

JCTVC-B068

Performance evaluation on implicit direct vector derivation

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Outline

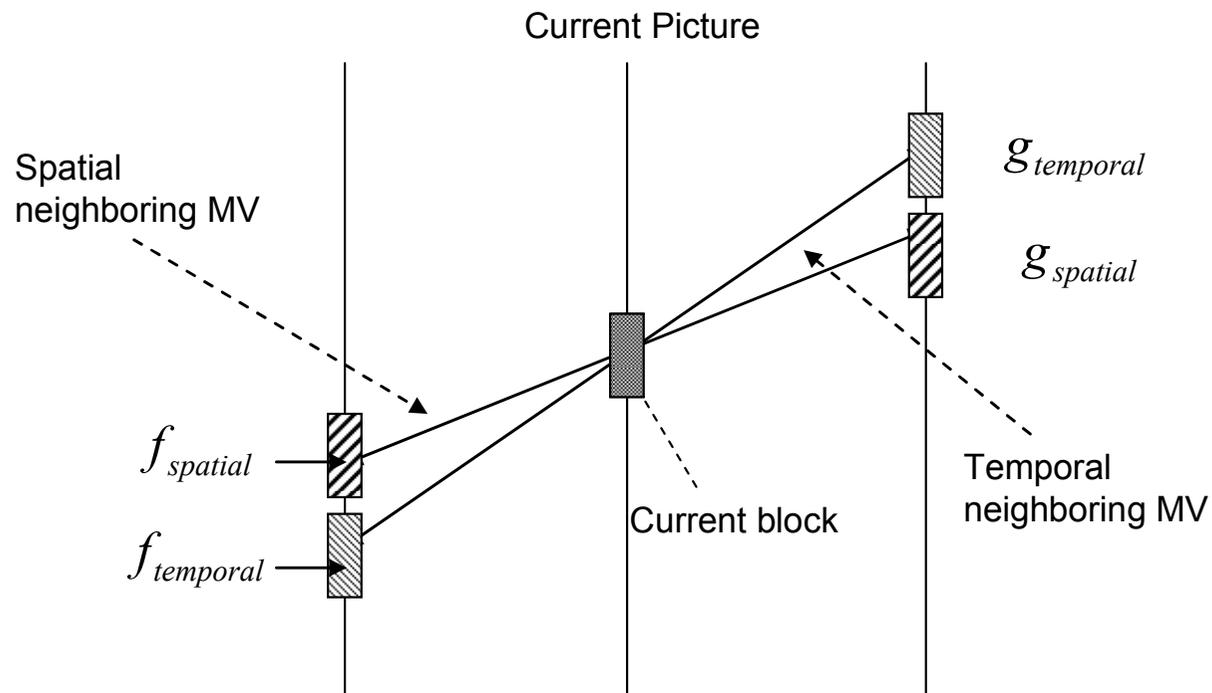
- Background
- Proposed method
- Performance evaluation
- Conclusion

Background

- ***B-skip/Direct mode design***
 - Key technical point for HEVC standard
 - Not specified in TMuC
- ***The direct vector derivation scheme proposed in A107(A122) evaluated***
 - Based on A124 software

Proposed direct mode design

- Adaptive direct MV derivation from spatial and temporal candidates
 - Without signaling bit by SAD competition at both encoder and decoder
 - Used also as B-Skip MV



Performance Evaluation

- Software: A124
 - AVC compatible modes except for large MC/transform blocks, ALF, and IBDI
- Test conditions

Test sequence	SHV sources, Class A, B, C sequences
GOP structure	CfP CS1 anchor based
Number of encoded frames	2 sec (next slide)
Largest Coding Unit	64x64
CU partitioning depth	4 levels
QP	4QP points depending on each sequence
Motion search range	± 128

Test Sequences

ID	Test Set	Original Sequence Name	Starting Frame Number	Number of Frames
S01	Class A	Traffic	0	65
S02	Class A	PeopleOnStreet	0	65
S03	Class B	Kimono (first scene)	0	49
S04	Class B	ParkScene	0	49
S05	Class B	Cactus	0	97
S06	Class B	BasketballDrive	0	97
S07	Class B	BQTerrace	140	129
S08	Class C	BasketballDrill	0	97
S09	Class C	BQMall	400	129
S10	Class C	PartyScene	403	97
S11	Class C	RaceHorses	0	65
S19	Class B	Kimono (second scene)	140	49
S20	SHV	Steam locomotive train	0	129
S21	SHV	Nebuta Festival	0	129

Simulation Results

Sequence	BD-rate(Y) [%]	BD-rate(U) [%]	BD-rate(V) [%]
S01	-2.14252	-0.98009	-1.50071
S02	-4.94732	-4.36401	-4.19395
S03	-0.76209	-1.02544	-0.82559
S04	-2.4273	-2.23223	-1.86526
S05	-2.81615	-2.54437	-3.00284
S06	-0.78087	-0.81932	-0.92438
S07	-1.48954	-2.37299	-1.78456
S08	-1.36656	-2.60614	-2.54794
S09	-4.09376	-4.38662	-3.4995
S10	-4.25602	-4.49746	-4.18194
S11	-1.13795	-2.42574	-3.73547
S19	-3.1355	-3.0538	-2.21146
S20	-4.03194	-2.91496	-3.52496
S21	-0.34421	-3.99019	-5.05375
average	-2.40941	-2.72952	-2.77516

Example of visual improvement

- Improves prediction efficiency around complicated motion field in front of still background



Spatial direct vector only



Proposed direct vector derivation

Conclusion

- An implicit direct vector derivation scheme has been evaluated
 - Coding gain can be expected in TMuC framework
- Propose to establish a formal experiment to identify B-skip/Direct mode design to be included into test model