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## Facial image retrieval on semantic features using adaptive mean genetic algorithm

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### Abstract

The emergence of larger databases has made image retrieval techniques an essential component, and has led to the development of more efficient image retrieval systems. Retrieval can either be content or text-based. In this paper, the focus is on the content-based image retrieval from the FGNET database. Input query images are subjected to several processing techniques in the database before computing the squared Euclidean distance (SED) between them. The images with the shortest Euclidean distance are considered as a match and are retrieved. The processing techniques involve the application of the median modified Wiener filter (MMWF), extraction of the low-level features using histogram-oriented gradients (HOG), discrete wavelet transform (DWT), GIST, and Local tetra pattern (LTrP). Finally, the features are selected using Adaptive Mean Genetic Algorithm (AMGA). In this study, the average PSNR value obtained after applying Wiener filter was 45.29. The performance of the AMGA was evaluated based on its precision, F-measure, and recall, and the obtained average values were respectively 0.75, 0.692, and 0.66. The performance matrix of the AMGA was compared to those of particle swarm optimization algorithm (PSO) and genetic algorithm (GA) and found to perform better; thus, proving its efficiency.

### Keywords

euclidean distance; median modified weiner filter; histogram oriented gradients; discrete wavelet transform; local tetra pattern; genetic algorithm; particle swarm optimization algorithm

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