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| Title: | Proposal of rule for choosing reference and distorted video sequences. | | |
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Please don't change the structure of this table, just insert the necessary information.

1. Introduction

To compare the performance of objective assessment methods, we must use the estimated accuracy of arbitrary video sequences. If most of the test video sequence were used for tuning its model, it could not be said that we were able to acquire an adequate estimate of the accuracy of an objective assessment method for arbitrary video. In this document, we propose contriving to equalize the ratio of known video sequences of the proponents.

2. Deciding the upper limit ratio of known reference and distorted video sequences

We propose deciding the upper limit ratio of the known video sequences of all proponents to compare the performance of objective assessment methods fairly and having ILG choose video sequences to become lower than the limit ratio. For example, we can decide the upper limit ratio of a known reference video sequence and a distorted video sequence are each 50%. In particular, we propose either opening Phase II reference video sequences to all proponents or not using them at the MM contests because the ratio of known video sequences of the proponents that were proposed in Phase II are much larger than the known ratios of others.

3. Disclosing properties of video sequences selected by ILG

Though we set the upper limit ratio previously, ILG may choose many video sequences offered by a particular proponent if there is a small number of SRCs of a particular material type. So we propose opening the information (reference offer organization and distorted organization) of the video sequences finally selected by ILG to the public. We

should assert that the MM test is proper and fair by showing the ratio between known and unknown video sequences.

4. Summary

In this document, we propose the following two points to compare the performance of objective assessment methods fairly.

- (1) We decide the upper limit ratio of known reference and distorted video sequences.
- (2) We disclose the properties (reference offered organization and distorted organization and so on) of final selected test video sequence.

Appendix: Example of upper limit decision

In this appendix, we show how to decide the upper limits ratio of reference and distorted video sequences of one proponent. Here, the decision condition (the upper ratio limit of known reference video sequence and known distorted video sequences) is lower than 50%.

Ratio decision in the reference video sequence

If four proponents offer reference sequences, the ratio of the known reference video sequences of one proponent is 40% (calculated as follows), so this proponent meets the upper limit (50%).

$$(2) 0.4 / 4 + (3) 0.3 = 0.4 \text{ -----} > 40\%$$

Ratio decision in the distorted video sequence

If two proponents make distorted video sequences, the ratio of the known distorted video sequences of one proponent is 32% (calculated as follows), so this proponent meets the upper limit (50%).

$$(1) 0.3 \times 0 + (2) 0.4 \times 1.0 / 2 + (3) 0.3 \times 0.8 / 2 = 0.32 \text{ -----} > 32\%$$

Table1. The ratio of reference/distorted video sequence.

| Reference sequences | Ratio of reference sequences | Ratio of sequences distorted by ILG | Ratio of sequences distorted by proponent |
|------------------------------------|------------------------------|-------------------------------------|---|
| (1) Sequences offered by ILG | 30% | 100% | 0% |
| (2) Sequences offered by proponent | 40% (10%) | 0% | 100% (50%) |
| (3) Phase I/II sequences | 30% | 20% | 80% (40%) |

Parentheses show the assignment ratio of the target proponent.