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Sung et al.

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(54) **AUDIO SIGNAL ENCODING METHOD AND APPARATUS AND AUDIO SIGNAL DECODING METHOD AND APPARATUS USING PSYCHOACOUSTIC-BASED WEIGHTED ERROR FUNCTION**

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G10L 19/008 (2013.01)
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CPC ***G06N 3/08*** (2013.01); ***G10L 19/008*** (2013.01); ***G10L 19/032*** (2013.01); *G10L 25/30* (2013.01); *G10L 25/69* (2013.01)

(58) **Field of Classification Search**
CPC G06N 3/08
See application file for complete search history.

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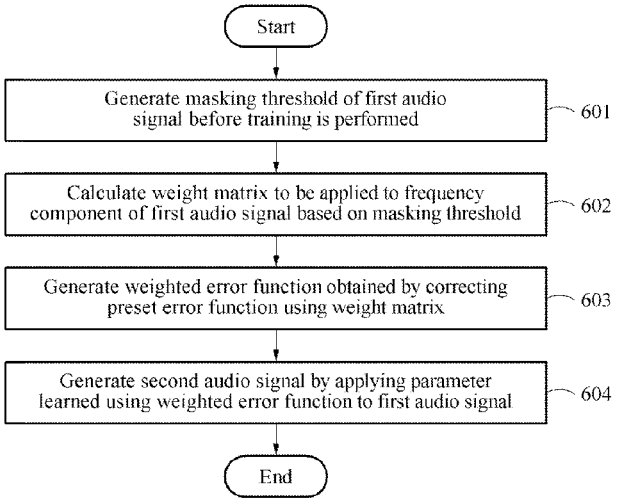
(57) **ABSTRACT**

Provided is a training method of a neural network that is applied to an audio signal encoding method using an audio signal encoding apparatus, the training method including generating a masking threshold of a first audio signal before training is performed, calculating a weight matrix to be applied to a frequency component of the first audio signal based on the masking threshold, generating a weighted error function obtained by correcting a preset error function using the weight matrix, and generating a second audio signal by applying a parameter learned using the weighted error function to the first audio signal.

7 Claims, 11 Drawing Sheets



(51) **Int. Cl.**

G10L 19/032	(2013.01)
G10L 25/30	(2013.01)
G10L 25/69	(2013.01)

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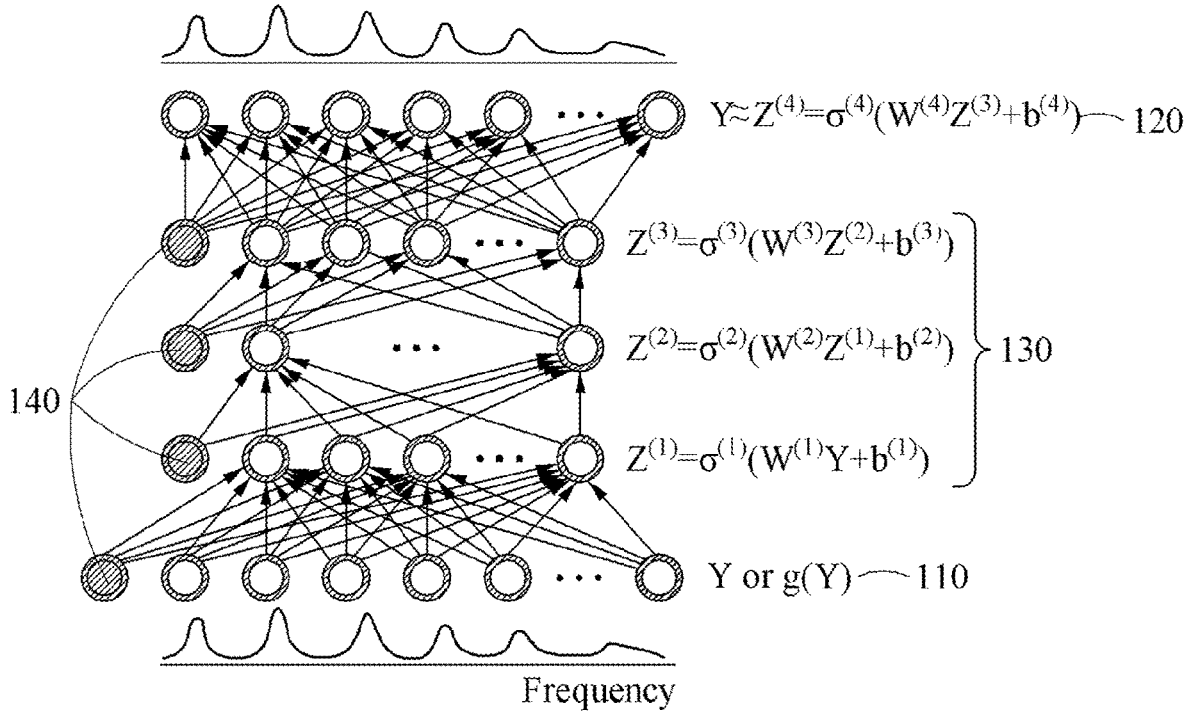
FIG. 1


Y≈Z(4)=σ(4)(W(4)Z(3)+b(4))
120
Z(3)=σ(3)(W(3)Z(2)+b(3))
Z(2)=σ(2)(W(2)Z(1)+b(2))
130
Z(1)=σ(1)(W(1)Y+b(1))
140
Y or g(Y)
110
Frequency