Title (en)

VOICE-CONTROLLED ELECTRONIC MUSICAL INSTRUMENT

Title (de)

DURCH SPRACHE GESTEUERTES ELEKTRONISCHES MUSIKINSTRUMENT

Title (fr)

INSTRUMENT DE MUSIQUE ELECTRONIQUE A COMMANDE VOCALE

Publication

EP 1183677 B1 20050831 (EN)

Application

EP 00936067 A 20000519

Priority

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Abstract (en)

[origin: WO0072303A1] The invention is an electronic, voice-controlled musical instrument. It is in essence an electronic kazoo. The player hums into the mouthpiece, and the device imitates the sound of a musical instrument whose pitch and volume change in response to the player's voice. The player is given the impression of playing the actual instrument and controlling it intimately with the fine nuances of his voice. The instrument can in principle be any music-producing sound source: a trumpet, trombone, clarinet, flute, piano, electric guitar, voice, whistle, even a chorus of voices, *i.e.* virtually any source of sound. In its simplest configuration, the instrument resembles a kind of horn. However, the shape and appearance of the instrument can be fashioned by the manufacturer to match the sound of any traditional instrument, if desired; or its shape can be completely novel. The functional requirements of the invention's physical design are only: that it be hand-held; that it have a mouthpiece (5) where the player's voice enters; that it have one or more speakers (3) where the sound is produced; that it have a body (11) where the electronics and batteries are stored and where finger-actuated controls (1a, 1b) can be placed. Three primary software components of the invention are the frequency-detection module, the loudness-tracking module, and the note-attack module. The frequency-detection module (FDM) identifies the frequency of the player's voice. It does this by analyzing the incoming sound wave and finding patterns of recurring shapes. This method is a highly computationally efficient and novel combination of auto-correlation and zero-crossing- or peak-based pitch detection. The chosen instrument is synthesized at the pitch determined by the FDM or at an offset from that pitch as desired by the player. The loudness-tracking component measures the loudness of the player's voice, and this information is used then to set the volume of the synthesized sound. The not-attack module detects abrupt changes in the loudness of the player's voice. This component helps decide when the synthesized instrument should begin a new note.

IPC 1-7

G10H 5/00

IPC 8 full level

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