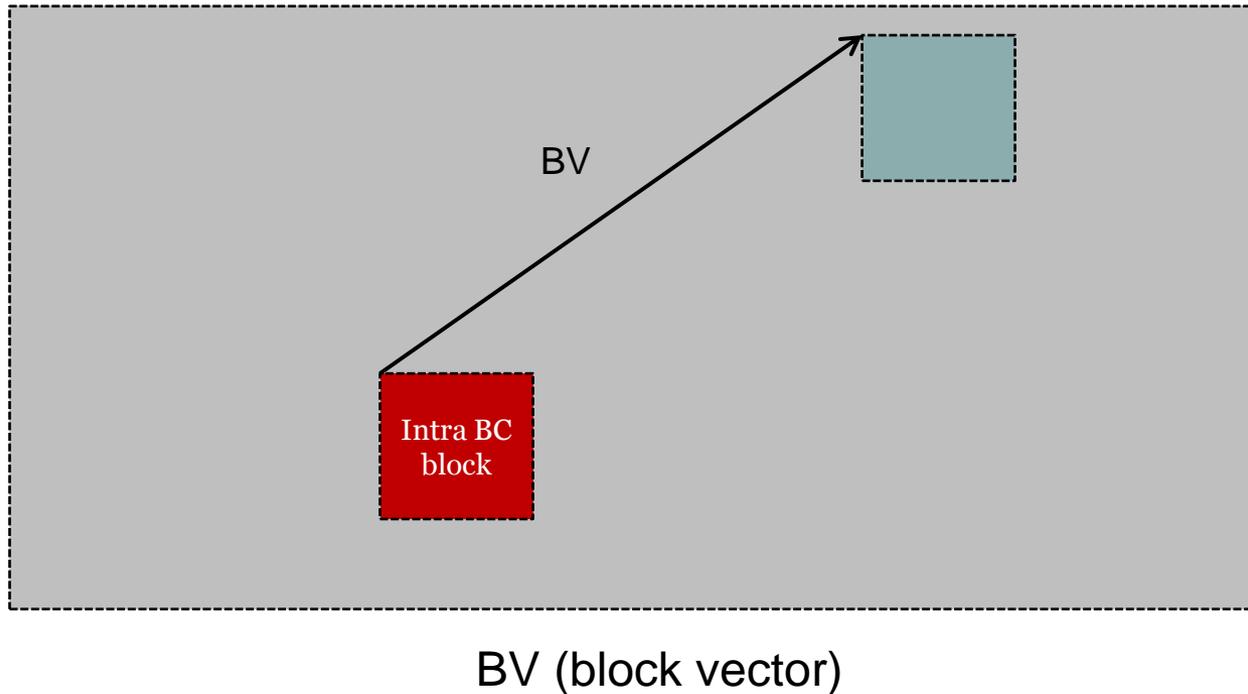


JCTVC-R309: Combination of JCTVC-R0185 and JCTVC-R0203 (SCCE1 Test 3.1, Test 3.2 and Test 3.4)

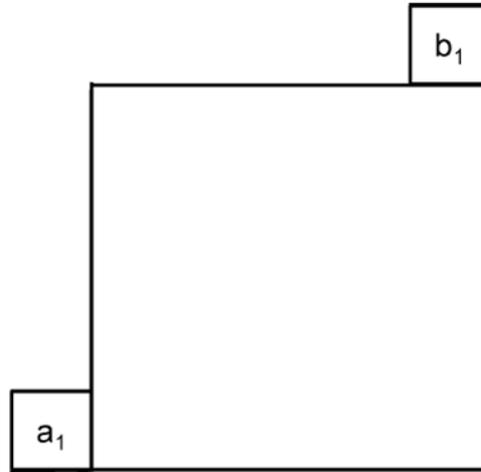
C. Pang, J. Sole, Y. Chen, M. Karczewicz (Qualcomm)
X. Xu, S. Liu, T.-D. Chuang, S. Lei (MediaTek)
L. Zhu, J. Xu (Microsoft)

Intra block copy (Intra BC)



The search region for Intra BC is the entire frame for both intra- and inter- frames.

Proposed method



Spatial neighboring blocks in the proposed method

- First check spatial neighboring blocks a_1 and b_1
- If not two different spatial neighboring BVs, using last N (1 or 2) BVs, initialized with $(-2W, 0)$ and $(-W, 0)$ to construct the candidate list with two different entries

Lossy results for AI

	All Intra									
	3.1	3.3	3.4	R0309 N = 1	R0309 N = 2	3.1*	3.3*	R0309 N = 1*	R0309 N = 2*	3.3**
RGB, text & graphics with motion, 1080p	-7.3%	-6.5%	-7.2%	-7.5%	-7.6%	-9.7%	-8.9%	-9.8%	-9.8%	-8.9%
RGB, text & graphics with motion,720p	-4.2%	-3.8%	-4.2%	-4.4%	-4.5%	-5.3%	-5.3%	-5.4%	-5.5%	-5.3%
RGB, mixed content, 1440p	-2.9%	-2.6%	-2.9%	-3.0%	-3.1%	-3.7%	-3.7%	-3.9%	-3.9%	-3.7%
RGB, mixed content, 1080p	-3.5%	-3.1%	-3.5%	-3.7%	-3.7%	-4.2%	-4.2%	-4.4%	-4.4%	-4.2%
RGB, Animation, 720p	-0.1%	-0.1%	-0.1%	-0.2%	-0.2%	-0.1%	-0.2%	-0.2%	-0.2%	-0.2%
RGB, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, text & graphics with motion, 1080p	-7.7%	-6.7%	-7.7%	-8.2%	-8.2%	-10.5%	-9.2%	-10.8%	-10.7%	-9.2%
YUV, text & graphics with motion,720p	-4.7%	-4.4%	-4.7%	-4.9%	-5.2%	-5.9%	-6.0%	-6.2%	-6.4%	-6.0%
YUV, mixed content, 1440p	-3.3%	-3.1%	-3.3%	-3.5%	-3.6%	-4.1%	-4.2%	-4.3%	-4.4%	-4.2%
YUV, mixed content, 1080p	-3.7%	-3.5%	-3.8%	-3.9%	-4.0%	-4.8%	-4.6%	-4.9%	-4.9%	-4.6%
YUV, Animation, 720p	-0.1%	-0.2%	-0.2%	-0.2%	-0.3%	-0.1%	-0.3%	-0.2%	-0.3%	-0.3%
YUV, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Encoder 1: RD cost check at every search point (no encoding time increase);

Encoder 2: RD cost check at every search point + Full RD check at predictor positions (~10% time increase);

Encoder 3: RD cost check at every search point + Full RD check at predictor positions + additional RD check at spatial neighbors (~10% time increase);

Lossy results for RA

	Random access									
	3.1	3.3	3.4	R0309 N = 1	R0309 N = 2	3.1*	3.3*	R0309 N = 1*	R0309 N = 2*	3.3**
RGB, text & graphics with motion, 1080p	-3.3%	-3.6%	-3.3%	-3.6%	-3.7%	-5.4%	-5.4%	-5.7%	-5.8%	-6.0%
RGB, text & graphics with motion,720p	-2.7%	-2.5%	-2.7%	-2.8%	-2.9%	-3.5%	-3.1%	-3.6%	-3.6%	-3.5%
RGB, mixed content, 1440p	-1.6%	-1.6%	-1.7%	-1.7%	-1.8%	-2.1%	-2.0%	-2.2%	-2.3%	-2.2%
RGB, mixed content, 1080p	-2.1%	-2.0%	-2.2%	-2.3%	-2.3%	-2.7%	-2.5%	-2.7%	-2.7%	-2.8%
RGB, Animation, 720p	-0.1%	-0.1%	-0.1%	-0.1%	-0.2%	-0.1%	-0.1%	-0.2%	-0.1%	-0.1%
RGB, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
YUV, text & graphics with motion, 1080p	-3.1%	-3.3%	-3.2%	-3.6%	-3.6%	-5.6%	-5.5%	-6.1%	-6.2%	-6.1%
YUV, text & graphics with motion,720p	-3.0%	-2.7%	-2.9%	-3.3%	-3.2%	-3.9%	-3.4%	-4.1%	-4.0%	-3.8%
YUV, mixed content, 1440p	-1.7%	-1.8%	-1.9%	-2.0%	-2.1%	-2.3%	-2.2%	-2.5%	-2.7%	-2.7%
YUV, mixed content, 1080p	-2.4%	-2.4%	-2.6%	-2.7%	-2.8%	-3.2%	-3.0%	-3.5%	-3.6%	-3.3%
YUV, Animation, 720p	0.0%	-0.1%	-0.2%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.2%
YUV, camera captured, 1080p	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%

Encoder 1: RD cost check at every search point (no encoding time increase);

Encoder 2: RD cost check at every search point + Full RD check at predictor positions (~10% time increase);

Encoder 3: RD cost check at every search point + Full RD check at predictor positions + additional RD check at spatial neighbors (~10% time increase);

Lossy results for LB

	Low delay B									
	3.1	3.3	3.4	R0309 N = 1	R0309 N = 2	3.1*	3.3*	R0309 N = 1*	R0309 N = 2*	3.3**
RGB, text & graphics with motion, 1080p	-1.8%	-2.6%	-1.8%	-2.3%	-2.3%	-3.6%	-4.4%	-4.1%	-4.3%	-4.9%
RGB, text & graphics with motion,720p	-1.0%	-1.1%	-1.0%	-1.2%	-1.1%	-1.5%	-1.4%	-1.5%	-1.3%	-1.6%
RGB, mixed content, 1440p	-0.7%	-0.8%	-0.9%	-0.7%	-1.1%	-1.1%	-1.2%	-1.4%	-1.4%	-1.3%
RGB, mixed content, 1080p	-0.8%	-1.4%	-0.8%	-1.1%	-1.0%	-1.1%	-1.4%	-1.6%	-1.3%	-1.4%
RGB, Animation, 720p	0.0%	0.0%	0.0%	-0.1%	0.0%	0.0%	-0.1%	0.0%	0.0%	-0.1%
RGB, camera captured, 1080p	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.1%	0.0%
YUV, text & graphics with motion, 1080p	-1.6%	-2.2%	-1.6%	-2.0%	-2.1%	-3.7%	-4.5%	-4.3%	-4.4%	-4.9%
YUV, text & graphics with motion,720p	-1.0%	-1.2%	-1.0%	-1.1%	-1.2%	-1.6%	-1.5%	-1.7%	-1.5%	-1.7%
YUV, mixed content, 1440p	-0.7%	-0.8%	-0.7%	-0.9%	-1.0%	-1.3%	-1.6%	-1.4%	-1.4%	-1.6%
YUV, mixed content, 1080p	-0.5%	-1.0%	-0.7%	-0.9%	-0.5%	-1.0%	-1.6%	-1.4%	-1.2%	-1.5%
YUV, Animation, 720p	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.1%	-0.1%
YUV, camera captured, 1080p	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Encoder 1: RD cost check at every search point (no encoding time increase);

Encoder 2: RD cost check at every search point + Full RD check at predictor positions (~10% time increase);

Encoder 3: RD cost check at every search point + Full RD check at predictor positions + additional RD check at spatial neighbors (~10% time increase);

Conclusions

- Block vector prediction method is proposed
 - Combination of SCCE1 Test 3.1, 3.2 and 3.4

- Recommend to be adopted to the test model