Table 2. Comparison of BDPSNR and BDRATE

Sequence	QP	H.264/AVC		Proposed		Bjøntegaard Delta	
		PSNR (dB)	Bitrate (kbits/s)	PSNR (dB)	Bitrate (kbits/s)	BDPSNR (dB)	BDRATE (%)
Bigships (720p)	16	47.08	61143.12	46.00	51110.40	0.31	-4.74
	20	43.47	40422.96	42.62	33569.76		
	24	40.54	25798.08	40.01	23119.68		
	28	37.76	16042.80	37.46	15061.68		
Jets (720p)	16	46.45	32622.48	45.99	23141.04	0.20	-7.57
	20	43.67	16313.04	43.37	13814.40		
	24	42.00	8712.00	41.82	8208.72		
	28	40.45	5236.56	40.25	4983.12		
ShuttleStart (720p)	16	48.58	19584.24	48.04	16558.56	0.09	-2.55
	20	46.13	11039.04	45.77	9649.68		
	24	44.14	6380.64	43.89	5915.28		
	28	42.13	3559.20	41.97	3405.12		
BasketballDrive (1080p)	16	48.13	112107.12	46.42	76696.56	0.51	-14.90
	20	42.83	59862.48	42.34	45584.40		
	24	40.33	27544.08	40.16	25075.44		
	28	38.84	14913.84	38.70	14117.28		
ChristmasTree (1080p)	16	47.99	167586.48	46.50	144808.30	0.36	-4.00
	20	45.12	125040.48	43.40	104407.20		
	24	39.54	78764.64	39.13	71287.92		
	28	36.63	45160.80	36.46	43360.56		
Cactus (1080p)	16	46.48	172070.88	45.79	150515.00	0.29	-5.78
	20	42.25	106455.36	41.83	92064.72		
	24	39.38	60227.52	39.07	54915.84		
	28	37.36	34913.28	37.13	32742.72		
BQTerrace (1080p)	16	48.06	169545.12	47.26	158143.90	0.30	-2.98
	20	44.52	124250.16	43.64	112598.60		
	24	40.23	83761.44	39.51	73423.44		
	28	36.90	53018.64	36.38	47027.52		
Average						0.29	-6.07

Since the intra 4×4 mode requires more bits to represent the mode information than the intra 16×16 mode, we can reduce the coding bits using the proposed method.

5. CONCLUSION

In this paper, we introduced an efficient line-based intra 16×16 prediction method for high resolution video. In the proposed algorithm, we have used the line-based, instead of block-based, prediction and reconstruction since the more closely located reference pixels provide the better prediction. Using line-based processing, we have improved prediction accuracy for the intra 16×16 mode. Experimental results show that the proposed algorithm provides approximately 6.07% bit savings, compared to coding performance of intra 16×16 coding in the current H.264/AVC FRExt high profile.

6. REFERENCES

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