AHG10: On IBC memory reduction

JCTVC-T0051

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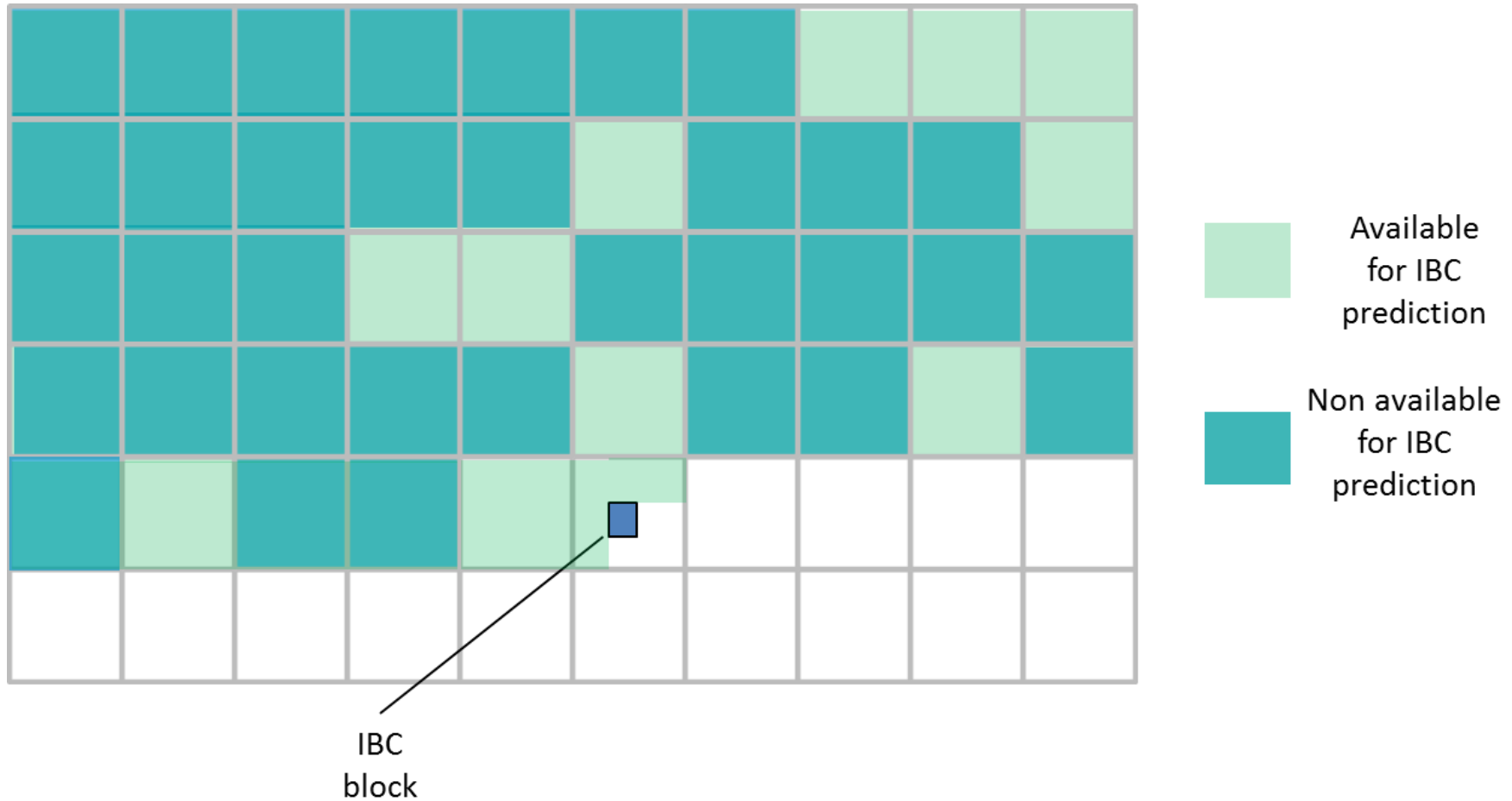20th Meeting: Geneva, CH, 10-18 Feb. 2015

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Introduction

- IBC predictors comes from non filtered data.

- For some implementation IBC and DBF are parallelized at CU level when all reconstructed data are available
  - When IBC is enabled, this requires to store both filtered and non filtered data for this implementation.

Proposed IBC modification

- For each CTB, a flag is transmitted to know if this CTB is available for IBC prediction:
  - available_for_IBC_flag
- When available_for_IBC_flag =1, the DBF and SAO are bypass.

- The current CTB and the previous one are always considered as available for IBC prediction

- The proposed method reduces the memory impact for IBC to only 2 CTBs

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Proposed IBC modification

Available for IBC prediction

Non available for IBC prediction

IBC block

Experimental results

- Anchor: SCM3.0:
  - AI: 0.7%, 0.4%,   0.4%
  - RA: 0.3%, −0.6%, −0.6%
  - LDB: 0.3%, −0.5%, −0.5%
- Small losses

- Significant improvement compared to our initial proposal JCTVC–S0088

	All Intra			Random Access			Low delay B		
	G/Y	B/U	R/V	G/Y	B/U	R/V	G/Y	B/U	R/V
RGB, text & graphics motion, 1080p & 720p	0.5%	-1.0%	-0.8%	0.4%	-1.4%	-1.3%	0.6%	-0.7%	-0.6%
RGB, mixed content, 1440p & 1080p	0.9%	0.1%	0.1%	0.3%	-1.3%	-1.3%	0.3%	-1.0%	-1.1%
RGB, Animation, 720p	0.2%	0.6%	0.2%	0.0%	0.0%	-0.1%	0.0%	0.1%	-0.2%
RGB, camera captured, 1080p	0.3%	0.2%	0.7%	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%
YUV, text & graphics motion, 1080p & 720p	0.9%	0.0%	-0.2%	0.8%	-0.9%	-1.2%	0.9%	-0.6%	-0.9%
YUV, mixed content, 1440p & 1080p	1.2%	1.1%	1.1%	0.7%	-1.1%	-1.0%	0.7%	-1.7%	-1.7%
YUV, Animation, 720p	0.6%	1.2%	0.7%	0.2%	0.1%	0.2%	0.1%	0.0%	0.0%
YUV, camera captured, 1080p	0.7%	0.9%	0.7%	0.2%	0.3%	0.1%	0.0%	0.0%	0.1%
Enc Time[%]	99%			99%			99%		
Dec Time[%]	87%			99%			101%		

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Experimental results

- +Enc choice (JCTVC−T0050 + item 2 and 3 JCTVC−T0116)
- Anchor: SCM3.0:
  - AI: −0.2% −0.5% −0.5%
  - RA: −0.4%   −1.3% −1.3%
  - LDB: −0.5%   −1.3% −1.3%

	All Intra			Random Access			Low delay B		
	G/Y	B/U	R/V	G/Y	B/U	R/V	G/Y	B/U	R/V
RGB, text & graphics motion, 1080p & 720p	-1.9%	-3.4%	-3.1%	-1.9%	-3.8%	-3.5%	-1.9%	-2.9%	-2.7%
RGB, mixed content, 1440p & 1080p	-0.1%	-0.8%	-0.9%	-0.3%	-1.8%	-1.8%	-0.4%	-1.6%	-1.9%
RGB, Animation, 720p	0.2%	0.6%	0.1%	0.1%	0.0%	-0.1%	0.0%	-0.2%	-0.2%
RGB, camera captured, 1080p	0.4%	0.2%	0.8%	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%
YUV, text & graphics motion, 1080p & 720p	-1.6%	-2.4%	-2.4%	-1.7%	-3.4%	-3.8%	-1.6%	-3.4%	-3.5%
YUV, mixed content, 1440p & 1080p	0.1%	0.1%	0.1%	-0.1%	-1.9%	-1.7%	-0.5%	-2.6%	-2.3%
YUV, Animation, 720p	0.5%	1.1%	0.6%	0.1%	-0.1%	0.2%	0.1%	-0.1%	0.0%
YUV, camera captured, 1080p	0.7%	0.9%	0.7%	0.2%	0.3%	0.1%	0.0%	0.1%	0.1%
Enc Time[%]	108%			104%			103%		
Dec Time[%]	86%			101%			101%		

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Conclusion

- This contribution proposes to solve the memory increase due to the use of non-loop filtered blocks as reference for IBC

- Principle: signal the CTB used as reference for IBC and disable DBF and SAO for these CTB.

- Small losses

- Similar proposal JCTVC-T0045

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