|  |  |
| --- | --- |
| **Joint Collaborative Team on Video Coding (JCT-VC)**  **of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11**  13th Meeting: Incheon, KR, 18–26 Apr. 2013 | Document: JCTVC-M0399 |

|  |  |  |  |
| --- | --- | --- | --- |
| *Title:* | **SCE1: Crosschecking of SCE1 2.1 on gradient based intra prediction** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Proposal | | |
| *Author(s) or Contact(s):* | Krishna Rapaka  5775 More house drive San Diego, CA 92121-1714 | Tel: Email: | krapaka@qti.qualcomm.com |
| *Source:* | Qualcomm Incorporated | | |

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Abstract

This contribution reports crosschecking results of Test SCE1 2.1 on gradient based intra prediction (JCTVC-M0032) in SHVC. The simulation results reportedly matched those provided by the proponents.

# Introduction

In this test (JCTVC- M0032), a gradient based intra prediction method was proposed.

For horizontal and vertical intra prediction modes, this method proposes to enhance the prediction using base layer information. The process is illustrated in Figure 1 below for a 4x4 block using vertical prediction.

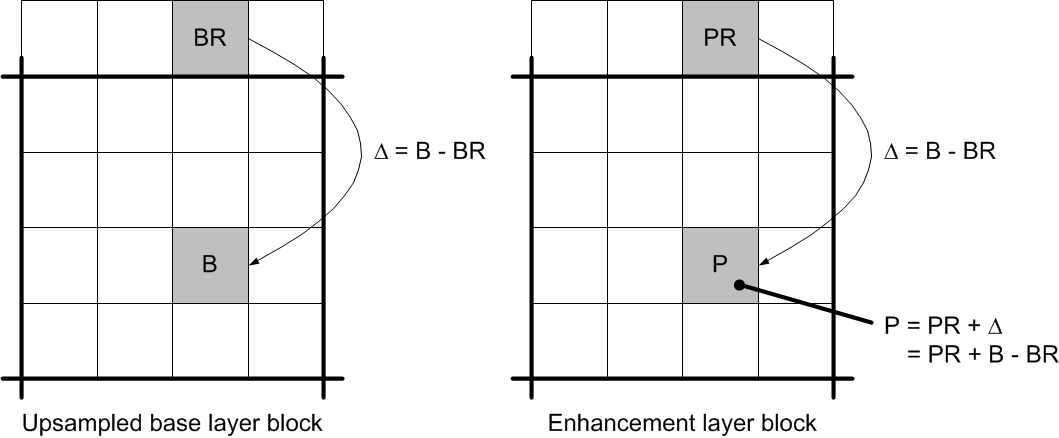


Figure 1: Gradient based enhancement of intra prediction for vertical prediction

It is also proposed to not introduce any additional syntax or signalling and instead, the intra prediction process at enhancement layer is modified as follows for the mentioned intra prediction directions:

P(x,y) = clip ( PR(xR,yR) + B(x,y) - BR(xR,yR) )

Where:

P(x,y) denotes the sample to be predicted in the enhancement layer picture.

PR (xR,yR) denotes the enhancement layer reference sample in the enhancement layer picture based on the directionality of the intra prediction mode

B(x,y) in the base layer picture with location corresponding to the enhancement layer sample P(x,y)

BR (xR,yR) denotes the base layer reference sample in the base layer picture based on the directionality of the intra prediction mode

In addition, this method is tested together with DC Correction method of JCTVC-M0031.

# Experimental results

We received the source code from the proponents, implemented in SHM-1.0, and did a quick code study to verify that the proposed method was implemented as described. We used the common conditions [2] in our experiments and ran simulations for the AI cases.

The results match what was provided by the proponents and are summarized as follows:

**Table 1: Results of gradient based intra prediction method for AI cases**



**Table 2: Results of gradient based intra prediction with DC correction method for AI cases**



# Conclusion

In this contribution, we have presented the results of our cross-check Test SCE1 2.1 on gradient based intra prediction (JCTVC-M0032). The implemented algorithm is in line with the proponent’s description, and the simulation results also match that provided by the proponents.

# References

1. [A. Tabatabai](mailto:ali.tabatabai@am.sony.com), [K. Rapaka](mailto:krapaka@qti.qualcomm.com), [A. Saxena](mailto:asaxena@sta.samsung.com), [S. Liu](mailto:shan.liu@meditek.com) : Description of Core Experiment 1: Intra Prediction Improvements in SHVC, JCTVC-L1101, Geneva, Switzerland, 14–23 Jan. 2013.

1. [X. Li](mailto:lxiang@qti.qualcomm.com), [J. Boyce](mailto:jill@vidyo.com), [P. Onno](mailto:patrice.onno@crf.canon.fr), [Y. Ye](mailto:yan.ye@interdigital.com), “Common SHM test conditions and software reference configurations”, JCTVC-L1009, Geneva, Switzerland, 14–23 Jan. 2013.