

Project Report: **Investigating Wavelet Based Video Coding in Video Conferencing Applications**

Introduction:

Digital video is being adopted in a vast array of applications ranging from fixed and mobile telephony to realtime video conferencing, DVD and high definition digital television. Applications such as video conferencing are strongly affected by bandwidth constraints and have strict processing time limitations to provide online data for real time communication.

The increase in demand for such applications has motivated the need for efficient video compression algorithm that can produce acceptable video quality at high compression rates.

Project Deliverables:

Develop a prototype wavelet based video codec

- 1 Performance Evaluation in terms of the quantitative and qualitative issues as well as its computational complexity
- 2 Develop a real time video conferencing system based on wavelet based video codec
- 3 Publication in an international conference

Project Objectives:

1. Assess the feasibility of wavelet based approaches to replace block based DCT coding in Video codecs.
2. Comparison of performance in terms of complexity and quality of wavelet based and DCT based video codecs.
3. Develop a video conferencing system based on wavelet transform coding of video.

Digital video is being adopted in a vast array of applications ranging from fixed and mobile telephony to real-time video conferencing, DVD and high definition digital television. Applications such as video conferencing are strongly affected by bandwidth constraints and have strict processing-time limitations to provide online data for real-time communication. The increase in demand for such applications has motivated the need for efficient video compression algorithms that can produce acceptable video quality at high compression rates. Wavelet technology can enable high quality digital video compression by removing redundancy in individual frames as well as between successive frames without any blocking artifacts. The aim of this research initiative was to investigate video coding schemes using wavelet transforms especially with a view to develop a hybrid scheme that can decode both wavelet transform based as well as DCT block based encoded streams.

Main objective of this project was to develop a wavelet transform based video conferencing system that will result in better utilization of bandwidth in heterogeneous networks.