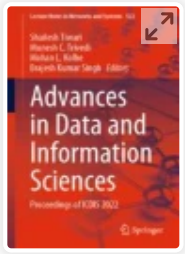

Advances in Data and Information Sciences pp 1–10

A Review on Automatic Image Forgery Classification Using Advanced Deep Learning Techniques

Anshul Kumar Singh, Chandani Sharma, Brajesh Kumar Singh & Erma Suryani

Conference paper | First Online: 25 November 2022

Part of the Lecture Notes in Networks and Systems book series (LNNS,volume 522)

Abstract

Digital images are the representation of an event and considered as an evidence for most of the cases and scenarios. Copy-move forgery is a generic sort of forgery method. The technique for recreating one segment or part of the picture inside a similar picture is called as copy-move forgery. An effective and

dependable technique has been created by various authors for recognizing these forgeries for restoring the image credibility. Passive approaches of image forgery detection are very hard to achieve. Copy-move, cut-paste, image splicing, image retouching and lightening condition are the examples of independent forgery techniques. Various techniques have been used by various authors like deep learning, convolution neural network, median filtering detection based on CNN, copy-move forgery detection, ringed residual, discrete cosine transform, U-Net, image splicing forgery detection, etc., with good accuracy on publically accessible databases like CASIA, dataset series of MICC, CoMoFoD, BSDS300, etc. In this paper, we have done a critical analysis of these image forgery detection technologies and the dataset available publically. Comparative analysis based on techniques, model, dataset and accuracy has been performed, and they achieve good accuracy as well.

Keywords

CNN **Copy-move forgery** **Cut-paste**

Image splicing

References

1. Barad ZJ, Goswami MM (2020) Image forgery detection using deep learning: a survey. In: 2020 6th international conference on advanced computing and communication systems (ICACCS), April

2. Wang W, Dong J, Tan T (2009) A survey of passive image tampering detection. In: International workshop on digital watermarking. Springer, pp 308–322

3. Zhang Y, Goh J, Win LL, Thing VL (2016) Image region forgery detection: a deep learning

approach. In: SG-CRC, pp 1–11

4. Bondi L, Lameri S, Güera D, Bestagini P, Delp EJ, Tubaro S (2017) Tampering detection and localization through clustering of camera-based CNN features. In: IEEE conference on computer vision and pattern recognition workshops (CVPRW), pp 1855–1864

5. Bayar B, Stamm MC (2016) A deep learning approach to universal image manipulation detection using a new convolutional layer. In: Proceedings of the 4th ACM workshop on information hiding and multimedia security, pp 5–10

6. Salloum R, Ren Y, Kuo C-CJ (2018) Image splicing localization using a multi-task fully convolutional network (MFCN). J Vis Commun Image Represent 51:201–209

7. Amerini I, Uricchio T, Ballan L, Caldelli R (2017) Localization of jpeg double compression through multi-domain convolutional neural networks. In: IEEE conference on computer vision and pattern recognition workshops (CVPRW), pp 1865–1871

8. Chen J, Kang X, Liu Y, Wang ZJ (2015) Median filtering forensics based on convolutional neural networks. IEEE Signal Process Lett 22(11):1849–1853

9. Hajialilu SF, Azghani M, Kazemi N (2020) Image copy-move forgery detection using sparse recovery and keypoint matching. IET Image Process 14(12):2799–2807

10. Gani G, Qadir F (2020) A robust copy-move forgery detection technique based on discrete cosine transform and cellular automata. J Inf Secur Appl 54

11. Elaskily MA, Elnemr HA, Sedik A, Dessouky MM, El Banby GM, Elshakankiry OA, Khalaf AAM, Aslan HK, Faragallah OS, Abd El-Samie FE (2020) A novel deep learning framework for copy-move forgery detection in images. Multimed Tools Appl

12. Liu Y, Wang H, Chen Y et al (2020) A passive forensic scheme for copy-move forgery based on superpixel segmentation and K-means clustering. Multimed Tools Appl 79:477–500

13. Soni B, Das PK, Thounaojam DM (2019) Geometric transformation invariant block based copy-move forgery detection using fast and efficient hybrid local features. J Inf Secur Appl 45:44–51

14. Cozzolino D, Poggi G, Verdoliva L (2015) Efficient dense-field copy–move forgery detection. IEEE Trans Inf Forens Secur 10(11):2284–2297

15. Chen C-C, Lu W-Y, Chou C-H (2019) Rotational copy-move forgery detection using SIFT and region growing strategies. Multimed Tools Appl

16. Yang F, Li J, Lu W, Weng J (2017) Copy-move forgery detection based on hybrid features. Eng Appl Artif Intell 59(3):73–83

17. Wu Y, Abd-Almageed W, Natarajan P (2018) Busternet: detecting copy-move image forgery with source/target localization. In: Proceedings of the European conference on computer vision (ECCV), pp 168–184

18. Bi X, Wei Y, Xiao B, Li W (2019) Rru-net: the ringed residual u-net for image splicing forgery detection. In: Proceedings of the IEEE conference

on computer vision and pattern recognition workshops, pp 30–39

Author information

Authors and Affiliations

Department of CSE, Quantum University, Roorkee, Uttrakhand, India

Anshul Kumar Singh & Chandani Sharma

Department of CSE, Raja Balwant Singh Engineering Technical Campus, Agra, India

Brajesh Kumar Singh

Department of Information Systems, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia

Erma Suryani

Corresponding author

Correspondence to Anshul Kumar Singh .

Editor information

Editors and Affiliations

Krishna Engineering College, Ghaziabad, Uttar Pradesh, India

Shailesh Tiwari

Associate Professor, CSED, National Institute of Technology Agartala, Tripura, India

Munesh C. Trivedi

Faculty of Engineering and Science, University of Agder, Agder, Norway

Mohan L. Kolhe

Dept. of Computer Sci & Engineering, R. B. S. Engineering Technical Campus, Agra, Uttar Pradesh, India

Brajesh Kumar Singh

Rights and permissions

Copyright information

About this paper

Cite this paper

Singh, A.K., Sharma, C., Singh, B.K., Suryani, E. (2023). A Review on Automatic Image Forgery Classification Using Advanced Deep Learning Techniques. In: Tiwari, S., Trivedi, M.C., Kolhe, M.L., Singh, B.K. (eds) Advances in Data and Information Sciences. Lecture Notes in Networks and Systems, vol 522. Springer, Singapore. https://doi.org/10.1007/978-981-19-5292-0_1

.RIS .ENW .BIB

DOI	Published	Publisher Name
https://doi.org/10.1007/978-981-19-	25 November 2022	Springer, Singapore

5292-0_1

Print ISBN	Online ISBN	eBook Packages
978-981-19-5291-3	978-981-19-5292-0	Intelligent Technologies and Robotics Intelligent Technologies and Robotics (R0)

Publish with us

Policies and ethics