Abstract

In Facial Expression Recognition (FER), feature extraction plays an important role to determine the most appropriate image representation for the purpose of recognition. In this TA project, a comparison study between two feature extraction methods for recognizing facial expressions is conducted. The first method involves a set of multiscale and multiorientation Gabor Wavelet coefficients which is extracted from a set of *fiducial point*s in the facial image. The second one involves geometric positions of the *fiducial point*s. Features extracted from these methods can be used alone or combined together.

Classification process is done with k-Nearest Neighbors algorithm with available expression classes comprise angry, disgusted, fear, happy, sad, or surprised. A functionality to assist the choosing of *fiducial point*s with *template* is also made.

Experimental result shows that the highest recognition rate of both feature extraction are achieved with 1-NN (or simply Euclidean distance). The highest recognition rate of Gabor Wavelet's representation 93.33% and its average recognition rate is 75.66% while geometric representation reaches the highest recogniton rate of 90% and average recognition rate of 69.33%. With the two features combined together, the average recognition rate increases to 76.28%.

Keywords: facial expression recognition, feature extraction, gabor wavelet, geometric, k-Nearest Neighbors