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Survey on Image Forgery Detection using Machine Learning Classifier

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Abstract: Image is a very powerful media of communication. Nowadays, most of the people like to take pictures and manipulate the picture using free editing software for example is Photoshop, picsart, etc. Images play very important part in our daily life and it is not much of complex to make edited image using software and it's not required any particular knowledge but it is very difficult to recognize a forged image. We can also see bad image editing in social media, photography. It comes under illegal activities. So image forgery detection is very important. In this paper, we have compared the different techniques for forgery detection of image and machine learning classifiers.
Keywords: Forgery Detection of Image, Machine Learning Classifier, CMFD Technique.

I. INTRODUCTION

Image forgery or image manipulation using free cost editing software is an old concept as Photoshop. But the technology has developed very fastly; nowadays people cannot expect the genuine usage of digital images for several causes. In the recent past, the fame of DSLR cameras, smart phone and tab phones are really helpful to take digital image easily. Image forgery includes three main basic types that are Image Retouching, Image Splicing, and Copy-Move, image forgery has two basic approaches that are active approach and passive approach [10]. The forgery detection of images is very important because most of forged image comes under the illegal activity so this detection may use for judicial proof in criminal case and several areas. Forgery detection of image is using so many techniques from the past few years such as CMFD techniques, Ring projection transform (RPT), Fuzzy transform (F-Transform) and color illumination etc. In this paper we have explained the machine learning classifiers such as Artificial Neural Network (ANN) and Support Vector Machine (SVM). These two classifiers are used for classification of dataset, ANN is very efficient and it gives best accuracy as compared to SVM.

II. EXISTING SYSTEM

Image forgery detection is mainly using a CMFD method and its techniques but very few methods include the machine learning classifier like SVM, LSSVM and ANN. This classifier is used for classification of dataset and regression analysis. ANN classifier is basically interconnected neural like layers, network can be used to adjust the available input and output, it can explore the hidden layer in the dataset and also this classifier separates the dataset itself like training, validation and testing. This classifier needs training set to operate so it's required large processing time and also large complexity of network structure. This imperfection gives less efficiency.

III. PROPOSED SYSTEM

To overcome the imperfections of the existing system we are trying to implement image forgery detection using convolutional neural network (CNN).

IV. RELATED WORK

1) *"CMFD: a detailed review of block based and key feature based techniques in image copy-move forgery detection" by Badal Soni, Pradip K. Das, & Dalton Meitei Thounaojam [7]:* This paper give an analytical discussions and complete analysis with advantages and disadvantages of each CMFD techniques from 2007 to 2017 are discussed. They also addressed the changes in databases, problems, future work and references in this CMFD domain. They proposed scale invariant feature transform key point & fusion of block method, in this method the image is split into non overlaying part using scale invariant feature transform key points are removed from all regions and Simple Linear Iterative Clustering (SLIC). They described SURE method that are extracted & matched by using Hierarchical agglomerative clustering (HAC). They concentrated in improvement of efficient system to various forgery detection. They have found that CMFD is most popular area in the image forgery detection.

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2) *"Copy-Move Image Forgery Detection using Ring Projection and Modi_ed Fast Discrete Haar Wavelet Transform" by Mohd Dilshad Ansari and Satya Prakash Ghrera [6]:* This paper present a CMFD based on RPT and haar wavelet method. Image processing is a helpful tool of wavelet transform. Modified fast haar wavelet transform is unique approaches that decrease the estimation work in haar transform and fast haar transform. In this paper they have suggested a technique in terms of accuracy, FPR and TPR. They have applied different attacks using MFHDWT method such as turning, scaling and unfocused. In this method obtained results show the effectiveness and feasibility.
3) *"Image forgery detection using support vector machine" by Dr Palanivel, Arthi.Z, Deepika.G and Latha.S [3]:* In this paper they have proposed the technique to find a forged region in the image or document by using the SVM classifier and PCA algorithm; it is based on the forgery detection technique of CMFD. They also did the copy-move and splicing forgery detection at the same time. They are using the SVM classifier for developing and detecting image forgery in which image include addition, replacement and removal part in the images, SVM is used to find out the similar part of an image by its matching image block. And finally the result of output is highlighted the duplicate region in the forged image. The result shows accuracy 85.86%.
4) *"Forgery Detection of Spliced Images Using Machine Learning Classifiers and color Illumination" by Tamana Sharma, Er.Mandeep Kaur [2]:* In this paper described a technique for forgery detection of composite images using machine learning classifiers LSSVM & SVM and perceptron with the help of illuminating color. They proposed a method, that describes mismatches of color and that objects are considered for forgery detection of image based on the color illumination. In this technique they improved image forgery detection. The main advantage is totally prevents user interrelationship and gives a declaration on the actuality of the forged image. Comparison between the old SVM and modified SVM using LSSVM is based upon the accuracy, the result shows better and more accuracy.
5) *"Framework for Image Forgery Detection and Classification Using Machine Learning" by Shruti Ranjan, Prayati Garhwal, and Anupama [5]:* This paper is implemented on Graphical User Interface, based on this solution of the digitally morphed image or document; it is a foundation for investigating the digitally forged image and differentiating between the original images from digitally forged document. They can also use the advanced image editing tools in this project, it implement the required solution more instantly. Artificial neural network classifier gave a high accuracy of 96.4% as compared to linear support vector machine which gave less accuracy 87.6%.

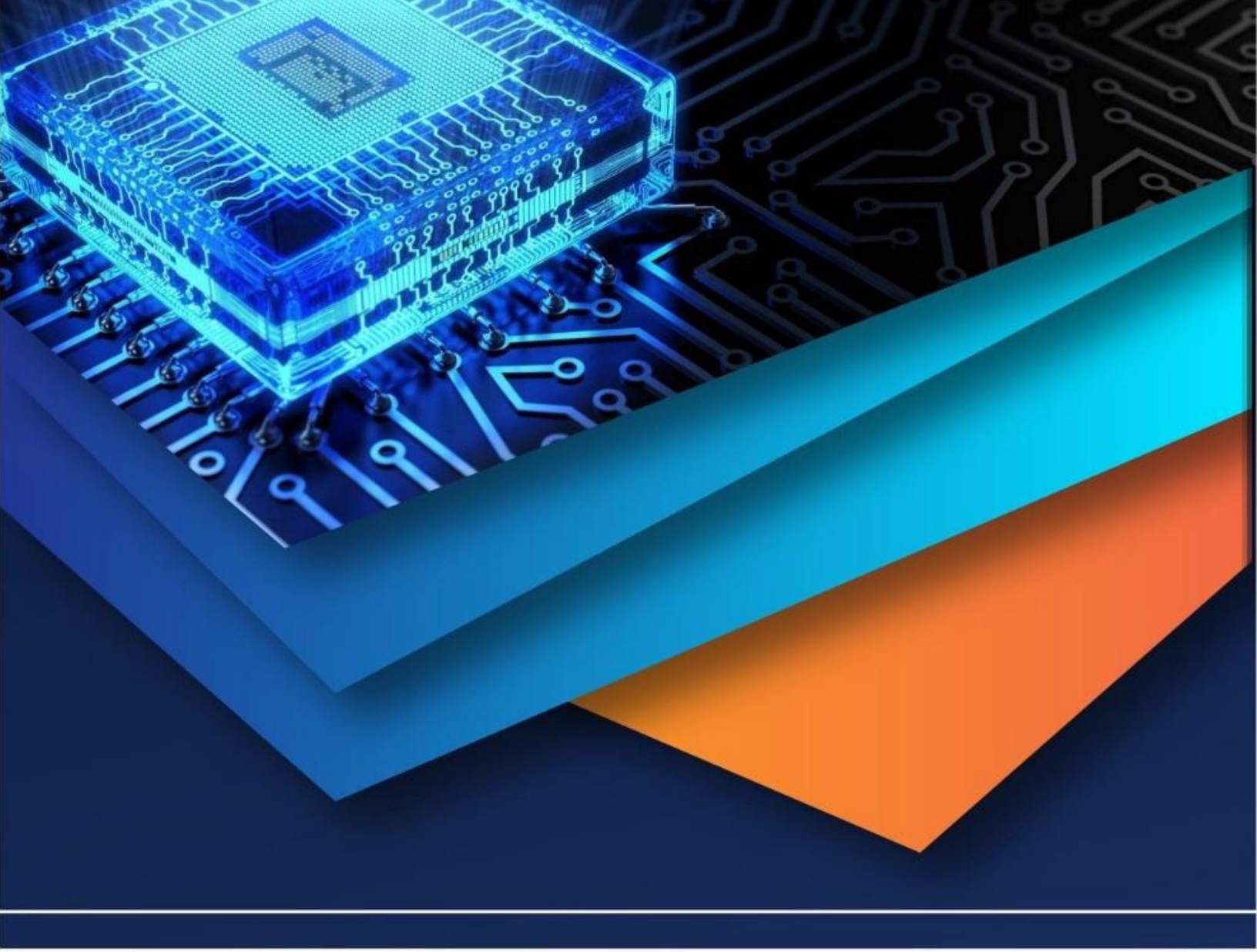
V. CONCLUSION

This study demonstrates forgery detection of image using machine learning classifiers. We have discussed about the various techniques and methods of machine learning classifiers for detecting image forgery. In this paper, we find that CMFD, color illumination, ANN and SVM are the most familiar methods of detecting forged image. These are the most comfortable technique for detecting forged image. In this survey we have mainly focused on machine learning classifiers such as SVM and ANN. Among these two classifiers ANN gave better accuracy (96.4%) compared to the SVM classifier. In SVM classifier have imperfection & drawbacks and CNN can be used for more accurate image forgery detection.

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