

Coding of Multiview Imagery with Motion and Disparity Compensated Orthogonal Transforms

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1 Introduction

Problem

- Efficient coding of multiview video
- Predictive coding: Sequential processing – In which order?
- Subband coding: Adaptive wavelets – Subband properties?

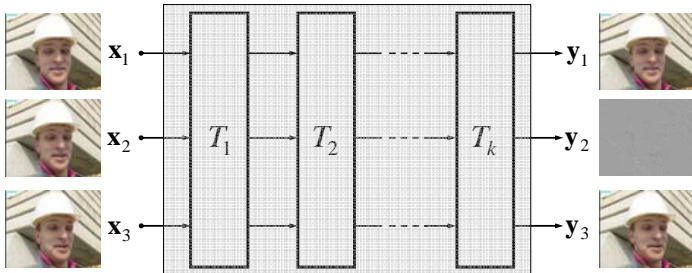
Adaptive Orthogonal Transforms

- New class of motion-compensated orthogonal transforms
- Maintain orthogonality for any block-motion field

Goals

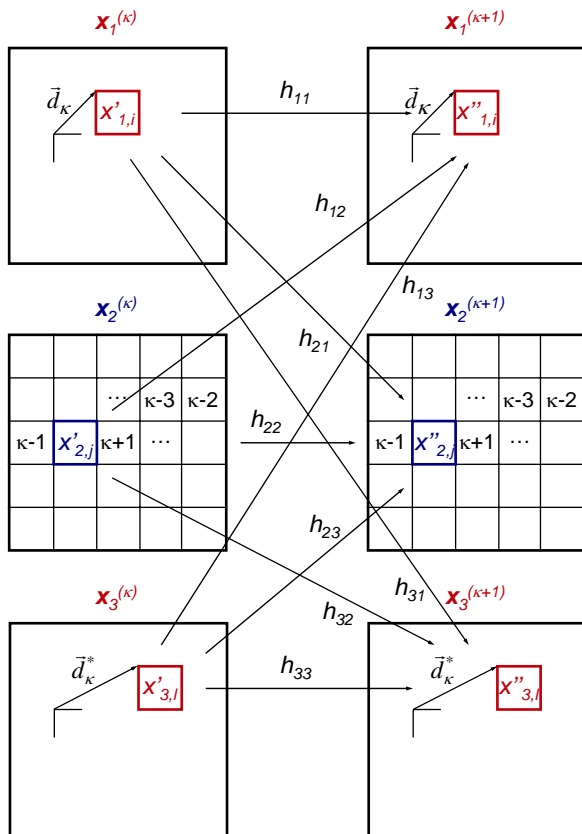
- Extend the new class by disparity compensation
- Investigate the advantage of strictly orthogonal subbands

2 MC Orthogonal Transforms



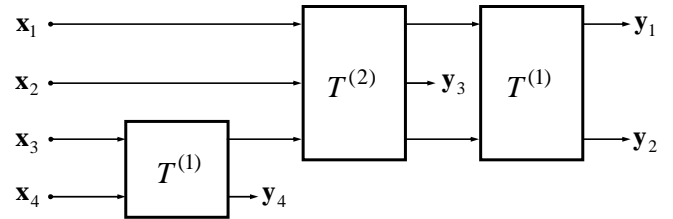
$$T = T_k T_{k-1} \dots T_2 T_1 \text{ where } T_k T_k^T = I$$

Incremental Transform T_k

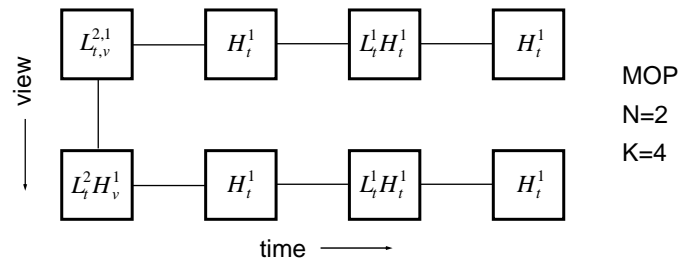


3 Subband Decompositions

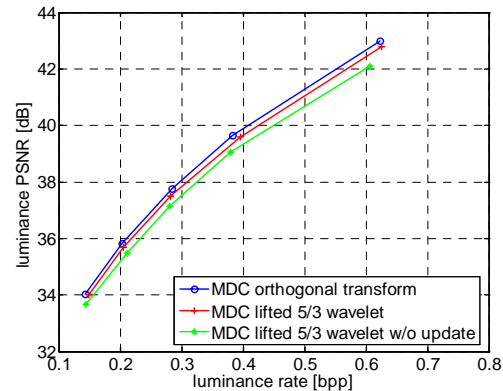
Dyadic Decompositions



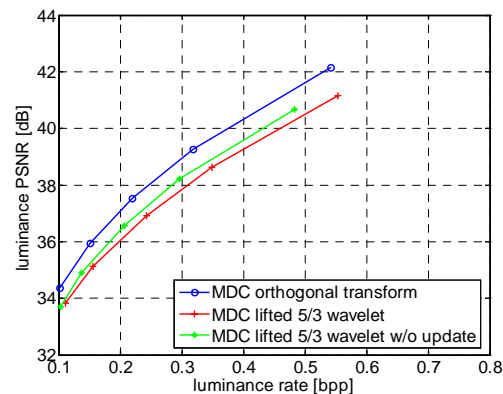
Decomposition of Matrix of Pictures (MOP)



4 Experimental Results



Breakdancers
4 views
256x192, 15 fps
8x8 block motion
GOV: N=1



Breakdancers
4 views
256x192, 15 fps
8x8 block motion
GOV: N=4

5 Conclusions

Orthonormality improves energy compaction, in particular for large numbers of decomposition levels.

