Efficient Approach Towards Detection and Classification for Image Forgery by Using Machine Learning Technique

Publisher: IEEE Cite This PDF

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Abstract:
Copy-move forgery (CMF) is one of the most malicious forgery attacks often manipulated to spread misinformation and influence security. In the paper, utilized Machine Learning techniques specifically, a Multiclass Support Vector Machine (MSVM)-based Particle Swarm Optimization (PSO) algorithm was utilized for image forgery. PSO is an optimization algorithm in which a group of particles representing individual solutions moves through a search space to find the best solution. The objective function that the PSO algorithm seeks to minimize or maximize is typically related to the MSVM's performance on a validation dataset. The MICC-F200 dataset was used to verify the uniqueness of CMF and evaluate the model's image classification performance. It's important to note that MSVM based PSO can become computationally expensive and memory-intensive when dealing with a large number of classes. They are also sensitive to noisy or mislabeled data points, which can potentially lead to suboptimal performance. The results obtained from this study reveal that the MSVM-based PSO model achieves a high accuracy of 0.9936 on the MICC-F200 dataset, outperforming other existing models such as VGG16 and Mobile Net, thereby ensuring accurate image classification.

Published in: 2023 3rd International Conference on Mobile Networks and Wireless Communications (ICMNWC)

Date of Conference: 04-05 December 2023
DOI: 10.1109/ICMNWC60182.2023.10435770
Date Added to IEEE *Xplore*: 22 February 2024
Publisher: IEEE
ISBN Information:
Conference Location: Tumkur, India

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