PERFORMANCE EVALUATION OF FACIAL RECOGNITION ALGORITHM IN SURVEILLANCE SCENARIO: A CASE STUDY OF CORRELATION FILTER

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ABSTRACT

This research work examines the evaluation of a face recognition algorithm under surveillance scenarios. Recognition in surveillance scenario poses unique challenges due to images gotten from uncontrolled environment and variations in factors such as pose angle, illumination, distance from camera and so on. It important to be able to assess the performance of algorithms under situations such as this so as to determine the adequacy or inadequacy of a particular algorithm for a given application.

The correlation filter algorithm is evaluated using a small sample of 10 subjects from the SCface database and performing normalization so that metrics that normally would be used for binary classification instances (which involve placing subjects belongs to any of only two groups) is used in this case of multiclass labeling (where subjects can be classified as belonging any of more than two groups – in this case - 10) without any loss of accuracy or generality.

It was discovered that the correlation filter algorithm is not too effective for surveillance scenario which is usually the case for security application of face recognition but could be perfect for other face recognition application domain such as authentication. Infrared images produced the highest average recognition rates which indicates that with some improvement, the algorithm could be useful for in identification in low illumination conditions.

The outcome of this work and the evaluation technique used can be adopted for evaluation of other algorithms thereby leading to advancement in areas of algorithm classification as regards which algorithm is suitable for which application.