

VIDEO SIGNAL DUBBING

The present invention relates to an apparatus and method for the selection of a video signal to be recorded during dubbing.

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Generally, a common video cassette recorder (hereinafter referred to as a "VCR") and a VCR provided with a video camera (hereinafter referred to as "camcorder") are both known as image record/reproducing systems. Such a record/reproducing apparatus incorporates an input/output terminal to
10 input a video signal from an external source, record the signal onto a recording medium, and transmit a reproduced video signal. The VCR or camcorder is provided with a dubbing function for inserting a pictorial image into video programs.

15 Particularly, in the case of the camcorder, during dubbing, only a video signal input from an external source has been possible to record thus far, but not a video signal from a video camera. That is, at the desired time for dubbing during playback, the camcorder is converted from the VCR mode to a still mode, and selects and records an external input signal when a dubbing
20 key has been input in the still mode. It is therefore impossible for the camcorder during dubbing to select a signal output from the video camera, because it lacks the capability to concurrently set the playback and photographing modes.

25 A present-day VCR is able to selectively record video signals either input from an external source during dubbing or video signals generated from a broadcasting receiving apparatus in accordance with the user's selection. However, there has been a problem for both the above-mentioned devices in

that, while the dubbing operation is being carried out with no external signal, only noise present at the input/output terminal is recorded.

Accordingly, preferred embodiments of the present invention aim to
5 provide an apparatus and method for automatic selection of a video signal in an image record/reproducing system having a video signal source, to automatically select and record either a video signal of the video signal source or one input from an external source during a dubbing operation.

10 According to a first aspect of the present invention, there is provided a method of automatically selecting a video signal during dubbing operations in an image record/playback system having a video signal source, comprising the steps of:

15 recognising a dubbing mode request;

in response to the dubbing mode request, selecting, according to a signal selection request of a user and the presence of a video signal of an external source, either a video signal of either said video signal source or the
20 video signal of the external source:

in the absence of said external video signal, automatically selecting the video signal of the video signal source without regard to the users signal selection request; and

25 recording the thus-selected video signal.

Preferably, either one of the video signal of the external source or the video signal from the video signal source is automatically selected according to the presence or absence of the video signal of the external source and an input selection command of a user, to thereby prevent a lack of signal, and
5 to prevent recordal of only noise.

According to another aspect of the present invention, there is provided an apparatus for automatically selecting a video signal during a dubbing operation in an image record/playback system having a video signal source,
10 an input/output terminal for inputting and outputting a video signal from and to an external source, and a record/playback processor for recording or reproducing an applied video signal: said apparatus comprising:

input means for applying a command designated by a user, said input
15 means including a selection means for selecting between said video signal source and the input output terminal:

path control means for controlling connection of one signal selected between signals output from said video signal source and said input/output
20 terminal, to said record/playback processor:

a signal presence detector for detecting whether or not a video signal applied from said input/output terminal is present, following a dubbing mode request command being applied from said input means; and
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a microcomputer for controlling said path control means according to output signals of said signal presence detector and said input means, wherein

said microcomputer controls said path control means without regard to the output signal from said selecting means. once a detection indicative of no video signal being input is given by said signal presence detector, to cause the output of said video signal source to be applied to said record/play back processor.

Preferably, either one of the external video signal applied from said input/output terminal or an output signal from the video signal source is automatically selected according to the presence or absence of the external video signal and an input selection command of a user, to thereby prevent a lack of signal and to prevent recordal of only noise.

Preferably said video signal source comprises a camera or a broadcast receiving apparatus.

The invention extends to an image record/playback system comprising apparatus, or adapted to operate in accordance with a method, according to any of the preceding aspects of the invention.

For a better understanding of the invention, and to show how the same may be carried into effect, reference will now be made by way of example, to the accompanying diagrammatic drawings, in which:

Figures 1A and 1B are a flowchart for explaining one example of a video signal selecting method during a dubbing operation in accordance with the present invention; and

Figure 2 is a schematic block diagram of one example of a system for executing the process as shown in Figure 1.

Referring to Figures 1A and 1B, steps 101 through 109 represent a process for dubbing mode recognition, while steps 110 through 114 represent a process for signal selection, and steps 115 through 119 are for the selected signal recording process.

Figure 2, illustrating the system for executing the flowchart shown in Figure 1, is schematic block diagram of a camcorder, i.e. a VCR provided with a camera.

Reference is now made to Figure 2.

An input means 20 for applying a user-designated command comprises a keypad for inputting a general operation command from the user to a microcomputer 10 in the form of key data, and a selection switch SW2 for supplying a camera/VCR mode (hereinafter referred to as a "CAM/VCR mode") selection signal to the microcomputer 10 by the user. If the output of selection switch SW2 is high, then the operational mode of the camcorder is set to a camera mode, while a VCR mode is set when a low signal is output.

Microcomputer 10 controls a camera 30, a deck 40, a control switch SW1, and a record/playback processor 50, all shown in Figure 2, by the signals output from both selection switch SW2 and keypad 21 of input means 20, and also controls peripheral circuits not shown in the drawing.

The camera 30 operates under the control of microcomputer 10, converting the optical image of an object into a video signal, which serves as a video signal source in the present embodiment. A signal presence detector 60 detects the presence of a video signal at an input/output terminal 5 so as to supply the resultant information to the microcomputer in the form of a logic signal. Under the control of microcomputer 10, control switch SW1 connects the first input/output terminal I/01 of record/playback processor 50 to the output terminal of camera 30 or to input/output terminal 5 so as to control the signal transmission path.

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Under the control of the microcomputer, record/playback processor 50 processes for recording either the output video signal of camera 30 or an external video signal of input/output terminal 5, each of which is input through control switch SW1 to first input/output terminal I/01, and then supplies a so-processed video signal for recording to deck 40 through a second input/output terminal I/02, or alternatively, processes for playback and reading a read out video signal which is applied to the second input/output terminal I/02 from deck 40 and then transmits the so-processed video signal to control switch SW1 through the first input/output terminal I/02.

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Also under the control of microcomputer 10, the deck 40 drives a recording medium incorporated therein, and records the video signal for recording which is applied from the second input/output terminal I/02 of record/playback processor 50 onto the recording medium being driven, or reads out the recorded video signal from the recording medium being driven to supply the second input/output terminal I/02 of record/playback processor 50.

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Given below is an explanation in greater detail with respect to the flowchart shown in Figure 1 in conjunction with the block diagram illustrated in Figure 2. The process as illustrated in the flowchart of Figure 1 is executed by the operation of microcomputer 10 shown in the block diagram of Figure 2. Microcomputer 10 is provided with a ROM in which the whole process as shown in Figure 1 is stored, a RAM, a variety of registers as well as operation buffers.

When power is supplied, microcomputer 10 initializes the system and sets a still mode flag allotted to the register incorporated therein to set up a still mode (STEP 101). After execution of step 101, the microcomputer inspects the logic state of the CAM/VCR mode selection signal, i.e. the output of selection switch SW2, to determine whether the current state is for camera mode (logic state = "1") or for VCR mode (logic state = "0") (STEP 102).

If the logic state in step 102 designates the camera mode, then microcomputer 10 controls control switch SW1, connecting the first input/output terminal I/O1 of record/playback processor 50 to the output terminal of camera 30, and sets deck 40 to a stand-by recording mode (STEP 103). After execution of step 103, microcomputer 10 controls camera 30 to operate, controls deck 40 in stand by state to record, and controls record/playback processor 50 to record (STEP 104).

If the logic state in step 102 designates the VCR mode, microcomputer 10 inspects whether or not key data designating the playback mode has been input from keypad 21, and if not, returns to step 101. If key data designating the playback mode has been input in step 105, then microcomputer 10

controls control switch SW1 so as to connect the first input/output terminal I/O1 of record/playback processor 50 to an input/output terminal 5, and then also controls record/playback processor 50 and deck 40 so that both perform a playback operation (STEP 106).

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After execution of step 106, microcomputer 10 inspects whether or not key data designating the still mode has been input from keypad 21 and, if not, then returns to step 106 (STEP 107). For a "YES" condition in step 107, the microcomputer controls deck 40 to repeatedly read out a viewing block of a recording medium driven therein (STEP 108). After execution of step 108, microcomputer 10 stands by until after key data designating the dubbing mode has been input (STEP 109).

The microcomputer then controls deck 40 to keep it in a temporary still state after the input of key data designating the dubbing mode (STEP 110). After execution of step 110, microcomputer 10 inspects the logic state of an output signal from signal presence detector 60 and determines whether there is a video signal input from an external source through input/output terminal 5 (STEP 111). If and when there is a signal in the previous step 111, the microcomputer inspects the logic state of the CAM/VCR mode selection signal which is the output of selection switch SW2 (STEP 112).

If the CAM/VCR mode selection signal is high in step 112, i.e. the camera mode, then microcomputer 10 controls control switch SW1, regardless of whether a video signal is input to input/output terminal 5 in step 111, to connect the first input/output terminal I/O1 of record/playback processor 50 to the output terminal of camera 30 (STEP 113).

Conversely, if and when the CAM/VCR mode selection signal is low, i.e. the VCR mode, then microcomputer 10 controls control switch SW1 to connect the first input/output terminal I/O1 of record/playback processor 50 to input/output terminal 5 (STEP 114). In the case of no video signal being input through input/output terminal 5 in step 111, the microcomputer 10 controls control switch SW1 without regard to the logic state of the output signal from selection switch SW2, thereby connecting the first input/output terminal I/O1 of record/playback processor 50 to the output terminal of camera 30.

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After execution of either step 113 or step 114, microcomputer 10 inspects whether or not key data releasing the temporary still mode of deck has been input and, if not, then returns to step 110 (STEP 115). For the "YES" condition in step 115, microcomputer 10 then controls both deck 40 and record/playback processor 50 to operate (STEP 116).

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After execution of step 116, microcomputer 10 inspects the logic state of the output signal from selection switch SW2, and if it has been changed, then returns to step 112 (STEP 117). If and when the state has not changed in step 117, then microcomputer 10 inspects whether or not key data for dubbing release has been input from keypad 21 and, if not, then returns to step 116 (STEP 118). For the "YES" condition in 118, the microcomputer controls deck 40, record/playback processor 50 and camera 30 to cease operation (STEP 119).

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As explained above, in steps 111 through step 114, either an output video signal from camera 30 or an external video signal from input/output terminal 5 is automatically selected according to the existence of a video

signal input from an external source to input/output terminal 5 and a user-designated CAM/VCR mode selection. That is to say, a video signal from camera 30 is automatically selected in the case of no external video signal input; however, if an external video signal is provided and the user designates the camera mode, then the output of camera 30 is selected. If the VCR mode is designated by the user as well as an external video signal supplied, then the external video signal at input/output terminal 5 is selected. In addition, when a corresponding embodiment of the present invention is applied in a common VCR, a broadcasting receiving apparatus comprising a tuner may serve as the video signal source.

The illustrated embodiment of the present invention, as explained and described, has an advantage in that, during a dubbing operation, either one of an external video signal or the output of a video signal source is automatically selected according to the presence or absence of an external video signal input and the input selection command of a user, thereby to prevent the formation of any section lacking a signal and where noise only is recorded. Especially, in embodiments of this invention applied to a camcorder, the output of a camera portion thereof can be recorded during the dubbing operation.



CLAIMS

1. A method of automatically selecting a video signal during dubbing operations in an image record/playback system having a video signal source,
5 comprising the steps of:

recognising a dubbing mode request:

- in response to the dubbing mode request, selecting, according to a
10 signal selection request of a user and the presence of a video signal of an external source, either a video signal of said video signal source or the video signal of the external source:

- in the absence of said video signal of the external source, automatically
15 selecting the video signal of the video signal source without regard to the users signal selection request; and

recording the thus-selected video signal.

- 20 2. A method of automatically selecting a video signal during dubbing operations according to claim 1, in which either one of the video signal of the external source or the video signal from the video signal source is automatically selected according to the presence or absence of the video signal of the external source and an input selection command of a user, to thereby
25 prevent a lack of signal, and to prevent recordal of only noise.

3. An apparatus for automatically selecting a video signal during a dubbing operation in an image record/playback system having a video signal



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source, an input/output terminal for inputting and outputting a video signal from and to an external source, and a record/playback processor for recording or reproducing an applied video signal: said apparatus comprising:

5 input means for applying a command designated by a user, said input means including a selection means for selecting between said video signal source and the input output terminal:

10 path control means for controlling connection of one signal selected between signals output from said video signal source and said input/output terminal, to said record/playback processor:

15 a signal presence detector for detecting whether or not a video signal applied from said input/output terminal is present, following a dubbing mode request command being applied from said input means; and

 a microcomputer for controlling said path control means according to output signals of said signal presence detector and said input means, wherein

20 said microcomputer controls said path control means without regard to the output signal from said selecting means. once a detection indicative of no video signal being input is given by said signal presence detector, to cause the output of said video signal source to be applied to said record/play back processor.

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4. An apparatus according to Claim 3, for automatically selecting a video signal during a dubbing operation, in which either one of the external video signal applied from said input/output terminal or an output signal from the



video signal source is automatically selected according to the presence or absence of the external video signal and an input selection command of a user, to thereby prevent a lack of signal and to prevent recordal of only noise.

- 5 5. An apparatus according to Claim 3 or 4 for automatically selecting a video signal during a dubbing operation, in which said video signal source comprises a camera or a broadcast receiving apparatus.
- 10 6. An automatic selection method for a video signal during dubbing substantially as hereinbefore described with reference to the accompanying drawings.
- 15 7. An automatic selection apparatus for a video signal during dubbing substantially as hereinbefore described with reference to the accompanying drawings.
- 20 8. An image record/playback system comprising apparatus, or adapted to operate in accordance with a method, according to any of the preceding claims.
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