WHAT IS CLAIMED IS:

1. A method for speech processing, the method comprising:

determining by a processor, a first unvoicing parameter for a first subframe of a speech signal, wherein the first unvoicing parameter is determined using a product of $(1-P_{voicing})$ and $(1-P_{tilt})$, wherein $P_{voicing}$ is a periodicity parameter and P_{tilt} is a spectral tilt parameter;

determining by a processor a smoothed first unvoicing parameter for the first subframe according to a smoothed second unvoicing parameter for a second subframe prior to the first subframe of the speech signal;

computing a difference between the first unvoicing parameter for the first subframe and the smoothed first unvoicing parameter for the first subframe;

determining a classification of the first subframe using the computed difference as a decision parameter, the classification indicating whether the first subframe is an unvoiced speech signal or not an unvoiced speech signal; and

performing bandwidth extension on the speech signal for the first subframe, wherein a parameter for performing the bandwidth extension when the classification indicates the first subframe is an unvoiced speech signal is different from a parameter for performing the bandwidth extension when the classification indicates the first subframe is not an unvoiced speech signal.

2. The method of claim 1, wherein the second subframe is adjacent to the first subframe.

3. The method of claim 1, wherein determining the classification of the first subframe comprises determining a classification of the first subframe by comparing the computed difference with a threshold.

4. The method of claim 1,

wherein when the computed difference is greater than 0.1, the first subframe is classified as an unvoiced speech signal; wherein when the computed difference is less than 0.05, the first subframe is classified as not an unvoiced speech signal; and

wherein when the computed difference is not less than 0.05 and not greater than 0.1, the classification of the first subframe is the same as the second subframe.

5. The method of claim 1, wherein the smoothed first unvoicing parameter for the first subframe is a weighted sum of the first unvoicing parameter for the first subframe and the smoothed second unvoicing parameter for the second subframe.

6. The method of claim 5,

wherein a weighting factor of the smoothed second unvoicing parameter for the second subframe is 0.9, and a weighting factor of the first unvoicing parameter for the first subframe is 0.1 when the smoothed second unvoicing parameter for the second subframe is greater than the first unvoicing parameter for the first subframe; and

wherein the weighting factor of the smoothed second unvoicing parameter for the second subframe is 0.99, and the weighting factor of the first unvoicing parameter for the first subframe is 0.01 when the smoothed second unvoicing parameter for the second subframe is not greater than the first unvoicing parameter for the first subframe.

7. The method of claim 1, wherein performing bandwidth extension comprises:

controlling an energy of the first subframe in accordance with the classification of the first subframe.

8. An audio access device comprising a network interface and a CODEC with a decoder, wherein the decoder receives an encoded audio signal via the network interface, and is configured to:

determine a first unvoicing parameter for a first subframe of a speech signal, wherein the first unvoicing parameter is determined using a product of $(1-P_{voicing})$ and $(1-P_{tilt})$, wherein $P_{voicing}$ is a periodicity parameter and P_{tilt} is a spectral tilt parameter;

determine a smoothed first unvoicing parameter for the first subframe according to a smoothed second unvoicing parameter for a second subframe prior to the first subframe of the speech signal;

compute a difference between the first unvoicing parameter for the first subframe and the smoothed first unvoicing parameter for the first subframe;

determine a classification of the first subframe using the computed difference as a decision parameter, the classification indicates whether the first subframe is an unvoiced speech signal or not an unvoiced speech signal; and

perform bandwidth extension on the speech signal, wherein a parameter for performing the bandwidth extension when the classification indicates the first subframe is an

unvoiced speech signal is different from a parameter for performing the bandwidth extension when the classification indicates the first subframe is not an unvoiced speech signal.

9. The audio access device of claim 8, wherein the decoder is a digital signal processor.

10. The audio access device of claim 8, wherein the CODEC is implemented by software running on a processor.

11. A speech processing apparatus comprising:

a processor; and

a non-transitory computer-readable storage medium storing computer instructions, that when executed by the processor, cause the processor to:

determine a first unvoicing parameter for a first subframe of a speech signal, wherein the first unvoicing parameter is determined using a product of $(1-P_{voicing})$ and $(1-P_{tilt})$, wherein $P_{voicing}$ is a periodicity parameter and P_{tilt} is a spectral tilt parameter;

determine a smoothed first unvoicing parameter for the first subframe according to a smoothed second unvoicing parameter for a second subframe prior to the first subframe of the speech signal;

compute a difference between the first unvoicing parameter for the first subframe and the smoothed first unvoicing parameter for the first subframe;

determine a classification of the first subframe using the computed difference as a decision parameter, the classification indicates whether the first subframe is an unvoiced speech signal or not an unvoiced speech signal; and

perform bandwidth extension on the speech signal for the first subframe, wherein a parameter for performing the bandwidth extension when the classification indicates the first subframe is an unvoiced speech signal is different from a parameter for performing the bandwidth extension when the classification indicates the first subframe is not an unvoiced speech signal.

12. The apparatus of claim 11, wherein the second subframe is adjacent to the first subframe.

13. The apparatus of claim 11,

wherein when the computed difference is greater than 0.1, the first subframe is classified as an unvoiced speech signal;

wherein when the computed difference is less than 0.05, the first subframe is classified as not an unvoiced speech signal; and

wherein when the computed difference is not less than 0.05 and not greater than 0.1, the classification of the first subframe is the same as the second subframe.

14. The apparatus of claim 11, wherein the smoothed first unvoicing parameter for the first subframe is a weighted sum of the first unvoicing parameter for the first subframe and the smoothed second unvoicing parameter for the second subframe.

15. The apparatus of claim 14,

wherein a weighting factor of the smoothed second unvoicing parameter for the second subframe is 0.9, and a weighting factor of the first unvoicing parameter for the first subframe is 0.1 when the smoothed second unvoicing parameter for the second subframe is greater than the first unvoicing parameter for the first subframe; and

wherein the weighting factor of the smoothed second unvoicing parameter for the second subframe is 0.99, and the weighting factor of the first unvoicing parameter for the first subframe is 0.01 when the smoothed second unvoicing parameter for the second subframe is not greater than the first unvoicing parameter for the first subframe.

16. The apparatus of claim 11, wherein the computer instructions, when executed by the processor, further cause the processor to:

control an energy of the first subframe in accordance with the classification of the first subframe.

17. A non-transitory computer readable storage medium storing instructions which, when executed by a processor, cause the processor to perform the steps of:

determining a first unvoicing parameter for a first subframe of a speech signal, wherein the first unvoicing parameter is determined using a product of $(1-P_{voicing})$ and $(1-P_{tilt})$, according wherein $P_{voicing}$ is a periodicity parameter and P_{tilt} is a spectral tilt parameter;

determining a smoothed first unvoicing parameter for the first subframe according to a second smoothed unvoicing parameter for a second subframe prior to the first subframe of the speech signal;

computing a difference between the first unvoicing parameter for the first subframe and the smoothed first unvoicing parameter for the first subframe;

determining a classification of the first subframe using the computed difference as a decision parameter, the classification indicating whether the first subframe is an unvoiced speech signal or not an unvoiced speech signal; and

performing bandwidth extension on the speech signal for the first subframe, wherein a parameter for performing the bandwidth extension when the classification indicates the first subframe is an unvoiced speech signal is different from a parameter for performing the bandwidth extension when the classification indicates the first subframe is not an unvoiced speech signal.

18. The computer readable storage medium of claim 17, wherein the smoothed first unvoicing parameter for the first subframe is a weighted sum of the first unvoicing parameter for the first subframe and the smoothed second unvoicing parameter for the second subframe.