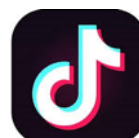


# JVET-AG0130

## EE1-4.1: UNIFIED CNN-BASED SUPER RESOLUTION FOR RESAMPLING-BASED VIDEO CODING

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# Tests over NNVC7.1 VTM anchor

## ■ Anchor: NNVC7.1 VTM

Test	Random Access			All Intra			kMAC /pxl	Param
	Y	U	V	Y	U	V		
NNVC SR (no other NN tools)	<b>-2.1%</b>	-1.0%	-0.8%	<b>-1.1%</b>	-2.8%	-1.7%	469	4.5
HOP SR (no other NN tools)	<b>-2.2%</b>	-0.6%	0.3%	<b>-1.2%</b>	-2.7%	-1.5%	469	1.9
LOP SR (no other NN tools)	<b>-1.5%</b>	-0.6%	0.1%	<b>-1.2%</b>	-0.2%	0.6%	20	0.08
RPR filter (no other NN tools)	<b>-0.27%</b>	2.83%	3.45%	<b>2.35%</b>	1.25%	4.53%	-	-
NNVC SR + LOP LF + NN-intra	<b>-3.64%</b>	-2.60%	-2.45%	<b>-2.23%</b>	-3.70%	-2.76%	469	4.5
HOP SR + LOP LF + NN-intra	<b>-3.86%</b>	-2.30%	-1.38%	<b>-2.07%</b>	-3.13%	-2.41%	469	1.9
LOP SR + LOP LF + NN-intra	<b>-3.55%</b>	-2.84%	-1.88%	<b>-2.05%</b>	-1.02%	-0.18%	20	0.08

# Tests over NNVC7.1 anchor

## ■ Anchor: LOP LF + NN-intra

Test	Random Access			All Intra			kMAC /pxl	Param
	Y	U	V	Y	U	V		
NNVC SR (no other NN tools)	<b>1.02%</b>	4.06%	3.59%	<b>1.85%</b>	1.31%	2.41%	469	4.5
HOP SR (no other NN tools)	<b>0.95%</b>	4.54%	4.82%	<b>1.80%</b>	1.45%	2.49%	469	1.9
LOP SR (no other NN tools)	<b>1.72%</b>	4.47%	4.68%	<b>1.53%</b>	4.51%	5.13%	20	0.08
RPR filter (no other NN tools)	<b>3.03%</b>	8.15%	8.29%	<b>5.77%</b>	5.85%	9.72%	-	-
NNVC SR + LOP LF + NN-intra	<b>-0.64%</b>	2.01%	1.69%	<b>0.67%</b>	0.27%	1.22%	469	4.5
HOP SR + LOP LF + NN-intra	<b>-0.88%</b>	2.35%	2.88%	<b>0.84%</b>	0.90%	1.50%	469	1.9
LOP SR + LOP LF + NN-intra	<b>-0.54%</b>	1.74%	2.30%	<b>-0.47%</b>	1.75%	2.30%	20	0.08

# Use same QP decision for all the tests

- Use same QP decision for all the 3 tests
  - AI: QP 22 and 27 are compressed as original resolution

Test	Random Access			All Intra			kMAC /pxl	Param
	Y	U	V	Y	U	V		
NNVC SR + LOP LF + NN-intra	-0.64%	2.01%	1.69%	-0.77%	1.62%	1.78%	469	4.5
HOP SR + LOP LF + NN-intra	-0.88%	2.35%	2.88%	-0.60%	2.05%	1.92%	469	1.9
LOP SR + LOP LF + NN-intra	-0.54%	1.74%	2.30%	-0.47%	1.75%	2.30%	20	0.08

- If same strategy applied for RA

Test	Random Access			All Intra			kMAC /pxl	Param
	Y	U	V	Y	U	V		
NNVC SR + LOP LF + NN-intra	-0.90%	1.72%	1.44%	-0.77%	1.62%	1.78%	469	4.5
HOP SR + LOP LF + NN-intra	-1.10%	1.80%	1.93%	-0.60%	2.05%	1.92%	469	1.9
LOP SR + LOP LF + NN-intra	-0.81%	1.51%	1.83%	-0.47%	1.75%	2.30%	20	0.08

# Conclusion

- LOP SR and HOP SR models are tested in the contribution
  - LOP SR significantly decrease the complexity of NNVC SR and keep most coding gains
  - HOP SR show comparable performance with NNVC SR, but use less #param and #models
- It is proposed to adopt LOP SR in the NNVC software.
- We would like to thank HUST for cross-checking!

Thanks!  
Q&A