

**INTERNATIONAL ORGANISATION FOR STANDARDISATION
ORGANISATION INTERNATIONALE DE NORMALISATION
ISO/IEC JTC1/SC29/WG11
CODING OF MOVING PICTURES AND AUDIO**

**ISO/IEC JTC1/SC29/WG11 MPEG2019/M49842
July 2019, Göteborg, Sweden**

Source Poznań University of Technology (PUT), Poznań, Poland
Status Input
Title [MPEG-I Visual] Evaluation of proposed objective quality metric for all CFP responses
Author Adrian Dziembowski

1 Introduction

This document presents extended results for BSNR quality metric proposed in m48093 [1]. The technical description of the proposed quality metric is provided in document m48093.

2 Experimental results

The tests require good subjective quality results. Such tests are very time-consuming and laborious work, therefore we decided to use existing MOS scores. However, in order to study influence of different types of artifacts in synthesized views, we also needed results obtained for different methods/algorithms.

2.1 Evaluation on CFP responses data

Proposed method was tested on the subjective quality results [2] for CFP [3] responses. The test set contained results for 2 anchors and all 5 CFP participants [4], [5], [6], [7], [8]. Multiview video data processing approaches in all CFP responses were very different, what makes this test set representative and complete.

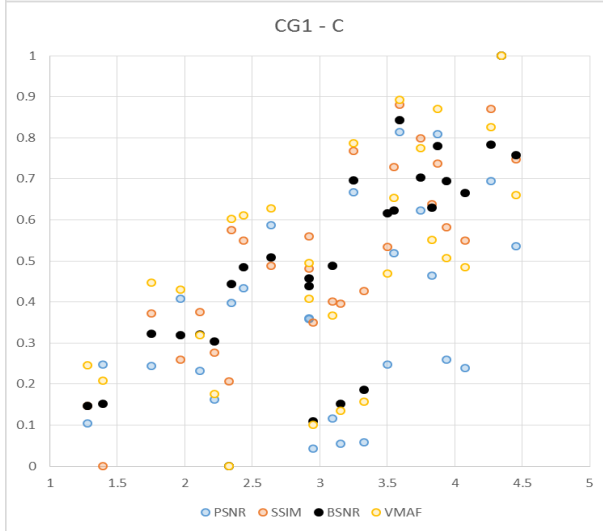
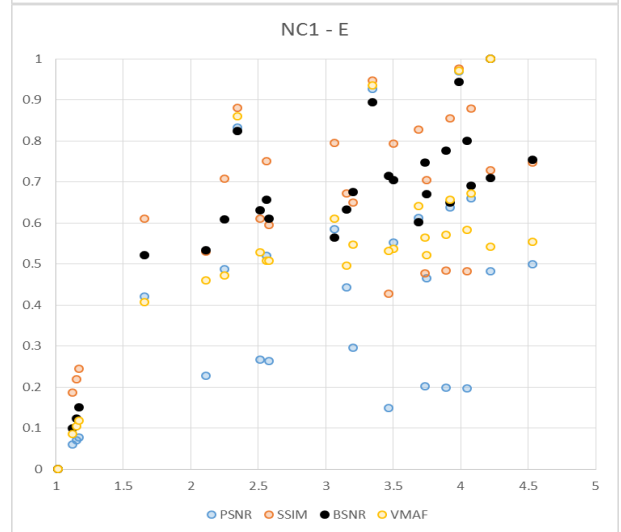
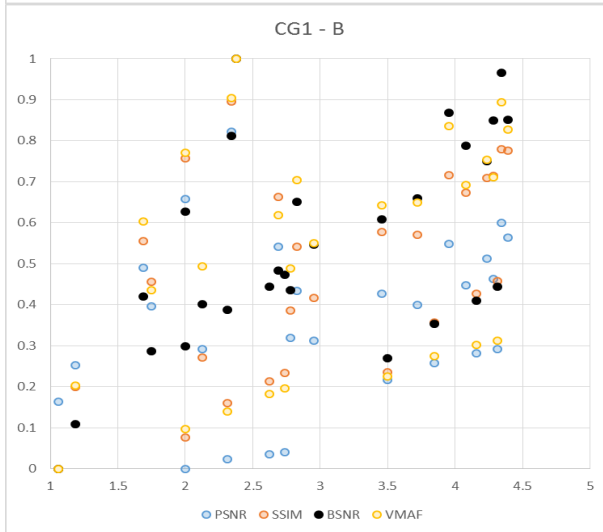
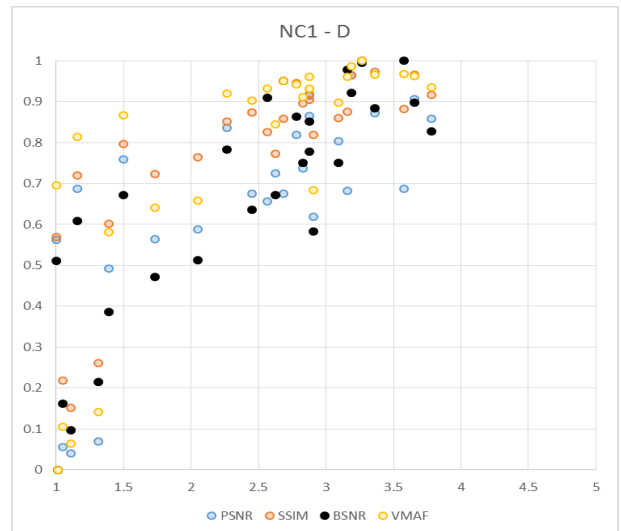
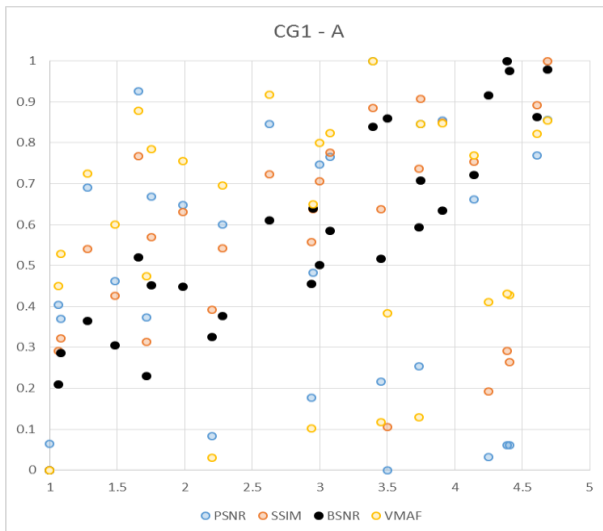


Fig. 1. MOS vs. objective quality metrics for computer-generated sequences (left column) and natural content (right column); horizontal axis: MOS, vertical axis: normalized objective quality.

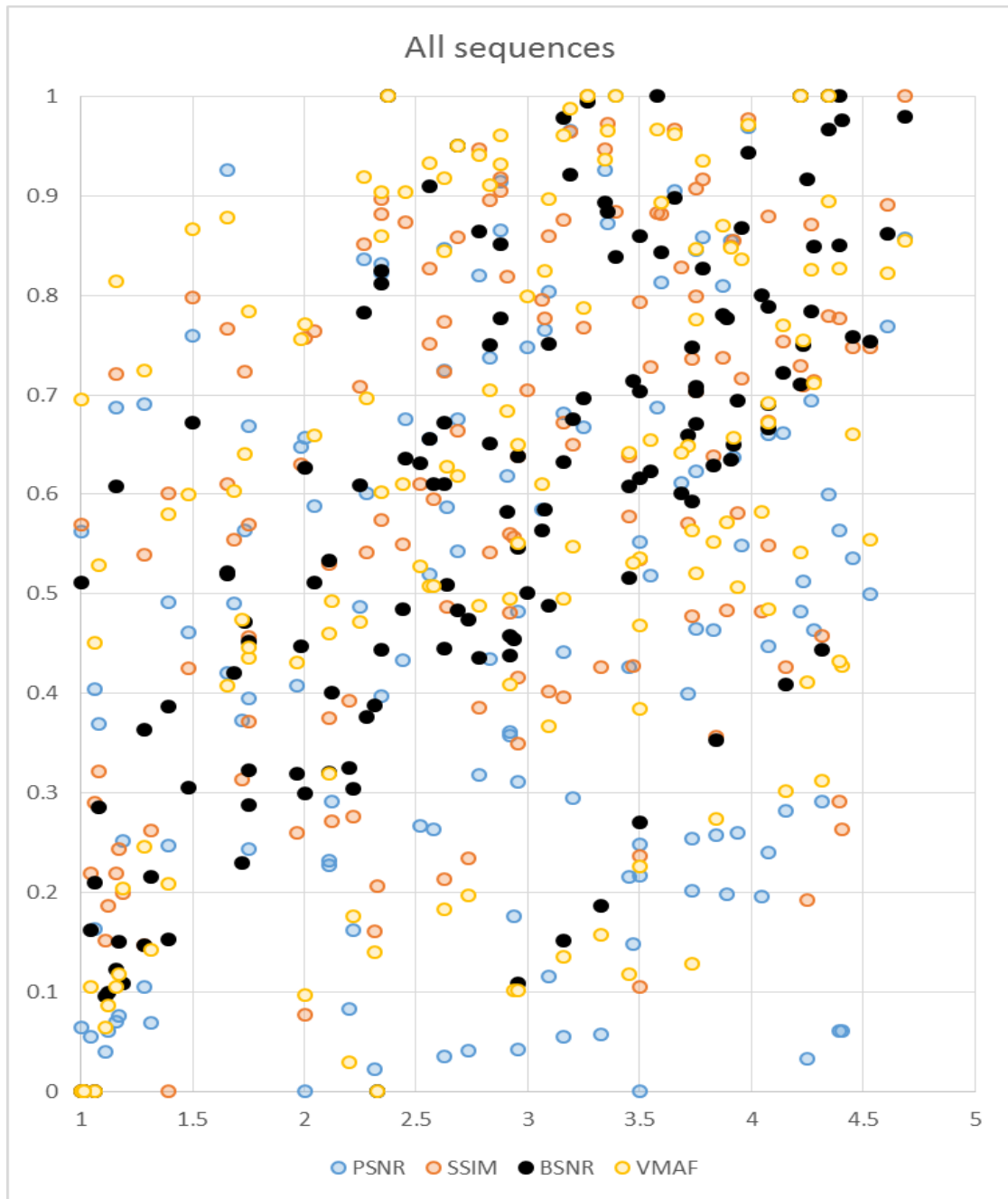


Fig. 2. MOS vs. objective quality metrics for all sequences used in Cfp [2], horizontal axis: MOS, vertical axis: normalized objective quality.

Correlation coefficient between MOS and all 4 quality metrics are presented in Table 1.

Table 1. Correlation coefficient between MOS and objective quality metrics.

Quality metric	Correlation with MOS
PSNR	0.2561
SSIM	0.4833
VMAF	0.3699
BSNR (proposed)	0.6983

Presented results were obtained for one chosen view; the quality for 10 first frames for each sequence was assessed.

2.2 Evaluation on windowed-6DoF data

Proposed objective quality metric was also tested on 12 windowed-6DoF test sequences. The subjective tests were performed for the purposes of PhD dissertation [9]. In the subjective tests, 44 naïve viewers were involved. They were assessing the quality difference for three different scenarios:

- Influence of color correction,
- Influence of filtering of the edges in input views and corresponding depth maps,
- Influence of different view synthesizer.

In the test set 12 multiview test sequences were included:

- Big Buck Bunny Flowers Arc,
- Big Buck Bunny Butterfly Arc,
- Poznan Fencing,
- Poznan Service2,
- Breakdancers,
- Ballet,
- Poznan Blocks,
- Poznan Blocks2
- Soccer Arc,
- Soccer Linear,
- Poznan Street,
- Poznan Carpark.

Most of them are (or were) included into the Test Materials for MPEG-I activities.

The correlation coefficient between subjective quality results and different objective quality metrics is presented in Table 2.

Quality metric	Correlation with MOS
PSNR	0.3952
SSIM	0.3871
BSNR (proposed)	0.6242

3 Acknowledgement

This work was supported by the Ministry of Science and Higher Education.

We would like to thank all the CfP participants, who provided their CfP data and support:

- Bart Kroon from Philips,
- Julien Fleureau, Gérard Briand, Renaud Doré and Franck Thudor from Interdigital,
- Vinod Kumar Malamal Vadakital from Nokia and
- Bin Wang and Lu Yu from Zhejiang University.

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