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## **Image Enhancement Techniques Using CNN**

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**Abstract:** The most significant area in imaging study and processing is image processing technique. The major goal is to improve quality images artificially through other means. The images that are obtained at times through certain mediums may end up distorted making the image unclear. One option to enhance the image quality is to change camera lens, which is costly. Thus, an alternative is required. A conventional neural network (CNN) may give priority to distinct aspects in an image and differentiate between them. A clear review of the literature on a few CNN-based picture enhancing techniques is carried out.

Keywords: CNN, Image processing, Image enhancement, Denoising.

## REFERENCES

- Mao, Xiao-Jiao, Chunhua Shen, and Yu-Bin Yang."IMAGE Restoration Using Very Deep Convolutional Encoder Decoder Networks with Symmetric Skip Connections." arXiv preprint arXiv:1603.09056 (2016).
- [2]. A Zhao, "Image Denoising with Deep Convolutional Neural Networks".
- [3]. Shen, Liang; Yue, Zihan; Feng, Fan; Chen, Quan; Liu, Shihao; Ma, JieK. ELISSA, "MSR-NET: LOW-light Image Enhancement Using Deep Convolutional Network", 2017.
- [4]. D. J. Jobson, Z.-u. Rahman, and G. A. Woodell. A multiscale retinexFOR BRIDGING the gap between color images and the human observation of scenes. IEEE Transactions on Image processing, 6(7):965–976, 1997.
- [5]. X. Fu, D. Zeng, Y. Huang, X.-P. Zhang, and X. Ding. A weighted variational model for simultaneous reflectance and illumination estimation. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, pages 2782–2790, 2016.
- [6]. X. Dong, Y. A. Pang, and J. G. Wen. Fast efficient algorithm for enhancement of low lighting video. In ACM SIGGRAPH 2010 Posters, page 69. ACM, 2010. 1.
- [7]. L. Tao, C. Zhu, J. Song, T. Lu, H. Jia and X. Xie, "Low-light image enhancement using CNN and brightchannel prior," 2017 IEEE International Conference on Image Processing (ICIP), Beijing, 2017, pp. 3215-3219.
- [8]. L. Tao, C. Zhu, G. Xiang, Y. Li, H. Jia and X. Xie, "LLCNN: A convolutional neural network for low-light image enhancement," 2017 IEEE Visual Communications and Image Processing (VCIP), St. Petersburg, FL, 2017, pp. 1-4.
- [9]. Guo X, Li Y, Ling H. "LIME: Low-Light Image Enhancement via Illumination Map Estimation," IEEE Transactions on Image Processing, vol. 26, no.2, pp. 982-993, 2017.
- [10]. D. J. Jobson, Z. Rahman, and G. A. Woodell, "Properties and performance of a center/surround retinex," IEEE Transactions on Image Processing, vol. 6, no. 3, pp. 451–462, Mar. 1996.
- [11]. C. Ledig et al., "Photo-Realistic Single Image Super-Resolution Using a Generative Adversarial Network," 2017 IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Honolulu, HI, 2017, pp. 105-114.
- [12]. 2020 25th International Conference on Pattern Recognition (ICPR), "Improving Low-Resolution Image Classification by Super-Resolution with Enhancing High-Frequency Content".
- [13]. CVGIP: Graphical Models And Image Processing, "Improving Resolution by Image Registration", Vol. 53, No. 3, May, pp. 231-239, 1991.