ABSTRACT

The necessity of multimedia's files in large numbers and size, such as video, needs large memories too. Therefore, a compression method is needed to get quite high compression ratio but not to decrease the quality significantly and have a minimum of time compression. Video is a group of frames. Similarity between two successive frames results a temporal redundancy. New Oriented Adaptive Cross Search (OACS) in Motion Estimation is an interframe compression method which can reduce the temporal redundancy in the video.

The reference frame (I-frame) contains entire information of an image. Correlation between pixel with the others around results a spatial redundancy so intraframe compression method is needed to exploits that correlation in a frame. A method which exploits spatial redundancy in a frame is wavelet transformation and vector quantization.

This final task will implement OACS in Motion Estimation as interframe compression method and wavelet transformation with vector quantization as intraframe compression method in a video compression's system. The performance's parameters of system are ratio of compression, Mean Squared Error (MSE), Peak Signal to Noise Ratio (PSNR), time compression and Mean Opinion Score (MOS). The performance is analyzed based on input variables such as decomposition level of wavelet, numbers of vector in a cluster, and size of macro blocks that are used at OACS in Motion Estimation.

The system's testing results show that increasing of decomposition level will be proportional with increasing of compression's ratio and MSE, but it will decreasing the values of PSNR. The greater number of vectors in a cluster will result the greater compression's ratio and MSE, but it will decrease the value of PSNR. And the greater macro blocks size will result the greater compression's ratio and MSE, but it will decrease the value of PSNR. Fastest time compressions are gotten in higher macro blocks size. Time compressions that are gotten are faster than ARPS an NCDS in same modeling. The usage of clustering with genetic algorithm and the usage of adaptive block matching algorithm besides OACS are suggested on this final task to get performance of the system that more optimal.

***Keywords** : video compression, wavelet transformation, vector quantization, New Oriented Adaptive Cross Search.*