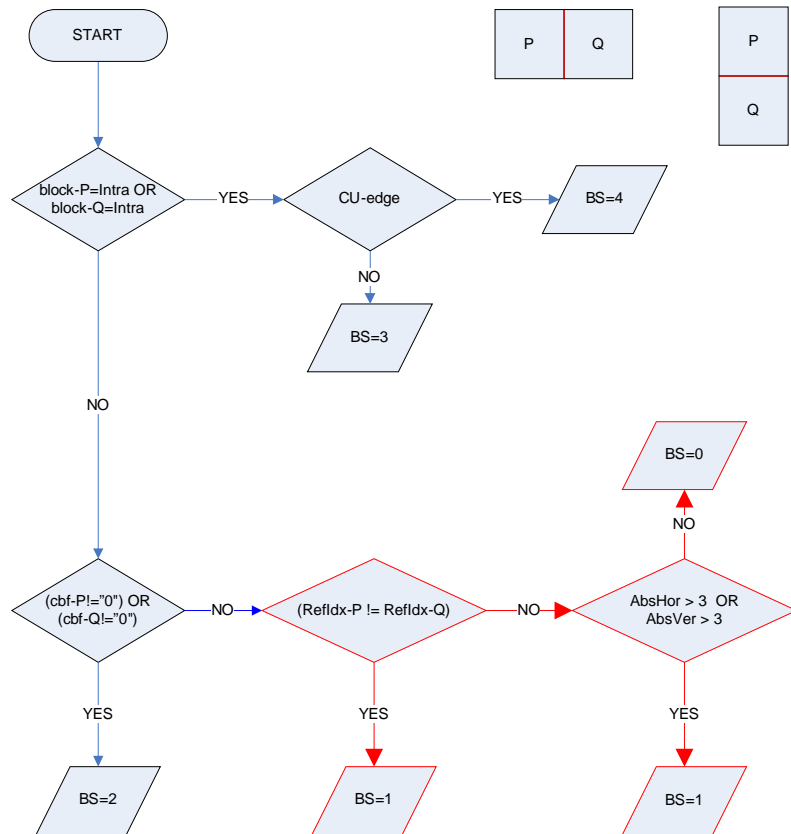# Improving Deblocking-filter Performance with SKIP-CU

(JCTVC-044)

Mangesh Sadafale
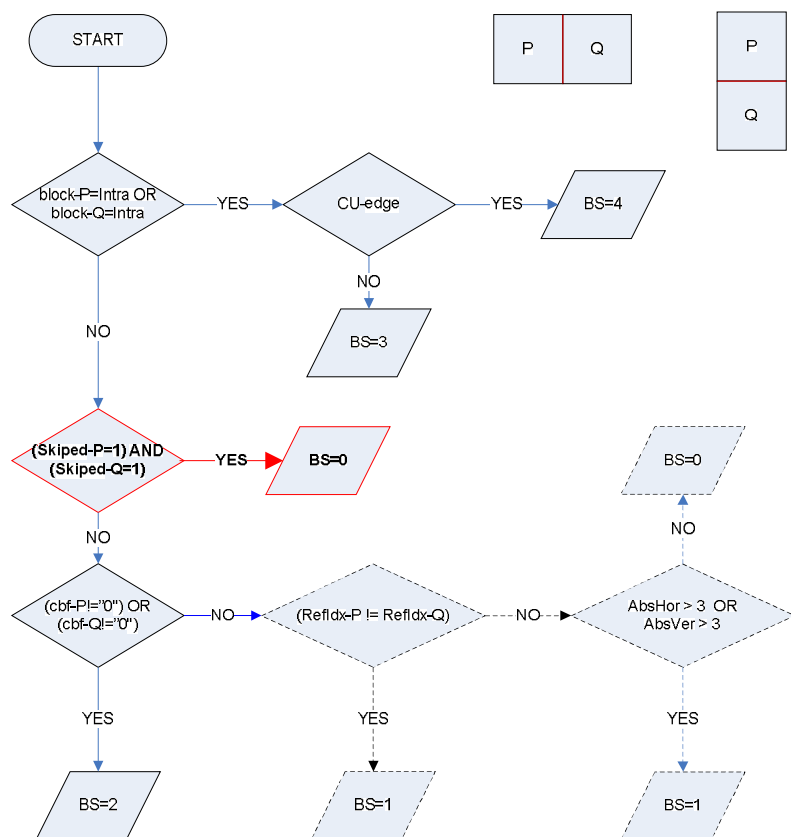
Problem Statement

- **For SKIP-CU**
  - TU-Size and qP is don't care
  - qP of Left CU is used for Deblk
  - All CBF are zero
  - bS=0 for all inside TU-Edge
  - bS=0/1 for PU-Edge

- **Most of the CU will be Skip in**
  - Video Conference
  - Video Surveillance

Proposal

- Proposal is to make bS=0
  - Q and P-Block belongs to SKIP CU

- HM and Proposal will differ
  - Q and P-Block are SKIP
  - Q and P-Block belongs to different Predication Unit
  - Q-Block and P-Block
    - Ref-Pic Index is different
    - Or MV difference is greater than 4.

Advantage

- No PU-Edge filtering inside CU

- No CU-Edge filtering if adjacent CU is SKIP

- No need of computation for "bS" and Filter

- Software and Hardware can do early exit by SKIP flag

- This will give good performance improvement without impacting BD-rate.

Result

	Intra			Intra LC		
	Y BD-rate	U BD-rate	V BD-rate	Y BD-rate	U BD-rate	V BD-rate
Class A	0.0	0.0	0.0	0.0	0.0	0.0
Class B	0.0	0.0	0.0	0.0	0.0	0.0
Class C	0.0	0.0	0.0	0.0	0.0	0.0
Class D	0.0	0.0	0.0	0.0	0.0	0.0
Class E	0.0	0.0	0.0	0.0	0.0	0.0
All	0.0	0.0	0.0	0.0	0.0	0.0
Enc Time[%]	99%			99%		
Dec Time[%]	99%			99%		

	Random access			Random access LC		
	Y BD-rate	U BD-rate	V BD-rate	Y BD-rate	U BD-rate	V BD-rate
Class A	0.0	-0.2	-0.1	0.1	0.1	0.2
Class B	0.1	0.0	0.0	0.1	0.1	0.0
Class C	0.1	0.0	0.0	0.1	0.0	0.0
Class D	0.0	0.0	-0.1	0.0	0.0	0.0
Class E						
All	0.0	-0.1	0.0	0.1	0.0	0.0
Enc Time[%]	99%			99%		
Dec Time[%]	98%			97%		

	Low delay			Low delay LC		
	Y BD-rate	U BD-rate	V BD-rate	Y BD-rate	U BD-rate	V BD-rate
Class A						
Class B	-0.1	0.2	0.1	0.0	-0.1	-0.1
Class C	0.0	0.1	-0.1	0.0	0.0	-0.2
Class D	-0.1	0.1	0.2	-0.1	0.2	-0.1
Class E	-0.1	0.2	-0.3	0.0	-0.4	-0.2
All	-0.1	0.2	0.0	0.0	-0.1	-0.2
Enc Time[%]	100%			99%		
Dec Time[%]	99%			95%		

JCTVC-F044

TEXAS INSTRUMENTS

Conclusion

- As this proposal will give good average case performance improvement without impacting BD-rate.

- We recommend study of this for quality-impact and adopt it to decrease complexity.

TEXAS
INSTRUMENTS