Claims

1. An apparatus for decoding an audio signal, comprising:

a receiving interface (110) for receiving a plurality of frames, wherein the receiving interface (110) is configured to receive a first frame of the plurality of frames, said first frame comprising a first audio signal portion of the audio signal, said first audio signal portion being represented in a first domain, and wherein the receiving interface (110) is configured to receive a second frame of the plurality of frames, said second frame comprising a second audio signal portion of the audio signal,

a transform unit (120) for transforming the second audio signal portion or a value or signal derived from the second audio signal portion from a second domain to a tracing domain to obtain a second signal portion information, wherein the second domain is different from the first domain, wherein the tracing domain is different from the second domain, and wherein the tracing domain is equal to or different from the first domain,

a noise level tracing unit (130), wherein the noise level tracing unit (130) is configured to receive a first signal portion information being represented in the tracing domain, wherein the first signal portion information depends on the first audio signal portion, wherein the noise level tracing unit (130) is configured to receive the second signal portion being represented in the tracing domain, and wherein the noise level tracing unit (130) is configured to determine noise level information depending on the first signal portion information being represented in the tracing domain and depending on the second signal portion information being represented in the tracing domain, wherein the noise level information is represented in the tracing domain, and

a reconstruction unit (140) for reconstructing a third audio signal portion of the audio signal depending on the noise level information, if a third frame of the plurality of frames is not received by the receiving interface (110) or if said third frame is received by the receiving interface (110) but is corrupted.

2. An apparatus according to claim 1,

wherein the first audio signal portion is represented in a time domain as the first domain,

wherein the transform unit ~~(120)~~ is configured to transform the second audio signal portion or the value derived from the second audio signal portion from an excitation domain being the second domain to the time domain being the tracing domain,

wherein the noise level tracing unit ~~(130)~~ is configured to receive the first signal portion information being represented in the time domain as the tracing domain, and

wherein the noise level tracing unit ~~(130)~~ is configured to receive the second signal portion being represented in the time domain as the tracing domain.

3. An apparatus according to claim 1,

wherein the first audio signal portion is represented in an excitation domain as the first domain,

wherein the transform unit ~~(120)~~ is configured to transform the second audio signal portion or the value derived from the second audio signal portion from a time domain being the second domain to the excitation domain being the tracing domain,

wherein the noise level tracing unit ~~(130)~~ is configured to receive the first signal portion information being represented in the excitation domain as the tracing domain, and

wherein the noise level tracing unit ~~(130)~~ is configured to receive the second signal portion being represented in the excitation domain as the tracing domain.

4. An apparatus according to claim 1,

wherein the first audio signal portion is represented in an excitation domain as the first domain,

wherein the noise level tracing unit ~~(130)~~ is configured to receive the first signal portion information, wherein said first signal portion information is represented in the FFT domain, being the tracing domain, and wherein said first signal portion

information depends on said first audio signal portion being represented in the excitation domain,

wherein the transform unit (120) is configured to transform the second audio signal portion or the value derived from the second audio signal portion from a time domain being the second domain to an FFT domain being the tracing domain, and

wherein the noise level tracing unit (130) is configured to receive the second audio signal portion being represented in the FFT domain.

5. An apparatus according to one of the preceding claims,

wherein the apparatus further comprises a first aggregation unit (150) for determining a first aggregated value depending on the first audio signal portion,

wherein the apparatus further comprises a second aggregation unit (160) for determining, depending on the second audio signal portion, a second aggregated value as the value derived from the second audio signal portion,

wherein the noise level tracing unit (130) is configured to receive the first aggregated value as the first signal portion information being represented in the tracing domain, wherein the noise level tracing unit (130) is configured to receive the second aggregated value as the second signal portion information being represented in the tracing domain, and wherein the noise level tracing unit (130) is configured to determine noise level information depending on the first aggregated value being represented in the tracing domain and depending on the second aggregated value being represented in the tracing domain.

6. An apparatus according to claim 5,

wherein the first aggregation unit (150) is configured to determine the first aggregated value such that the first aggregated value indicates a root mean square of the first audio signal portion or of a signal derived from the first audio signal portion, and

wherein the second aggregation unit (160) is configured to determine the second aggregated value such that the second aggregated value indicates a root mean

square of the second audio signal portion or of a signal derived from the second audio signal portion.

7. An apparatus according to one of the preceding claims, wherein the transform unit ~~(120)~~ is configured to transform the value derived from the second audio signal portion from the second domain to the tracing domain by applying a gain value on the value derived from the second audio signal portion.

8. An apparatus according to claim 7,

wherein the gain value indicates a gain introduced by Linear predictive coding synthesis, or

wherein the gain value indicates a gain introduced by Linear predictive coding synthesis and deemphasis.

9. An apparatus according to one of the preceding claims, wherein the noise level tracing unit ~~(130)~~ is configured to determine noise level information by applying a minimum statistics approach.

10. An apparatus according to one of the preceding claims,

wherein the noise level tracing unit ~~(130)~~ is configured to determine a comfort noise level as the noise level information, and

wherein the reconstruction unit ~~(140)~~ is configured to reconstruct the third audio signal portion depending on the noise level information, if said third frame of the plurality of frames is not received by the receiving interface ~~(110)~~ or if said third frame is received by the receiving interface ~~(110)~~ but is corrupted.

11. An apparatus according to claim 9,

wherein the noise level tracing unit ~~(130)~~ is configured to determine a comfort noise level as the noise level information derived from a noise level spectrum, wherein said noise level spectrum is obtained by applying the minimum statistics approach, and

wherein the reconstruction unit ~~(140)~~ is configured to reconstruct the third audio signal portion depending on a plurality of Linear Predictive coefficients, if said third frame of the plurality of frames is not received by the receiving interface ~~(110)~~ or if said third frame is received by the receiving interface ~~(110)~~ but is corrupted.

12. An apparatus according to one of claims 1 to 9,

wherein the noise level tracing unit ~~(130)~~ is configured to determine a plurality of FFT coefficients indicating a comfort noise level as the noise level information, and

wherein the first reconstruction unit ~~(140)~~ is configured to reconstruct the third audio signal portion depending on a comfort noise level derived from said FFT coefficients, if said third frame of the plurality of frames is not received by the receiving interface ~~(140)~~ or if said third frame is received by the receiving interface ~~(110)~~ but is corrupted.

13. An apparatus according to one of the preceding claims, wherein the reconstruction unit ~~(140)~~ is configured to reconstruct the third audio signal portion depending on the noise level information and depending on the first or the second audio signal portion, if said third frame of the plurality of frames is not received by the receiving interface ~~(110)~~ or if said third frame is received by the receiving interface ~~(110)~~ but is corrupted.

14. An apparatus according to claim 13, wherein the reconstruction unit ~~(140)~~ is configured to reconstruct the third audio signal portion by attenuating or amplifying a signal derived from the first audio signal portion or the second signal portion.

15. An apparatus according to one of the preceding claims,

wherein the apparatus further comprises a long-term prediction unit ~~(170)~~ comprising a delay buffer ~~(180)~~,

wherein the long-term prediction unit ~~(170)~~ is configured to generate a processed signal depending on the first or the second audio signal portion, depending on a delay buffer ~~(180)~~ input being stored in the delay buffer ~~(180)~~ and depending on a long-term prediction gain, and

wherein the long-term prediction unit (170) is configured to fade the long-term prediction gain towards zero, if said third frame of the plurality of frames is not received by the receiving interface (110) or if said third frame is received by the receiving interface (110) but is corrupted.

16. An apparatus according to claim 15, wherein the long-term prediction unit (170) is configured to fade the long-term prediction gain towards zero, wherein a speed with which the long-term prediction gain is faded towards zero depends on a fade-out factor.

17. An apparatus according to claim 15 or 16, wherein the long-term prediction unit (170) is configured to update the delay buffer (180) input by storing the generated processed signal in the delay buffer (180), if said third frame of the plurality of frames is not received by the receiving interface (110) or if said third frame is received by the receiving interface (110) but is corrupted.

18. An apparatus according to one of the preceding claims,

wherein the transform unit (120) is a first transform unit (120),

wherein the reconstruction unit (140) is a first reconstruction unit (140),

wherein the apparatus further comprises a second transform unit (121) and a second reconstruction unit (141),

wherein the second transform unit (121) is configured to transform the noise level information from the tracing domain to the second domain, if a fourth frame of the plurality of frames is not received by the receiving interface (110) or if said fourth frame is received by the receiving interface (110) but is corrupted, and

wherein the second reconstruction unit (141) is configured to reconstruct a fourth audio signal portion of the audio signal depending on the noise level information being represented in the second domain if said fourth frame of the plurality of frames is not received by the receiving interface (110) or if said fourth frame is received by the receiving interface (110) but is corrupted.

19. An apparatus according to claim 18, wherein the second reconstruction unit (141) is configured to reconstruct the fourth audio signal portion depending on the noise level information and depending on the second audio signal portion.

20. An apparatus according to claim 19, wherein the second reconstruction unit (141) is configured to reconstruct the fourth audio signal portion by attenuating or amplifying the second audio signal portion.

21. A method for decoding an audio signal, comprising:

receiving a first frame of a plurality of frames, said first frame comprising a first audio signal portion of the audio signal, said first audio signal portion being represented in a first domain,

receive a second frame of the plurality of frames, said second frame comprising a second audio signal portion of the audio signal,

transforming the second audio signal portion or a value or signal derived from the second audio signal portion from a second domain to a tracing domain to obtain a second signal portion information, wherein the second domain is different from the first domain, wherein the tracing domain is different from the second domain, and wherein the tracing domain is equal to or different from the first domain,

determining noise level information depending on first signal portion information, being represented in the tracing domain, and depending on the second signal portion information being represented in the tracing domain, wherein the first signal portion information depends on the first audio signal portion,

reconstructing a third audio signal portion of the audio signal depending on the noise level information, if a third frame of the plurality of frames is not received or if said third frame is received but is corrupted.

22. A computer program for implementing the method of claim 21 when being executed on a computer or signal processor.