

Unwrapping methods using face recognition and emotion identification

**V. Shanmugarajah^{*}, H. Sathananthan, T. Janathan, G.M.R.I. Godaliyadda,
M.P.B. Ekanayake and J. Wijayakulasooriya**

*Department of Electronics and Electrical Engineering, Faculty of Engineering,
University of Peradeniya, Sri Lanka*

**svinothine92@gmail.com*

Face recognition and Emotion Identification have gained increase interest in recent years due to its significant applications. In this research, Face images are converted into signals. This process is called unwrapping. Each of the face is represented as vector with a size of total number of pixels of the face image. Each unwrapped image vectors are represented as row vector. There are four unwrapping methods are used: row wise, column wise, spiral and zigzag method. First, image is unwrapped in row wise and the image matrix is created with the unwrapped images for which Principal Component Analysis (PCA) is applied. Each unwrapped image vectors or signals are represented by the rows of the matrix and size of the signal is given by the number of columns in the matrix. Face recognition is implemented by employing k-nearest neighbor classifier based on the cosine similarity measure. Experiments were conducted on Standard Cohn-Kanade database. Face recognition detection rate is obtained. Then image is unwrapped column wise, spiral and zigzag method and detection rate is obtained using the same procedure in all cases. All unwrapping methods actually produce the identical detection rate. The results show that any unwrapping methods can be used to solve the face recognition and Emotion identification problems.