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| *Title:* | **RCE 3: Combination of sample adaptive prediction and nearest neighbor prediction for oblique modes** | | |
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| *Purpose:* | Proposal | | |
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# Abstract

In this contribution, results of combination experiment B.1: on sample adaptive prediction and nearest neighbor prediction for oblique modes in RCE 3 are presented. It is asserted that the gains of the individual proposals (a) on sample adaptive prediction, and (b) nearest neighbor prediction are completely additive.

# Introduction

In RCE3, currently (a) tool A.2 on sample adaptive prediction, and (b) tool A.3 on nearest neighbor prediction for oblique intra prediction modes are being tested. In this contribution, we show that the compression efficiency gains for both these proposals are completely additive.

# Experimental results

In this section, coding results for combination test B.1 (combination of tools A.2 and A.3) are presented. The anchor for the tests is HM 12.0+RExt-4.1, and the simulations are performed under stipulated common test conditions in RCE3 [1]. The following tables present the coding results:

**Table 1:** Lossless. Apply SAP for strictly diagonal modes; and Rate-Distortion based variant nearest neighbor prediction for oblique modes.

**Table 2:** Lossy. Apply SAP for strictly diagonal modes; and Rate-Distortion based variant nearest neighbor prediction for oblique modes.

**Table 3:** Lossless. Apply SAP for strictly diagonal modes; and Threshold based variant nearest neighbor prediction for oblique modes.

**Table 4:** Lossy. Apply SAP for strictly diagonal modes; and Threshold based variant nearest neighbor prediction for oblique modes.

In all the 4 tests, both SAP, and nearest neighbor prediction are applied on all block sizes from 4x4 to 64x64.

Detailed results are in attached excel files.

**Table 1: Lossless. Apply SAP for strictly diagonal modes; and Rate-Distortion based variant nearest neighbor prediction for oblique modes.**







**Table 2: Lossy. Apply SAP for strictly diagonal modes; and Rate-Distortion based variant nearest neighbor prediction for oblique modes.**



**Table 3: Lossless. Apply SAP for strictly diagonal modes; and Threshold based variant nearest neighbor prediction for oblique modes.**







**Table 4:** Lossy. Apply SAP for strictly diagonal modes; and Threshold based variant nearest neighbor prediction for oblique modes.



# Conclusion

In this contribution, we presented results of combination experiment B.1: on sample adaptive prediction and nearest neighbor prediction for oblique modes in RCE 3. The gains of both these tools are complete additive, and it is recommended to adopt both these tools in HEVC Range Extensions Committee Draft..

# References

1. A. Saxena, D. Kwon, M. Naccari and C. Pang, “HEVC Range Extensions Core Experiment 3 (RCE3): Intra Prediction techniques,” JCTVC-N1123, Vienna, Austria, July 2013.

# Patent rights declaration(s)

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