

Short Video Performance Evaluation of AV1 Coding Tools

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Short Videos

- Short video is one of the most popular media for people to record and share their experience.
- Popular short video service provider, such as Kuaishou, Instagram, TikTok, etc.



Short Videos Compression

- Existing applications and research work are focusing on the scenario of Live and VoD (Video on Demand)
- Short videos are ranging from a few seconds to a few minutes.
- Some coding tools may lead to performance loss to encode these short videos.

AV1 Codec

- AV1 is an emerging open-source and royalty-free video compression format
- AV1 is jointly developed and finalized in early 2018 by the Alliance for Open Media.
- Many coding tools are introduced into AV1 to improve compression performance.



Coding Tools Performance Evaluation

- Test 35 tools.
- BD-rate means bitrate saving when turn off the tested coding tool.

Suggest to Turn OFF			Suggest to Turn ON		
Index	Coding Tools	BD-rate	Index	Coding Tools	BD-rate
1	dis_wtd_comp	-0.41%	1	rect_partition_type	6.26%
2	reference_set	-0.38%	2	keyframe_filtering	6.07%
3	global_motion	-0.35%	3	tx_64x64	4.21%
4	palette	-0.35%	4	intra_angle_delta	2.94%
5	intrabc	-0.35%	5	tpl_model	1.77%
6	fwd_kf	-0.35%	6	order_hint	1.02%
7	overlay	-0.35%	7	tx_type_set	0.89%
8	dual_filter	-0.33%	8	1to4_partition_type	0.75%
9	paeth_intra	-0.33%	9	ref_frame_mv	0.63%
10	cfl	-0.32%	10	lr	0.61%
11	smooth_inter_intra	-0.31%	11	warp_motion	0.40%
12	inter_intra_wedge	-0.30%	12	flip_idtx	0.38%
13	inter_inter_wedge	-0.27%	13	filter_intra	0.25%
14	inter_intra_comp	-0.24%	14	obmc	0.16%
15	diff_wtd_comp	-0.18%	15	ab_partition_type	0.03%
16	masked_comp	-0.16%	16	-	-
17	intra_edge_filter	-0.08%	17	-	-
18	cdef	-0.06%	18	-	-
19	one_sides_comp	-0.04%	19	-	-
20	smooth_intra	-0.04%	20	-	-

Thanks!