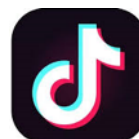


# JVET-AG0130

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

Chaoyi Lin, Yue Li, Junru Li, Kai Zhang, Li Zhang

Bytedance Inc.



# Tests over NNVC7.1 anchor

## ■ Anchor: LOP LF + NN-intra

Tests	Random Access			All Intra			kMAC /pxl	Param of SR
	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%	475	4.5
HOP SR + LOP LF + NN-intra	<b>-0.88%</b>	2.35%	2.88%	<b>0.84%</b>	0.90%	1.50%	475	1.9
LOP SR + LOP LF + NN-intra	<b>-0.54%</b>	1.74%	2.30%	<b>-0.47%</b>	1.75%	2.30%	26	0.08
RPR filter + LOP LF + NN-intra	<b>-0.09%</b>	3.07%	3.73%	<b>2.89%</b>	2.11%	6.20%	6	-

# Use same QP strategy for all the tests

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

Test	Random Access			All Intra			kMAC /pxl	Param of SR
	Y	U	V	Y	U	V		
NNVC SR + LOP LF + NN-intra	-0.64%	2.01%	1.69%	-0.77%	1.62%	1.78%	475	4.5
HOP SR + LOP LF + NN-intra	-0.88%	2.35%	2.88%	-0.60%	2.05%	1.92%	475	1.9
LOP SR + LOP LF + NN-intra	-0.54%	1.74%	2.30%	-0.47%	1.75%	2.30%	26	0.08

- If same strategy is further applied for RA

Test	Random Access			All Intra			kMAC /pxl	Param of SR
	Y	U	V	Y	U	V		
NNVC SR + LOP LF + NN-intra	-0.90%	1.72%	1.44%	-0.77%	1.62%	1.78%	475	4.5
HOP SR + LOP LF + NN-intra	-1.10%	1.80%	1.93%	-0.60%	2.05%	1.92%	475	1.9
LOP SR + LOP LF + NN-intra	-0.81%	1.51%	1.83%	-0.47%	1.75%	2.30%	26	0.08

# Conclusion

- LOP SR and HOP SR models are tested in the contribution
  - LOP SR saves 96% kMAC/pix and 98% parameters with 0.1% lower RA luma gain
  - HOP SR shows comparable performance with NNVC SR, but saves 58% parameters and use less number of models
- It is proposed to adopt LOP SR in the NNVC software.
- We would like to thank HUST for cross-checking!

Thanks!  
Q&A