International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

P.1201.1

Amendment 1

(12/2013)

SERIES P: TERMINALS AND SUBJECTIVE AND OBJECTIVE ASSESSMENT METHODS

Models and tools for quality assessment of streamed media

Parametric non-intrusive assessment of audiovisual media streaming quality – Lower resolution application area

Amendment 1: New Appendix I – Use of ITU-T P.1201.1 internal model parameters for diagnostic purposes

Recommendation ITU-T P.1201.1 (2012) – Amendment 1

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Recommendation ITU-T P.1201.1

Parametric non-intrusive assessment of audiovisual media streaming quality – Lower resolution application area

Amendment 1

New Appendix I – Use of ITU-T P.1201.1 internal model parameters for diagnostic purposes

Summary

Amendment 1 to Recommendation ITU-T P.1201.1 (2012) introduces Appendix I.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T P.1201.1	2012-10-14	12	11.1002/1000/11728
1.1	ITU-T P.1201.1 (2012) Amd. 1	2013-12-12	12	11.1002/1000/12110

* To access the Recommendation, type the URL http://handle.itu.int/ in the address field of your web browser, followed by the Recommendation's unique ID. For example, http://handle.itu.int/11.1002/1000/11830-en.

FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

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Recommendation ITU-T P.1201.1

Parametric non-intrusive assessment of audiovisual media streaming quality – Lower resolution application area

Amendment 1

New Appendix I – Use of ITU-T P.1201.1 internal model parameters for diagnostic purposes

1) Appendix I

Introduce Appendix I at the end of the Recommendation as shown below.

Appendix I

Use of ITU-T P.1201.1 internal model parameters for diagnostic purposes

(This appendix does not form an integral part of this Recommendation.)

I.1 Introduction

The present appendix to ITU-T P.1201.1 presents a short description of which parameters of the model can be used for diagnostic purposes.

The document is centred on a table that indicates the parameters and the respective clauses in which these can be found. Further, it contains information about the level at which the parameter can be retrieved, and the respective model output to which it is related. Note that the highlighted parameters are at the highest level, that is, they should be used as the starting point for identifying why quality may be low.

Note also that the relationship between the parameters and quality are only describing the internal relationship between the model internal parameters and quality, when the output MOS of the models is low. They do not reflect relationship between video encoding parameters in general and quality. For example, the encoding complexity is not a quality problem in itself, but can explain why the MOS score drops in certain circumstances.

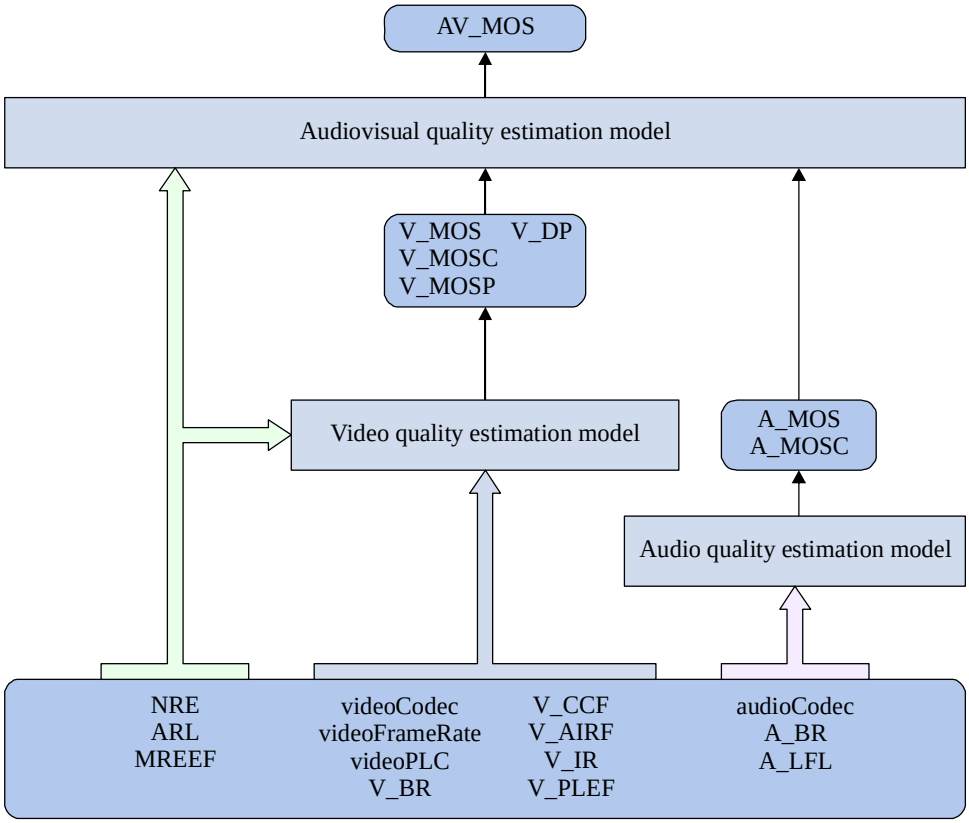
I.2 Diagnostic use of model parameters

Parameter	Provided information	Clause in ITU-T P.1201.1	Relationship of parameter values to quality	Module dependent on this parameter
videoFrameRate	Video frame rate	6.1.2	Lower means worse quality	Video
videoCodec	Video codec type	6.1.2		Video

Parameter	Provided information	Clause in ITU-T P.1201.1	Relationship of parameter values to quality	Module dependent on this parameter
videoResolution	Video frame size	6.1.2	Lower means worse quality	Video
videoPLC	Type of packet loss concealment used	6.1.2		Video
NRE	Number of rebuffering events	6.1.3	Higher means worse quality	Video + audiovisual
ARL	Average rebuffering length	6.1.3, Eq. 6-9	Higher means worse quality	Video + audiovisual
MREEF	Multiple rebuffering events effect factor	6.1.3, Eq. 6-10		Video + audiovisual
V_AIRF	Average impairment rate of video frames	6.3.2, Eq. 6-33	Higher means worse quality	Video
V_PLEF	Video packet loss event frequency	6.3.2	Higher means worse quality	Video
V_BR	Video bit rate	6.3.2, Eq. 6-30	Lower means worse quality	Video
V_CCF	Video content complexity factor	6.3.2, Eq. 6-32	Higher means worse quality	Video
V_MOSC	Video quality due to compression	6.4.2, Eqs. 6-38, 39, 40	Lower means worse quality Range: 1 to 5	Audiovisual
V_MOSP	Video quality due to packet loss	6.4.2, Eqs. 6-41, 42, 43	Lower means worse quality Range: 1 to 5	Audiovisual
V_MOSR	Video quality due to rebuffering	6.4.2, Eqs. 6-44, 45	Lower means worse quality Range: 1 to 5	Audiovisual
V_IR	Impairment rate of video stream (slicing)	6.3.2, Eq. 6-34	Higher means worse quality	Video
audioCodec	Audio codec type	6.1.1		Audio
A_CR	Audio bandwidth / sampling frequency	6.1.1, Eq. 6-1	Lower means worse quality	Audio
A_BR	Audio bit rate	6.3.1	Lower means worse quality	Audio
A_MOS	Total audio quality score	6.4.1, Eqs. 6-35, 36, 37	Lower means worse quality Range: 1 to 5	Audiovisual
A_MOSC	Audio quality due to compression	6.4.1, Eqs. 6-36, 37	Lower means worse quality Range: 1 to 5	Audiovisual
A_LFL	Audio packet loss degradation parameter	6.3.1, Eq. 6-27	Higher means worse quality	Audio

Parameter	Provided information	Clause in ITU-T P.1201.1	Relationship of parameter values to quality	Module dependent on this parameter
AV_MOSR	Audio visual quality due to rebuffering	6.4.3, Eqs. 6-52, 53	Lower means worse quality Range: 1 to 5	Audiovisual
AV_MOSC	Audio visual quality due to compression	6.4.3, Eq. 6-46	Lower means worse quality Range: 1 to 5	Audiovisual
AV_MOSP	Audio visual quality due to packet loss	6.4.3, Eqs. 6-47, 48, 49, 50, 51	Lower means worse quality Range: 1 to 5	Audiovisual
AV_MOS	Audio visual MOS	6.4.3	Lower means worse quality Range: 1 to 5	Audiovisual

The flowchart below represents the information flow for the parameters used to calculate the audiovisual MOS estimate. This can be used to do fault localization by following the arrows in the opposite direction, for example; the AV_MOS score is dependent on outputs from the video quality estimation model, the audio quality estimation model and a number of rebuffering related parameters. By going back one step from the audiovisual quality estimation model these three areas can be investigated individually. If, for example, the video related parameters are good but the A_MOS is low, it is sufficient to follow the flow chart down to the parameters that the audio quality estimation model is using and investigate those separately. On the other hand, if the V_MOS is low, but A_MOS is high, there might be no reason to include the audio parameters in the analysis.


AV_MOS
Audiovisual quality estimation model
V_MOS V_DP
V_MOSC
V_MOSP
Video quality estimation model
A_MOS
A_MOSC
Audio quality estimation model
NRE
ARL
MREEF
videoCodec
videoFrameRate
videoPLC
V_BR
V_CCF
V_AIRF
V_IR
V_PLEF
audioCodec
A_BR
A_LFL
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