

Abstract

Face is one of our physical character, it can differentiate us from other people. Human's brain can recognize hundreds or thousands faces even if it has change because of aging or other physical changes such as haircut, facial hair, or scar.

In this face identification system, writer want to allegorize that human's brain ability with back propagation artificial neural network (ANN-BP). Special characteristics which can represent the image of the face that will be identified are very important for this process as the input data for the ANN. Within this face identification system, writer use 2D gabor wavelet filter which is combine with feature point processing for the characteristic extraction process. The 2D gabor wavelet filter will extract normal image which is in square shape and grayscale color mode with 3 angle combination, that are 30°, 60°, and 90°, the frequency are 2,3,4,5 and 6. In order to get the distance between 12 face coordinate point writer use feature point processing. Hereafter, the result of the extraction from these methods will be combined by looking for the average from the result, so it will be ready to be use in practicing and testing process by ANN. The optimal ANN in this system have learning rate 0,8 the total amount of neuron in 1st hidden layer is 150 and 200 in 2nd hidden layer.

The result of the test show that this system can identify face as a testing data which is a part of learning data, accurately and the percentage reach 100%, in the other word, all the data can be known correctly. Meanwhile in case which the data are still unknown for the ANN system the percentage of accuracy for this system decrease to 50%, from 20 testing data, this system can recognize 10 data correctly. In conclusion, this system cannot recognize somebody's face accurately if it change because of aging, without practicing process first.

Key Word : Back propagation artificial neural network, filter 2D gabor wavelet, grayscale, feature point processing, learning rate, hidden layer.