Optimal Multilevel Threshold Selection for Gray Level Image Segmentation using SMS Algorithm

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Abstract

Image processing is one of the real research regions in the most recent four decades. Numerous researchers have contributed very great algorithms and reported outstanding results. In this paper, state of matter search optimization based multilevel thresholding is implemented for the segmentation of gray scale images. Set of standard gray level images are considered for image segmentation. The optimal multilevel threshold is found by maximizing the very popular objectives such as between class variance (Otsu method) and Kapur's entropy. The outcomes are looked at with the aftereffects of the existing algorithms like IDSA, HSA, PSO, and BF. The outcomes uncover that the execution of state of matter search optimization algorithm based optimal multilevel threshold for image segmentation is better and has predictable execution than officially reported techniques.

References

1. S. Patra, R. Gautam, A. Singla, A novel context sensitive multilevel thresholding for image
2. D. Oliva, E. Cuevas, G. Pajares, D. Zaldivar, M. Perez-Cisneros, Multilevel thresholding
doi:10.1109/TSMC.1979.4310076.
doi:10.1016/0031-3203(86)90030-0.
8. C.-C. Chang, L.-L. Wang, A fast multilevel thresholding method based on lowpass and
9. Q. Huang, W. Gao, W. Cai, Thresholding technique with adaptive window selection for
doi:10.1109/TSMC.1979.4310076.
11. S. Cho, R. Haralick, S. Yi, Improvement of kittler and illingworth’s minimum error
13. P.-Y. Yin, A fast scheme for optimal thresholding using genetic algorithms, Signal
16. B. Akay, A study on particle swarm optimization and artificial bee colony algorithms for
doi:10.1016/j.asoc.2012.03.072.
17. P.D. Sathya, R. Kayalvizhi, Optimal multilevel thresholding using bacterial foraging
18. P.D. Sathya, R. Kayalvizhi, Modified bacterial foraging algorithm based multilevel
driven optimization based study of satellite image segmentation for multilevel thresholding using


**Index Terms**

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**Keywords**

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