CU Content Classification based Mode Skipping and Texture Complexity based Depth Skipping for Fast Intra Coding in H.266/VVC Screen Content Coding

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Background

Screen Content Coding

Telecommuting

Remote desktop

Real-time transmissions requirement

Coding time reduction is needed

Problem

Special compression tools for screen content lead to extra computation process

① Redundant mode checking process

② Redundant partitions and depth checking process

Solution

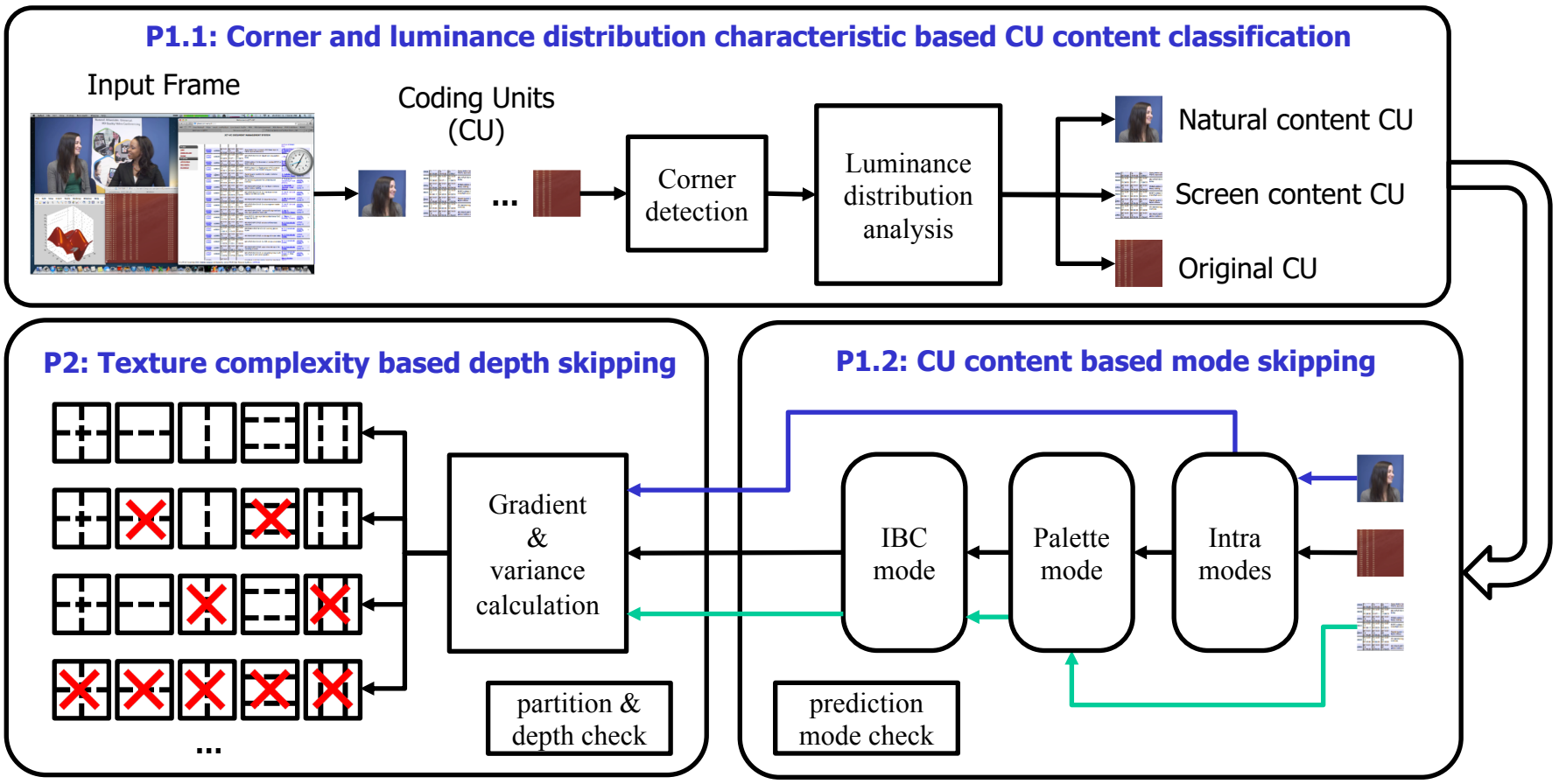
Remove redundancy in the exhaustive optimization process

Proposal 1.1: CU content classification

Proposal 1.2: Prediction mode skipping

Proposal 2: Partition depth skipping

Proposed Methods



Experimental Results

Sequence	SCC turned off		Conventional Work		Proposed	
	BD-rate (%)	TS (%)	BD-rate (%)	TS (%)	BD-rate (%)	TS (%)
flyingGraphics	92.67	31.37	6.66	18.51	2.96	30.71
sc_desktop	221.94	26.11	2.24	32.29	3.05	33.35
sc_console	106.67	20.96	1.98	23.69	3.69	37.76
ChinesesEditing	73.09	31.01	1.37	31.89	1.12	22.47
sc_web_browsing	186.86	29.72	7.01	17.62	2.68	33.16
sc_map	27.48	38.49	2.28	26.87	2.05	31.09
sc_programming	54.17	33.43	3.64	24.55	2.32	31.42
sc_SlideShow	15.43	34.24	3.77	23.19	2.47	32.16
EBURainFruits	0.01	34.46	0.07	36.44	0.87	39.80
sc_robot	1.50	36.05	1.98	37.33	1.12	40.79
Kimono	-0.09	28.69	-0.07	24.66	0.64	44.76
Basketball_Screen	52.87	35.93	4.38	25.16	2.39	32.74
MissionControlClip2	34.33	35.21	2.17	31.23	2.05	32.77
MissionControlClip3	61.68	32.75	5.71	29.32	2.13	31.43
Average	66.33	32.22	3.09	27.34	2.11	34.10

Conclusion

- **This work aims to speed up mode decision and depth decision process for H.266/VVC Screen Content Coding**
- **With the proposed method, 34.10% time saving is achieved at the cost of 2.11% BD-rate increase in average**

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