An evaluation of Power Transfer Functions for HDR video compression – Supplementary Material

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1 Analysis of Power Function Images

The selection of images used for the analysis of power functions.

Figure 1: Images used for evaluation of γ variation at a selection of bit-depths.

2 Computational Performance Results

Results showing the decoding computational performance of PTF'_4 against $\text{PQ}_{\text{forward}}$, PTF'_4 LUT and $\text{PQ}_{\text{forward}}$ LUT.

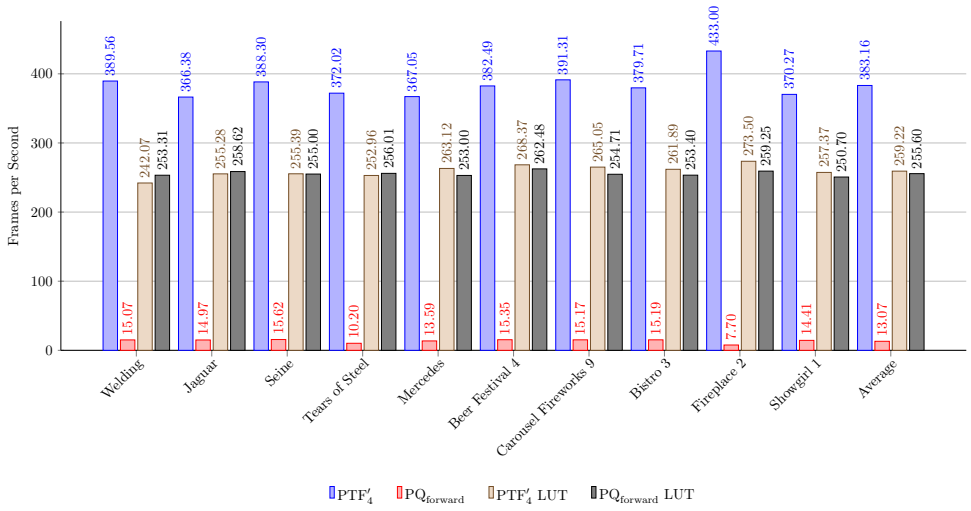

Figure 2: Difference in decoding time in frames per second between PTF'_4, $\text{PQ}_{\text{forward}}$ and their LUT equivalents. Higher bars indicate faster decoding performance.

3 HDR-VDP-2.2.1 Sequence Results

Results of the evaluation of PTF, HLG, Fraunhofer, HDRV and PQ for individual sequences.

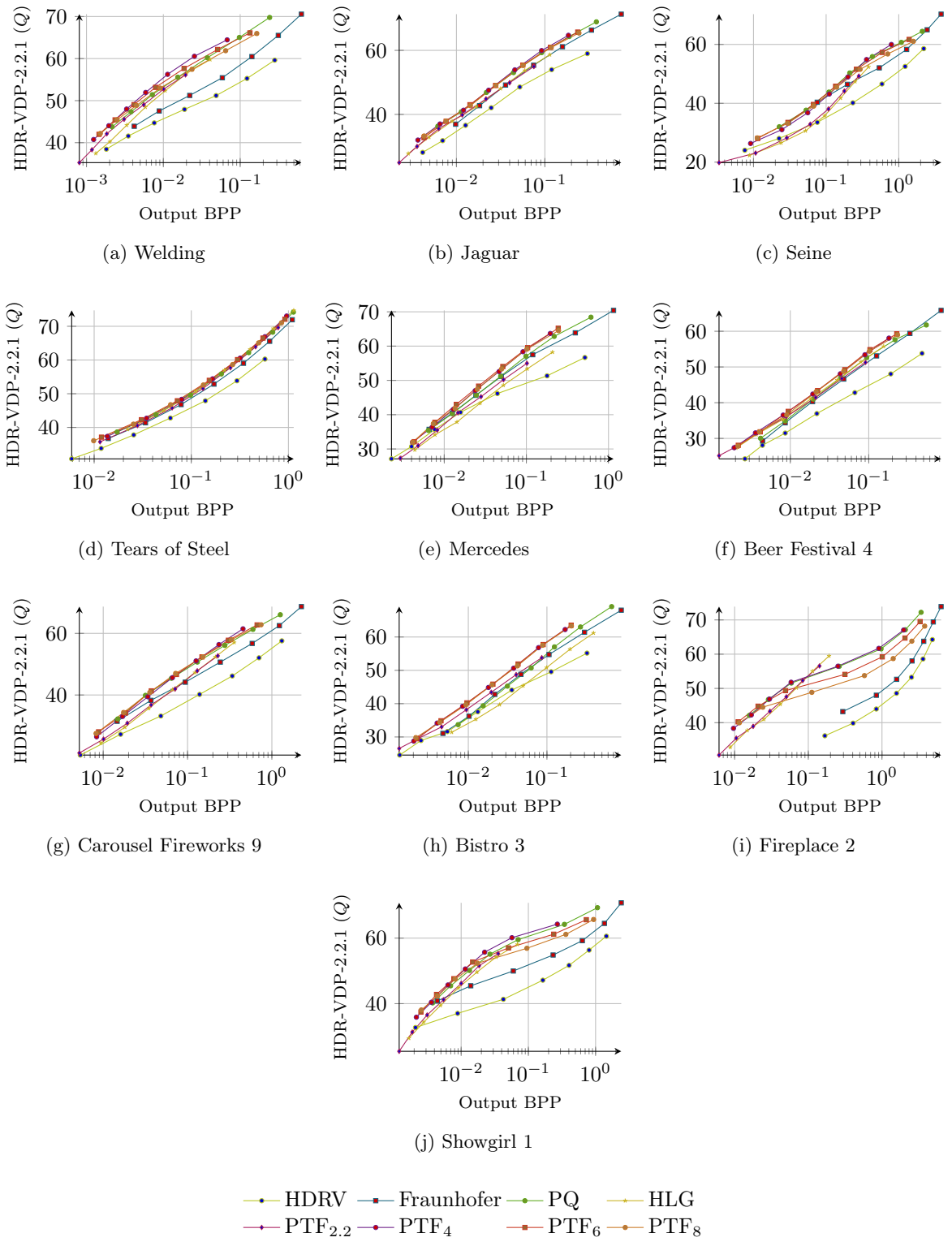

Figure 3: Rate distortion characteristics showing how the different HDR video compression methods perform on a variety of sequences. The rate is measured in output bits per pixel (BPP) and the distortion as a HDR-VDP-2.2.1 Q correlate. Figures are presented with a logarithmic x axis to improve clarity.

4 Bjøntegaard Delta Bit-rate Metric Results

Bjøntegaard Delta bit-rate metric results showing pair-wise comparison between methods for the reduction in bit-rate achieved for the same HDR-VDP-2.2.1 Q correlate result.

	PTF$_{2.2}$	**PTF$_4$**	**PTF$_6$**	**PTF$_8$**	**HDRV**	**Fraun.**	**PQ**	**HLG**
PTF$_{2.2}$	0.0%	42.6%	22.8%	7.7%	−80.9%	−59.1%	24.4%	−5.8%
PTF$_4$	−29.9%	0.0%	−13.3%	−29.1%	−86.4%	−70.1%	−4.8%	−33.2%
PTF$_6$	−18.6%	15.4%	0.0%	−18.9%	−84.2%	−66.2%	9.8%	−22.6%
PTF$_8$	−7.1%	41.0%	23.3%	0.0%	−81.6%	−59.1%	33.8%	−8.2%
HDRV	424.6%	635.9%	532.0%	444.4%	0.0%	101.9%	536.9%	397.5%
Fraunhofer	144.7%	234.9%	195.5%	144.6%	−50.5%	0.0%	219.0%	138.2%
PQ	−19.6%	5.1%	−8.9%	−25.3%	−84.3%	−68.7%	0.0%	−25.4%
HLG	6.2%	49.7%	29.2%	8.9%	−79.9%	−58.0%	34.0%	0.0%

Table 1: Bjøntegaard delta bit-rate results showing the average reduction in bit-rate achieved to maintain quality over a ten sequences. Negative numbers denote the percentage saving in bit-rate by the row method in order to result in a sequence with the same HDR-VDP-2.1.1 Q correlate result as the column method.