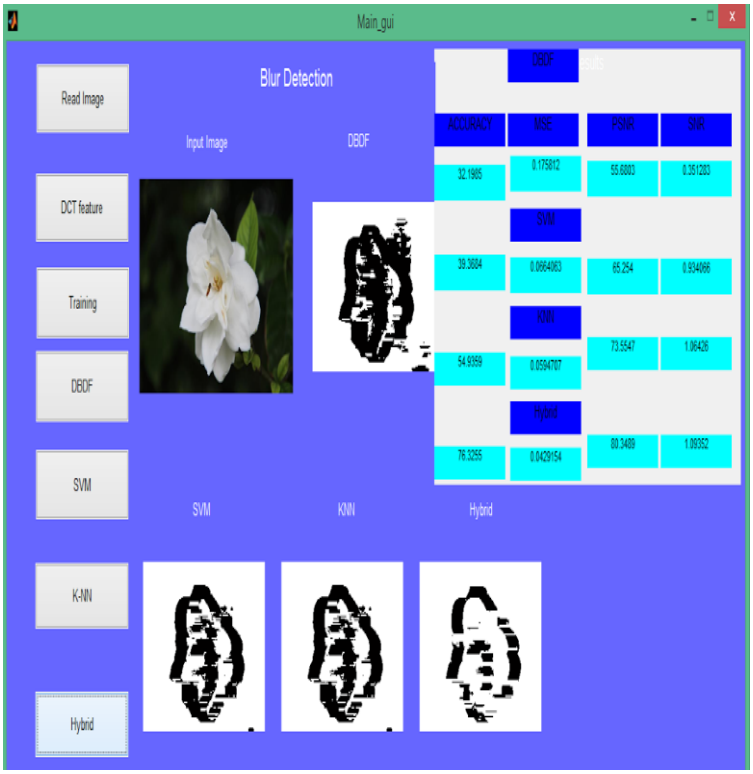

Figure 3: Flower Image

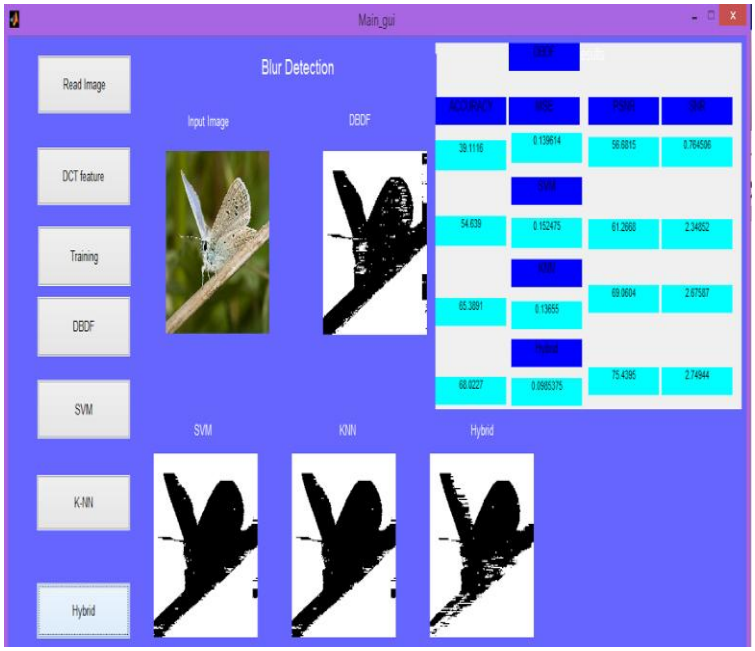

Figure 4: Bird Image

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The second best classifier after SVM is KNN gives 86% accuracy in results. All the four parameters are used to check the results of the given parameters. From the given four screenshots it is clear that our purposed hybrid system gives best result as compare to others.

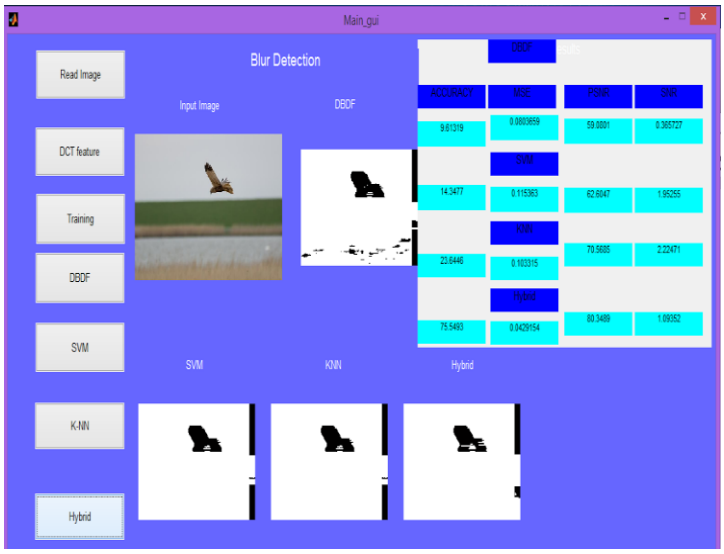

Figure 5: Bird Image

These are the most successful previous methods. Therefore, it is effective to make comparison our technique with these.

The last and the very accurate Classifier is Hybrid Classifier which performs very well and give 96% accurate result as shown in Fig 5.

The below table 1 gives the result comparison of these four Classifier. From the below table it is clear that Hybrid Classifier gives best result as compare to all other Classifiers. Table 4.1 shows the comparison of results in the term of accuracy. On dataset I, the accuracies of DBDF, KNN, SVM AND Hybrid are 25.334, 39.184, 86.323 and 96.881 respectively. The accuracy of Hybrid is 10% higher than that of SVM.

Table 1: Results of DBDF classifier for 4 different images

Accuracy	MSE	PSNR	SNR
55.6938	0.37734	52.3635	1.71928
32.1985	0.175812	55.6803	0.351283

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39.1116	0.139614	56.6815	0.764506
9.61319	0.0803659	59.0801	0.365727

Table 2: Results of SNN classifier for 4 different images

Accuracy	MSE	PSNR	SNR
68.5754	0.0776924	64.501	0.532603
39.3684	0.0664063	65.254	0.934066
54.639	0.152475	61.2668	2.34852
14.3477	0.115363	62.6047	1.95255

Table 3: Results of KNN classifier for 4 different images

Accuracy	MSE	PSNR	SNR
81.2086	0.0695781	72.706	0.606842
54.9359	0.0594707	75.5547	1.06426
65.3891	0.13655	69.0604	2.67587
23.6446	0.103315	70.5685	2.22471

Table 4 Results of hybrid classifier for 4 different images

Accuracy	MSE	PSNR	SNR
96.7988	0.0502091	79.4218	0.623525
76.3255	0.0429154	80.3489	1.09352
68.0227	0.0985375	75.4395	2.74944
75.5493	0.0429154	80.3489	1.09352

Above tables show the comparison of for different classifier on four different parameters. It is clear from above tables that our proposed hybrid techniques gives best result as compare to other.

Table4. 5: Comparison table of all four parameters

Parameters	DBDF	SVM	KNN	Hybrid

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Accuracy	136.61709	176.9305	225.1782	316.6963
MSE	0.7731319	0.4119367	0.3689138	.2345774
PSNR	223.8054	253.6265	287.8826	315.5591
SNR	3.200796	5.767739	6.571682	5.561685

The above table 4.5 shows the comparison between all the four classifier. It is clear from the table that our proposed hybrid techniques give best result as compare to all other previous classifiers.

Conclusion

Blurriness causes low quality picture i.e. blur is the aspect that reduce the nature of the picture. For high quality picture, blur has to be removed from the image. Blur degrade the quality of an image. There are number of techniques mentioned in literature for the removal of blurriness. The techniques mentioned in this dissertation are SVM, DCT, Discriminative Blur Detection Feature (DBDF) and Nearest Neighbour Search and a proposed hybrid method for enhancing the quality of an image. All these techniques are applied on four images and their results are tabulated in chapter 4. From the Table 4.5, it is found that the SNR and PSNR value of proposed method is higher than all other techniques and consequently the error in the proposed method is less. Also the capacity of proposed method is higher than all other techniques mentioned in literature survey.

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