Abstract

At this final project, it's made a systems which is combined method Kernel Principal Component Analysis (KPCA) as a method for extracting features and Competition Artificial Neural Network (Competition ANN) as a method for training and searching image. There are two scenarios are conducted in this final project, the first scenario (scenario 0) conduct training and searching imagees for 3 types of image. This type of image is the image of cambridge, mountain images, and image of the monkey. For the second scenario (scenario 1) conduct training and searching image for four types of imagery. This type of image is the image of cambridge, mountain images, the image of the monkey and human face images (dean). By using this method, the system is able to recognize 90 image data contained in the data train with an accuracy of 91.74%, data validation to achieve 89.62% accuracy, and test data with an accuracy reaching 86.67%, for the first scenario (scenario 0). For the second scenario (scenario 1) system capable of recognizing the image data 120 contained in the data train with an accuracy of 94%, data validation to the accuracy reached 95.83%, and test data with an accuracy of up to 90%

By using the method of KPCA (Kernel Principal Component Analysis) which is one method of non-liniear extract feature extraction yield performance characteristics of accuracy is better because it implicitly count. While Competition Artificial Neural Network is a network without a supervised learning (unsupervised learning). The advantage of Competition ANN have competitive layer and has a principle of "winner takes all", so it has quick learning ability. The feature extraction process of KPCA is done using 90 images (scenario 0) and 120 image (scenario 1). Training process using 45 training images, for validation using the 33 validation images and testing using 12 test images (scenario 0). Training process using 60 training images, for validation using the 44 validation images and testing using 16 test images (scenario 1), From the results in this final project, the best parameter KPCA and Competition ANN are: using a PC to 25, 5000 iterations , learning rate 0.05 and radius 0.05.

Keywords : searching image, feature extraction, Kernel Principal Component Analysis (KPCA), Competition Artificial Neural Network (Competition ANN)