

ABSTRACT

In this digital era, video is a fundamental requirement for everyone to present their daily activities. Video files have a specified resolution, which means the greater the resolution, the larger the file size of the video. The main problem with video files storing large volumes of data is the wastage of storage. Compressing video is one way to reduce the size of video files, which are inefficient for data storage. Compression is performed on digital data that generates a large amount of data when obtained (recorded or photographed), which is then discarded during compression. Therefore, the Compressive Sensing (CS) approach is used to prevent inefficiency.

This bachelor's thesis uses uncompressed Avi format videos as the input in the compression process. The videos are processed by splitting the video into frames, then using the difference frame technique as the initial method. The next step is to process the frames into the blocks and then apply Discrete Cosine Transform (DCT) and threshold values. DCT performs the signal sparsity to generate significant compression performance. CS compresses the blocks by grouping them into 8x8 macro-blocks, which are then reconstructed to get the video back. Therefore, the CS method is effective for video compression.

The video data used to perform this process is 10 grayscale uncompressed videos. The parameters utilized are Peak Signal Noise Ratio (PSNR), compression ratio, and Structural Similarity Index Measure (SSIM). The results obtained indicate that videos are successfully compressed, with the best compressed percentage files achieving a result of 96.78% with high reconstruction quality, as indicated by a SSIM value of 0.99 and a PSNR value of 85.94dB.

Keywords: Video compression; compressive sensing; difference block frame; discrete cosine transform