



e-ISSN: 2319-8753 | p-ISSN: 2320-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 4, April 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.512

9940 572 462

6381 907 438

ijirset@gmail.com

www.ijirset.com



Medical Image Forgery Detection for Smart Healthcare

A.Jasmine Vijithra¹, S.Mahima², L.Deepika³, J.Bhargavi⁴, P.Harshini⁵.

Associate Professor, Department of Electronics and Communication Engineering, RMKCET, Thiruvallur, India ¹,

B.E Student, Department of Electronics and Communication Engineering, RMKCET, Thiruvallur, India ^{2, 3, 4, 5}

ABSTRACT: With the invention of new communication technologies, new features and facilities are provided in a smart healthcare framework. The features and facilities aim to provide a seamless, easy-to-use, accurate, and real-time healthcare service to clients. As health is a sensitive issue, it should be taken care of with utmost security and caution. This article proposes a new medical image forgery detection system for the healthcare framework to verify that images related to healthcare are not changed or altered. The system works on a noise map of an image, applies a multi-resolution regression filter on the noise map, and feeds the output to support-vector-machine-based and extreme-learning-based classifiers. The noise map is created in an edge computing resource, while the filtering and classification are done in a core cloud computing resource. In this way, the system works seamlessly and in real time. The bandwidth requirement of the proposed system is also reasonable..

KEYWORDS: seamless ,clients ,forgery ,forgery detection ,multi-resolution regression ,noise map, vector-machine-based, filtering, core cloud computing .

I. INTRODUCTION

Due to the huge development of technology, the usage of the digital image has been expanding day by day in our daily lives. Because of this forgery of the digital image has turned out to be increasingly straightforward and undiscoverable. At present technology where anything can be controlled or changed with the assistance of modern technology had started to disintegrate the authentic of images [66, 67, 68], counterfeiting and forgeries with the move to the Mega pixels, which gives a new way for forgery.

Imitation is not new to humankind but rather it is past generation issues. In the past it was limited to craftsmanship and composing yet did not impact the overall population. The ability to create image forgery is nearly as old as photography itself [23]. Over a two- decade, photography is the normal and fascinating art which turned out for creating portraits and by that portrait photographers can earn money by making forgery possible by enhancing deals by retouching their photographs [73]. Image forgery detection had gain more attention and incredible investigation in various fields such as computer visualization, image processing, biomedical tools, immoral analysis, image forensics, etc. It gained further attention and demanding due to advanced software's that become difficult to verify whether an image is influenced by naked eyes [40].

However, now because of the advanced software and development of numerous gadgets, a photo can be changed and altered. It prompts to exceedingly worrying for people to distinguish the picture is authenticate or forged. The accessibility of digital image processing software includes PhotoShop, Adobe Photoshop makes it moderately simple to generate the forged image from several images [74]. In any case, the image contains many sources of data, and the dependability of digital images is therefore turning into an imperative issue. A photo may worth a thousand words however, nearby, it might have scores of analysis. Images are used to elucidate extreme ideas and move us easily in each field. Images are noticeable techniques for communication and various individuals rely on them, so it is significant that their genuineness should be illustrated.

The work in this chapter reveals the importance of image forgery detection in real-world applications. It is difficult task to identify the forgery image. This can be possible by adopting image processing techniques for efficient detection. Due to the availability of image processing techniques, editing tools, conversion of images become so easy and accessible. Nowadays image processing techniques are widely used in all fields due to easy manipulation, low expensive, less



computation time and efficient result. In this research detection of image forgery by image processing techniques to differentiate the forgery and authenticate image

II. RELATED WORK

FRAMEWORK FOR IMAGE FORGERY DETECTION AND CLASSIFICATION USING MACHINE LEARNING [14]

In this , lays a foundation on investigation of digitally manipulated documents and provides a solution to distinguish original document from a digitally morphed document. A Graphical User Interface (GUI) was created for detection of digitally tampered images. A Greedy Deep Learning Method for Medical Disease Analysis[15] In this paper using the Greedy weighted dictionary learning for mobile multimedia for medical disease analysis. The help of mobile multimedia technology, we timely follow-up observation to patients and exchange the collected information into data information.

SURVEY ON DATA MINING TECHNIQUES IN AGRICULTURE

According to him the decision trees suggested there exists a correlation between climatic factors and soybean crop productivity and these variables' influence on the soybean crop productivity were confirmed from the rule accuracy and Bayesian classification.

A DEEP LEARNING ARCHITECTURE FOR CLASSIFYING MEDICAL IMAGES OF ANATOMY OBJECT [17]

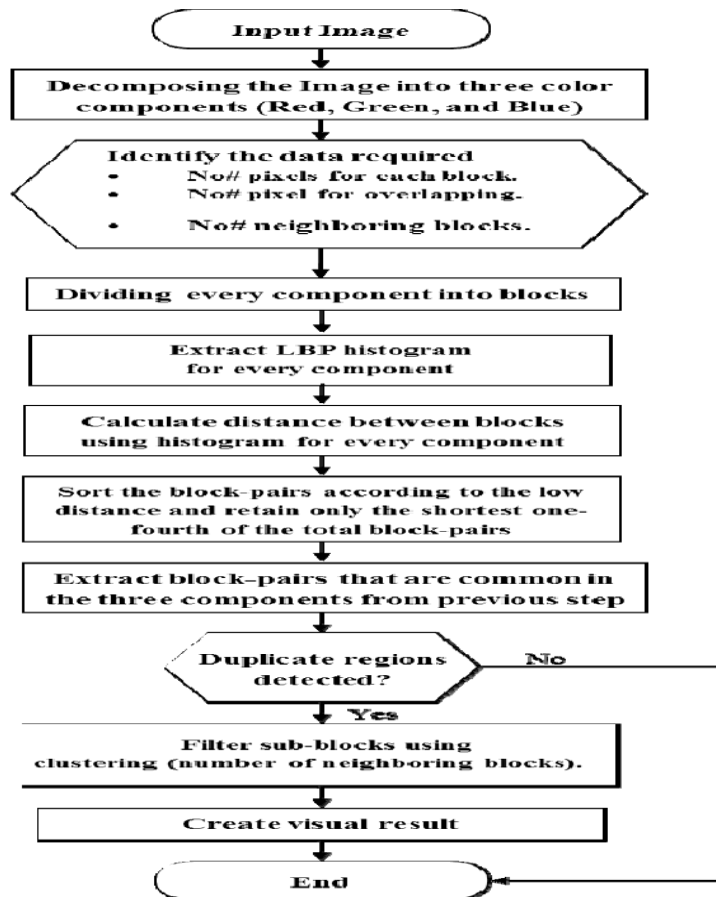
Deep learning architectures particularly Convolutional Neural Network (CNN) have shown an intrinsic ability to automatically extract the high level representations from big data.

MEDICAL IMAGE FORGERY DETECTION FOR SMART HEALTHCARE [18]

In this paper ,a new medical image forgery detection system for the healthcare framework to verify that images related to healthcare images not changed. The system was tested using three different databases, two having natural images and one having mammograms.

III. METHODOLOGY

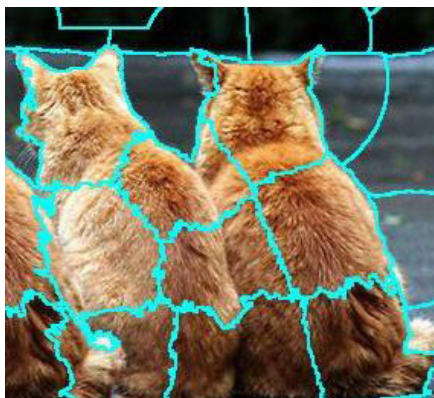
BLOCK DIAGRAM:



The process of creating fake image has been massively straightforward with the presentation of new and powerful computer graphics editing software tools which are uninhibitedly accessible as Photoshop, GIMP, and Corel Paint Shop. Today, this effective image processing software tools permit people to alter the photos and images conveniently and unperceivable. Nowadays it creates a big challenge to authenticate.

IV. EXPERIMENTAL RESULTS

Input	Number of authentic images	Number of forged images	T_p	T_n	F_p	F_n	Sensitivity	Specificity	Accuracy	F-measure	G-mean
Set-1	50	50	40	45	5	10	0.8000	0.9000	0.8500	0.8421	0.8485
Set-2	50	50	38	45	5	12	0.7600	0.9000	0.8300	0.8172	0.8270
Set-3	50	50	40	42	8	10	0.8000	0.8400	0.8200	0.8163	0.8198
Set-4	50	50	40	50	0	10	0.8000	1	0.9000	0.8889	0.8944
Set-5	50	50	37	47	3	13	0.7400	0.9400	0.8400	0.8222	0.8340
Total	250	250	195	229	21	55	0.78	0.916	0.848	0.8374	0.8441



i - Image in pixel level divided into blocks



ii – Image with the tampered areas highlighted

Image Forgery Detection The image forgery detection system was proposed in the smart healthcare framework. The system was tested using three different databases, two having natural images and one having mammograms. The system achieved accuracies over 98 percent for natural images and 84.3 percent for medical images. The system performed best when we combined the scores of two classifiers. The area of medical image forgery detection needs more attention to gain the trust of patients and to avoid their embarrassment. There is still a long way to go in this research. The next generation of network technologies bring immense computing power and ubiquitous service. We can take advantage of these technologies to make the healthcare system seamless, real-time, trustable, secure, and easy to use.

V. CONCLUSION

With the outgrowth of the imaging and communication technology, the exchange of digital images has become easy and extensive. But at the same time, the instances of manipulations in the digital images have also increased thereby resulting in greater need for establishing ownership and authentication of the media. Digital image forensic researcher community is continuously attempting to develop techniques for detection of the imaging device used for image acquisition, tracing the processing history of the digital image and locating the region of tampering in the digital images. An attempt to recover the tampered region details is expected to be an appealing



investigation domain for many researchers. Due to format incompatibility and use of encryption many organizations find their data to fail to qualify for analysis using many of the existing techniques.

REFERENCES

- [1] Solanas et al., "Smart Health: A Context Aware Health Paradigm within Smart Cities," IEEE Commun. Mag., vol. 52, no. 8, Aug. 2014, pp. 74–81.
- [2] C. Bekara, "Security Issues and Challenges for the IoT Based Smart Grid," Proc. COMMCA-2104, Procedia Computer Science 34, 2014, pp. 532–37.
- [3] M. A. Qureshi and M. Deriche, "A Bibliography of Pixel-Based Blind Image Forgery Detection Techniques," Signal Processing: Image Communication, vol. 39, Part A, Nov. 2015, pp. 46–74.
- [4] M. S. Hossain et al., "Audio-Visual Emotion-Aware Cloud Gaming Framework," IEEE Trans. Circuits and Systems for Video Tech., vol. 25, no. 12, Dec. 2015, pp. 2105–18.
- [5] J.O. Fajardo, I. Taboada, and F. Liberal, "Radio-Aware Service-Level Scheduling to Minimize Downlink Traffic Delay through Mobile Edge Computing," Mobile Networks and Management, 2015, pp. 121–34.
- [6] T. Ahonen, A. Hadid, and M. Pietikainen, "Face Description with Local Binary Patterns: Application to Face Recognition," IEEE Trans. Pattern Anal. Mach. Intell., vol. 28, 2006, pp. 2037–41.
- [7] J. Chen et al., "WLD: A Robust Local Image Descriptor," IEEE Trans. Pattern Anal. Mach. Intell., vol. 32, no. 9, Sept. 2010, pp. 1705–20.
- [8] J. Dong and W. Wang, "CASIA Tampered Image Detection Evaluation (TIDE) Database, v1.0, and v2.0," 2011; <http://forensics.idealtest.org/>.
- [9] M. Heath et al., "The Digital Database for Screening Mammography," Int'l. Work. Dig. Mamm., vol. 212–8, 2000.
- [10] G.-B. Huang et al., "Extreme Learning Machine for Regression and Multiclass Classification," IEEE Trans. Sys., Man, Cybern. B, Cybern., vol. 42, no. 2, Apr. 2012, pp. 513–29.
- [11] G. Muhammad et al., "Image Forgery Detection Using Steerable Pyramid Transform and Local Binary Pattern," Machine Vision and Applications, vol. 25, no. 4, May 2014, pp. 985–95.
- [12] X. Zhao et al., "Detecting Digital Image Splicing in Chroma Spaces," Proc. Int'l. Wksp. Digital Watermarking, 2011, pp. 12–22.



INNO  **SPACE**
SJIF Scientific Journal Impact Factor

**Impact Factor:
7.512**

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 **9940 572 462**  **6381 907 438**  **ijirset@gmail.com**



www.ijirset.com

Scan to save the contact details