Non-CE4 : QP prediction using spatial QP

JCTVC-G353

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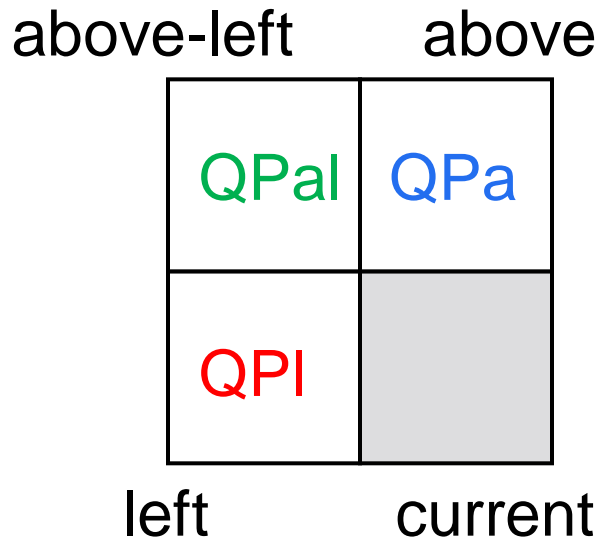
1. Overview

Overview

- **Proposed technique**

  - QP prediction using spatial QP

- **Algorithm**

  - Calculate predQP by weighted average between left and above QP

- **Cross-check**

  - JCTVC-G772 by Sony

- **Simulation results**

  - Overall BD-rate gain 0.3% for AI, 0.3% for RA, 0.4% for LD

2. Algorithm

Algorithm

- ■ Calculate weighted average between QPl and QPa

above-left   above

QPal	QPa
QPl	

left   current

if (QPal==QPl)
    predQP = (QPl + 3*QPa + 2)>>2

else if (QPal==QPa)
    predQP = (3*QPl +   QPa + 2)>>2

else
    predQP = (QPl +   QPa + 1)>>1

Use only QP value in spatial neighboring

3. Experiments

Simulation Results

	All Intra HE				All Intra LC			
	Y	U	V	dQP incr.	Y	U	V	dQP incr.
Class A	-0.1%	-0.1%	-0.1%	-3.4%	0.0%	0.0%	0.0%	-0.9%
Class B	-0.2%	-0.2%	-0.2%	-5.8%	-0.2%	-0.2%	-0.2%	-4.3%
Class C	-0.4%	-0.4%	-0.4%	-8.2%	-0.3%	-0.3%	-0.3%	-7.3%
Class D	-0.4%	-0.3%	-0.3%	-8.9%	-0.4%	-0.3%	-0.4%	-8.2%
Class E	-0.5%	-0.5%	-0.4%	-7.9%	-0.3%	-0.3%	-0.3%	-6.1%
Overall	-0.3%	-0.3%	-0.3%	-6.7%	-0.2%	-0.2%	-0.2%	-5.3%
	-0.3%	-0.3%	-0.3%		-0.2%	-0.2%	-0.2%	
Enc Time[%]	100%				98%			
Dec Time[%]	100%				100%			

	Random Access HE				Random Access LC			
	Y	U	V	dQP incr.	Y	U	V	dQP incr.
Class A	-0.2%	-0.1%	-0.4%	-4.9%	-0.1%	-0.1%	-0.2%	-3.5%
Class B	-0.3%	-0.2%	-0.2%	-6.8%	-0.3%	-0.3%	-0.3%	-6.1%
Class C	-0.4%	-0.3%	-0.5%	-8.9%	-0.5%	-0.4%	-0.4%	-9.0%
Class D	-0.4%	-0.4%	-0.3%	-8.6%	-0.4%	-0.6%	-0.5%	-8.7%
Class E								
Overall	-0.3%	-0.3%	-0.3%	-7.3%	-0.3%	-0.4%	-0.3%	-6.8%
	-0.3%	-0.3%	-0.3%		-0.3%	-0.4%	-0.3%	
Enc Time[%]	100%				100%			
Dec Time[%]	99%				100%			

	Low delay B HE				Low delay B LC			
	Y	U	V	dQP incr.	Y	U	V	dQP incr.
Class A								
Class B	-0.3%	-0.5%	-0.5%	-7.4%	-0.4%	-0.4%	-0.4%	-7.0%
Class C	-0.4%	-0.2%	-0.3%	-9.0%	-0.6%	-0.5%	-0.4%	-9.6%
Class D	-0.4%	-1.0%	-0.2%	-8.6%	-0.5%	-0.4%	-0.3%	-9.1%
Class E	-0.4%	0.1%	-0.6%	-9.8%	-0.5%	-1.5%	-0.1%	-9.7%
Overall	-0.4%	-0.4%	-0.4%	-8.6%	-0.5%	-0.6%	-0.3%	-8.6%
	-0.4%	-0.4%	-0.4%		-0.5%	-0.6%	-0.4%	
Enc Time[%]	100%				100%			
Dec Time[%]	100%				99%			

4. Conclusion

Conclustion

- Algorithm

  - Calculate predictive QP as weighted average between left and above QP

- Simulation results

  - Overall BD-rate gain 0.3% for AI, 0.3% for RA, 0.4% for LD

- Suggestion

  - Adopted to the next WD and HM