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

\[ T = T_k T_{k-1} \cdots T_2 T_1 \text{ where } T_k^T T_k = I \]

Incremental Transform \( T_k \)

3 Subband Decompositions

Dyadic Decompositions

\[
x_1 \xrightarrow{T(2)} y_3 \xrightarrow{T(1)} y_1
\]

Decomposition of Matrix of Pictures (MOP)

4 Experimental Results

5 Conclusions

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