The paper aims at solving the issue of image noise and image distortion by providing an algorithm for producing an optimized image with optimum threshold value. It does so by firstly explaining in detail what does optimization actually mean and how optimization relates to the field of image processing and can be applied to images to make it more efficient. It then explains the different image segmentation methods and the different parts that we can obtain as a result of image segmentation. It then explains in detail about what is Cuckoo searching algorithm and how an optimal threshold value can be obtained by the application of meta-heuristic Cuckoo Search algorithm via using the famous concepts of Levy Flight optimization. It also explains about the obligate brood parasitic behavior of some cuckoo species and combines it with the Levy Flight behavior in order to obtain the best possible results. As result, we developed an algorithm using a combination of all the algorithms mentioned above as a solution to the issue of image noise, image sizing and image optimization. The algorithm so suggested does this while reducing the size of the image, without compromising on either the quality or the detailing of the image. The paper also intends to
calculate the ‘Mean Squared Error’ and ‘PSNR’ value of the squared error image in order to compare the performance of our algorithm with the earlier proposed methods. In the end, the paper also dwells into some of the applications of Image Optimizations in different fields of technology like biometric fingerprint scanning, steganography and visual cryptography to name a few.

References


Index Terms

Computer Science Algorithms
Keywords

MSE, PSNR, Cuckoo search, Levy Flight, Meta heuristics, Makarov property.