Hybrid heuristic mechanism for occlusion aware facial expression recognition scheme using patch based adaptive CNN with attention mechanism

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Abstract: In computer vision, the recognition of expressions from partially occluded faces is one of the serious
problems. By the prior recognizing techniques it can solve the issue by various assumptions. A benchmark-
guided branch was proposed for detecting and eliminating the manipulated features from the occluded
regions since the human visual system is proficient for eliminating the occlusion and the appropriate focal
point was obtained on the non-occluded areas. In recent years deep learning has attained a great place in the
recognition of facial reactions Still, the precision of facial expression is affected by the occlusion and large
skew. In this research work, a deep structure-based occlusionaware facial expression recognition mechanism is
introduced to provide superior recognition results. Firstly, the required image is taken from publically provided
online sources and the gathered images are subjected to the face extraction method. The face extraction
method is done via the ViolaJones method for the extraction of redundant patterns from the original images.
Secondly, the extracted face features are given to the pattern recognition stage, where the Adaptive CNN with
Attention Mechanism (ACNN-AM) is introduced. This mechanism automatically forms the occluded region of
the face and the focal point was on the most discriminative un-occluded regions. Moreover, the hidden
patterns in the Occlusion aware facial expressions are identified through the Hybrid Galactic Swarm Yellow
Saddle Goatfish Optimization (HGSYSGO). Finally, the overall effectiveness of the developed occlusion aware
facial expression recognition model is examined through the comparative analysis of different existing
baseline recognition techniques.

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