

Study of HOG technique and Neural networks applied in face recognition

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Abstract: This study investigates the application of Histogram of Oriented Gradients (HOG) and Neural Networks for facial recognition. HOG is employed as a robust feature descriptor, capturing local gradient orientations to effectively represent facial structures and textures. The extracted HOG features are then utilized as input for a neural network classifier, which learns to distinguish between different individuals. The research explores the synergy between these two techniques, leveraging HOG's ability to provide illumination-invariant and discriminative features while harnessing the neural network's capacity for complex pattern recognition. Experimental results demonstrate that the combined HOG and neural network approach achieves high accuracy in face identification tasks, outperforming traditional methods in terms of robustness to variations in lighting and pose. The findings confirm that this hybrid method offers a reliable and efficient solution for automated facial recognition systems, with potential applications in security, surveillance, and human-computer interaction.

Keywords: HOG, neural network, face recognition, technique