



REDEFINING MOBILITY



# JCT3V-F0133: CE5 related: Simplification of Wedgelet pattern generation in half-pel accuracy

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# Summary

- For wedgelet pattern generation of half-pel accuracy, a  $N \times N$  wedgelet pattern is derived as a downsampled  $2N \times 2N$  wedgelet pattern. However, the downsampling method is independent of the orientations of patterns.
- Experimental results report that almost no coding loss under common test conditions.

# Introduction

- An NxN wedgelet partition pattern is represented as an NxN binary block.
- To generate an NxN wedgelet partition pattern, a pair of start point and end point position is given, and a partition is decided by a partition boundary line which connects the start and end points.

wedgelet pattern size (N)	Start/End point accuracy
4x4	half-pel
8x8	half-pel
16x16	full-pel
32x32	double-pel

- For wedgelet pattern generation of half-pel accuracy, a NxN wedgelet pattern is derived as a downsampled 2Nx2N wedgelet pattern.

# Introduction

- Wedgelet pattern generation in half-pel accuracy

$$bPattern[i][j] = bTempPattern[2*i + offsetX][2*j + offsetY]$$

wherein *offsetX* and *offsetY* depend on the orientation of the wedgelet pattern.

Orientation	<i>Intersected boundaries</i>	<i>offsetX</i>	<i>offsetY</i>
0	left, top	0	0
1	top, right	1	0
2	right, bottom	1	1
3	left, bottom	0	1
4	top, bottom	$(xS + xE) < 2*N ? 0 : 1$	0
5	left, right	0	$(yS + yE) < 2*N ? 0 : 1$

# Proposed method

- Proposed wedgelet pattern generation in half-pel accuracy
  - Independent of the orientation of the wedgelet patterns

$$bPattern[i][j] = bTempPattern[2*i + \text{offsetX}][2*j + \text{offsetY}]$$

- Complexity analysis
  - Calculation of offsetX and offsetY is removed
  - Two additions are removed for setting the binary value of each position

# Results

- Results under common test conditions
  - The same coding efficiency

	video 1	video 2	video PSNR / video bitrate	video PSNR / total bitrate	synth PSNR / total bitrate
Balloons	0.0%	0.1%	0.0%	0.0%	-0.02%
Kendo	0.0%	0.0%	0.0%	0.0%	0.00%
Newspapercc	0.0%	0.1%	0.0%	0.0%	0.11%
GhostTownFly	0.1%	0.1%	0.0%	0.0%	0.11%
PoznanHall2	-0.1%	-0.2%	0.0%	0.0%	-0.12%
PoznanStreet	0.2%	-0.1%	0.0%	0.0%	0.01%
UndoDancer	0.1%	-0.1%	0.0%	0.0%	-0.06%
1024x768	0.0%	0.1%	0.0%	0.0%	0.03%
1920x1088	0.1%	-0.1%	0.0%	0.0%	-0.02%
<b>average</b>	<b>0.1%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.00%</b>

# Results

- Results under all intra case
  - Minor coding loss for synthesized views

	video 1	video 2	video PSNR / video bitrate	video PSNR / total bitrate	synth PSNR / total bitrate
Balloons	0.0%	0.0%	0.0%	0.0%	0.08%
Kendo	0.0%	0.0%	0.0%	0.0%	0.04%
Newspapercc	0.0%	0.0%	0.0%	0.0%	0.20%
GhostTownFly	0.0%	0.0%	0.0%	0.0%	0.07%
PoznanHall2	0.0%	0.0%	0.0%	0.0%	0.09%
PoznanStreet	0.0%	0.0%	0.0%	0.0%	0.03%
UndoDancer	0.0%	0.0%	0.0%	0.0%	0.08%
1024x768	0.0%	0.0%	0.0%	0.0%	0.11%
1920x1088	0.0%	0.0%	0.0%	0.0%	0.07%
<b>average</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.08%</b>

Thank Hisilicon for the crosscheck (JCT3V-F0239)!

# Thank you!