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Title: **3D-CE6.h: Results on simplified DMM mode 3**

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Abstract

This document reports the results of simplified DMM mode 3. The proposed method finds the most suitable wedgelet by using the block's corner samples and determination of wedgelet start/end positions. By evaluating on HTM-5.0.1, encoder/decoder runtimes of 99.8%/99.2% and 95.3%/98.3% were achieved under CTC and all-intra configuration, respectively. The coding performance was not changed.

1 Introduction

The proposed method considers only the most likely wedgelet based on intensity differences to reduce encoding/decoding time [1]. For evaluation, the proposed method was implemented with disabling the DMM mode 3 modifications adopted in the last meeting [2].

2 Proposed Method

First, four corner samples are used to determine the block's wedgelet orientation. Figure 1 shows an example of CTLB. Absolute differences of *a*, *b*, *c* and *d* are calculated. The wedgelet's orientation can be derived from the two highest difference values. For example, in the figure, the *abs(a-b)* and *abs(a-c)* are greater than *abs(b-d)* and *abs(c-d)*. This means the wedgelet intersects the top and left sides. If the highest absolute difference is small, wedgelet modeling has very little impact. Thus, an arbitrary index is sent in this case. A threshould value of 40 is used for the skipping process.

As the intersecting sides are determined, the highest intensity changing point is found for each side. These points are assigned as start/end positions. To take wedgelet resolution into consideration, the positions are adjusted. For half-pel, the coordinate representing the side is doubled. Similarly for double-pel, the coordinate is reduced by half.

In the figure, the red circles indicate two points which are start/end positions in orientation 0 search, which implies that wedgelet starts from top and ends at left.

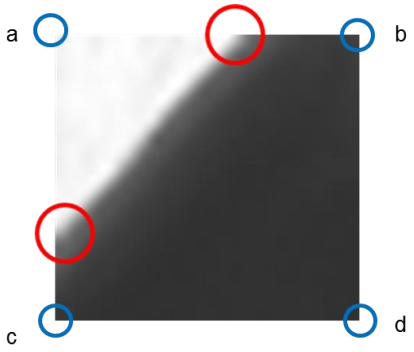

Figure 1. Example of start (top) and end (left) positions for orientation 0 search

3 Simulation Results

Tests were conducted under both CTC [3] and all-intra configurations. Table 1 and Table 2 show the under CTC and all intra configuration, respectively. Results indicate encoder/decoder runtime of 99.8%/99.2% under CTC, and 95.3%/98.3% under all-intra configuration. The coding performance was not affected.

Table 1. Results under CTC

	video 0	video 1	video 2	video only	synthesized only	coded & synthesized	enc time	dec time	ren time
Balloons	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	99.6%	98.4%	90.1%
Kendo	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	98.9%	86.4%
Newspapercc	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	99.7%	98.8%	90.2%
GhostTownFly	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.1%	99.7%	99.3%	101.3%
PoznanHall2	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.1%	99.9%	98.8%	107.5%
PoznanStreet	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.1%	97.0%
UndoDancer	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	99.5%	100.0%	105.3%
1024x768	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	99.8%	98.7%	88.9%
1920x1088	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	99.8%	99.5%	102.7%
average	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**99.8%**	**99.2%**	**96.5%**

Table 2. Results under all-intra configuration

	video 0	video 1	video 2	video only	synthesized only	coded & synthesized	enc time	dec time	ren time
Balloons	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	94.2%	98.8%	102.1%
Kendo	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	94.1%	99.9%	83.8%
Newspapercc	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	96.3%	97.0%	95.3%
GhostTownFly	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	95.7%	97.2%	104.2%
PoznanHall2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	95.1%	100.0%	102.7%
PoznanStreet	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	96.2%	97.7%	109.1%
UndoDancer	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	95.3%	97.6%	137.4%
1024x768	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	94.9%	98.6%	93.4%
1920x1088	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	95.6%	98.1%	112.5%
average	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.1%**	**0.0%**	**95.3%**	**98.3%**	**103.9%**

4 Conclusion

The proposed method targets runtime decrease by modifying DMM mode 3. By evaluating the proposed method on HTM-5.0.1, encoder/decoder runtime was 99.8%/99.2% under CTC, and 95.3%/98.3% under all-intra configuration. The coding performance was not affected.

5 Reference

[1] Y. Song and Y.S. Ho, "3D-CE6.h related: Complexity reduction of DMM mode 3," JCT3V-B0122, Shanghai, CN, Oct. 2012.

[2] P. Merkle, K. Muller, X. Zhao, Y. Chen, L. Zhang, and M. Karczewicz, "CE6.h results on simplified wedgelet search for DMM modes 1 and 3," JCT3V-B0039, Shanghai, CN, Oct. 2012.

[3] D. Rusanovskyy, K. Muller, and A. Vetro, "Common test conditions for 3DV core experiments," JCT3V-B1100, Shanghai, CN, Oct. 2012.

6 Acknowledgment

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7 Patent rights declaration(s)

Gwangju Institute of Science and Technology (GIST) may have current or pending patent rights relating to the technology described in this contribution and, conditioned on reciprocity, is prepared to grant licenses under reasonable and non-discriminatory terms as necessary for implementation of the resulting ITU-T Recommendation | ISO/IEC International Standard (per box 2 of the ITU-T/ITU-R/ISO/IEC patent statement and licensing declaration form).