

## CLAIMS

### What is claimed is:

1. A method for assessing image or video quality based on an approximate value, the method comprising:

obtaining a sample, the sample comprising a video or an image;

calculating a first approximate value approximating a subjective quality value of the sample by using an online model based on parameters of the sample, wherein the online model is implemented by a server and comprises a plurality of first sub-models respectively corresponding to a plurality of scenarios, the plurality of scenarios comprising a first scenario to which the sample corresponds;

assessing quality of the video or the image of the sample based on the first approximate value using a first sub-model of the plurality of first sub-models that corresponds to the first scenario, and

wherein the online model is generated based on an offline model comprising a plurality of second sub-models respectively corresponding to the plurality of scenarios, the first sub-model being generated based on a second sub-model of the plurality of second sub-models that corresponds to the first scenario, and the offline model is trained using  $k$  training samples and subjective quality values of the  $k$  training samples as a training set, the subjective quality values of the  $k$  training samples are obtained in a subjective scoring manner, and the first sub-model is generated by fitting parameters of the  $k$  training samples with reference to approximate values of the  $k$  training samples output by the second sub-model that corresponds to the first scenario,  $k$  being a positive integer.

2. The method according to claim 1, wherein the parameters of the sample comprise at least one of: a feedback parameter of a network module, a set parameter of a cloud game module, or a calculation parameter of a codec module.

3. The method according to claim 1, wherein before the calculating a first approximate value approximating a subjective quality value of the sample by using an online model based on parameters of the sample, the method further comprises:

calculating approximate values of the  $k$  training samples by using the first sub-model based on the parameters of the  $k$  training samples;

assessing the online model based on the approximate values of the  $k$  training samples obtained by using the second sub-model and the approximate values of the  $k$  training samples calculated by using the first sub-model; and

for each of the k training samples, determining that an assessment result of the online model is positive in response to a determination that a difference between an approximate value calculated by using the first sub-model and an approximate value obtained by using the second sub-model is less than or equal to a first preset threshold, and otherwise determining that the assessment result of the online model is negative.

4. The method according to claim 1, wherein before the calculating a first approximate value approximating a subjective quality value of the sample by using an online model based on parameters of the sample, the method further comprises:

assessing the online model based on the subjective quality values of the k training samples and approximate values of the k training samples calculated by using the first sub-model; and

for each of the k training samples, determining that an assessment result of the online model is positive in response to a determination that a difference between an approximate value calculated by using the first sub-model and a subjective quality value is less than or equal to a second preset threshold, and otherwise determining that the assessment result of the online model is negative.

5. The method according to claim 3, further comprising:

integrating the online model into a service system when the assessment result of the online model is positive; and

refitting, when the assessment result of the online model is negative, the first sub-model until the assessment result of the online model is positive.

6. The method according to claim 1, further comprising:

reporting the first approximate value to the offline model through a statistics collecting function;

obtaining a second approximate value of the sample by using the offline model;

optimizing, when a difference between the first approximate value and the second approximate value is greater than a third preset threshold, the first sub-model by using the parameters and the second approximate value of the sample; and

determining that there is no need to optimize the first sub-model in response to a determination that the difference between the first approximate value and the second approximate value is less than or equal to the third preset threshold.

7. The method according to claim 6, wherein before the optimizing, when a difference between the first approximate value and the second approximate value is greater than a third preset threshold, the first sub-model by using the parameters and the second approximate value of the sample, the

method further comprises:

obtaining the subjective quality value of the sample; and

optimizing, in a case that a difference between the second approximate value and the subjective quality value of the sample is greater than a fourth preset threshold, the offline model by using the sample and the subjective quality value of the sample.

8. The method according to claim 1, wherein the calculating a first approximate value approximating a subjective quality value of the sample by using an online model based on parameters of the sample comprises:

determining the first sub-model corresponding to the first scenario; and

calculating the first approximate value by using the first sub-model corresponding to the first scenario based on the parameters of the sample.

9. The method according to claim 8, wherein at least one of the plurality of scenarios defines a type of a device configured to play the video or the image.

10. The method according to claim 1, wherein the online model is a reduced-reference model or a no-reference model, and the offline model is a full-reference model or a no-reference model, the reduced-reference model being a model obtained by referring to some parameters of a to-be-compressed image frame and a compressed image frame, the no-reference model being a model obtained by only referring to the compressed image frame, and the full-reference model being a model obtained by referring to the to-be-compressed image frame and the compressed image frame.

11. An apparatus for assessing image or video quality based on an approximate value, the apparatus comprising:

an obtaining unit, configured to obtain a sample, the sample comprising a video or an image;

a calculation unit, configured to calculate a first approximate value approximating a subjective quality value of the sample by using an online model based on parameters of the sample, wherein the online model is implemented by a server and comprises a plurality of first sub-models respectively corresponding to a plurality of scenarios, the plurality of scenarios comprising a first scenario to which the sample corresponds;

an assessment unit, configured to assess quality of the video or the image of the sample based on the first approximate value using a first sub-model of the plurality of first sub-models that corresponds to the first scenario, and

wherein the online model is generated based on an offline model comprising a plurality of second

sub-models respectively corresponding to the plurality of scenarios, the first sub-model being generated based on a second sub-model of the plurality of second sub-models that corresponds to the first scenario, and the offline model is trained using  $k$  training samples and subjective quality values of the  $k$  training samples as a training set, the subjective quality values of the  $k$  training samples are obtained in a subjective scoring manner, and the first sub-model is generated by fitting parameters of the  $k$  training samples with reference to approximate values of the  $k$  training samples output by the second sub-model that corresponds to the first scenario,  $k$  being a positive integer.

12. A method for training a first model, performed by an electronic device having a data processing capability, the method comprising:

obtaining  $k$  training samples, subjective quality values of the  $k$  training samples being obtained in a subjective scoring manner, wherein the  $k$  training samples comprise at least one of video samples or image samples;

training, using the  $k$  training samples and the subjective quality values of the  $k$  training samples as a training set, a second model comprising a plurality of second sub-models respectively corresponding to a plurality of scenarios, the plurality of scenarios comprising a first scenario to which the  $k$  training samples correspond, to obtain a second sub-model of the plurality of second sub-models corresponding to the first scenario;

inputting the  $k$  training samples into the second sub-model to obtain, as output, approximate values approximating the subjective quality values of the  $k$  training samples;

fitting parameters of the  $k$  training samples with reference to the approximate values output by the second sub-model that corresponds to the first scenario, to generate a first sub-model; and

generating the first model comprising a plurality of first sub-models respectively corresponding to the plurality of scenarios, wherein the first sub-model of the plurality of first sub-models corresponds to the first scenario.

13. An apparatus for training a first model, deployed on an electronic device having a data processing capability, the apparatus comprising:

a first obtaining unit, configured to obtain  $k$  training samples, subjective quality values of the  $k$  training samples being obtained in a subjective scoring manner, wherein the  $k$  training samples comprise at least one of video samples or image samples;

a first training unit, configured to train, using the  $k$  training samples and the subjective quality values of the  $k$  training samples as a training set, a second model comprising a plurality of second sub-models respectively corresponding to a plurality of scenarios, the plurality of scenarios

comprising a first scenario to which the k training samples correspond, to obtain a second sub-model of the plurality of second sub-models corresponding to the first scenario;

a second obtaining unit, configured to input the k training samples into the second sub-model to obtain, as output, approximate values approximating the subjective quality values of the k training samples;

a second training unit, configured to fit parameters of the k training samples with reference to the approximate values output by the second sub-model that corresponds to the first scenario, to generate a first sub-model; and

a generating unit, configured to generate the first model comprising a plurality of first sub-models respectively corresponding to the plurality of scenarios, wherein a first sub-model of the plurality of first sub-models corresponds to the first scenario.

14. An electronic device, comprising:

a processor, adapted to execute a computer program; and

a computer-readable storage medium, the computer-readable storage medium storing the computer program, the computer program, when executed by the processor, implementing the method for assessing image and video quality based on an approximate value according to any one of claims 1 to 10 or the method for training a first model according to claim 12.

15. A computer-readable storage medium, configured to store a computer program, the computer program causing a computer to perform the method for assessing image and video quality based on an approximate value according to any one of claims 1 to 10 or the method for training a first model according to claim 12.

16. A computer program product, the computer program product, when executed, performing the method for assessing image and video quality based on an approximate value according to any one of claims 1 to 10 or the method for training a first model according to claim 12.