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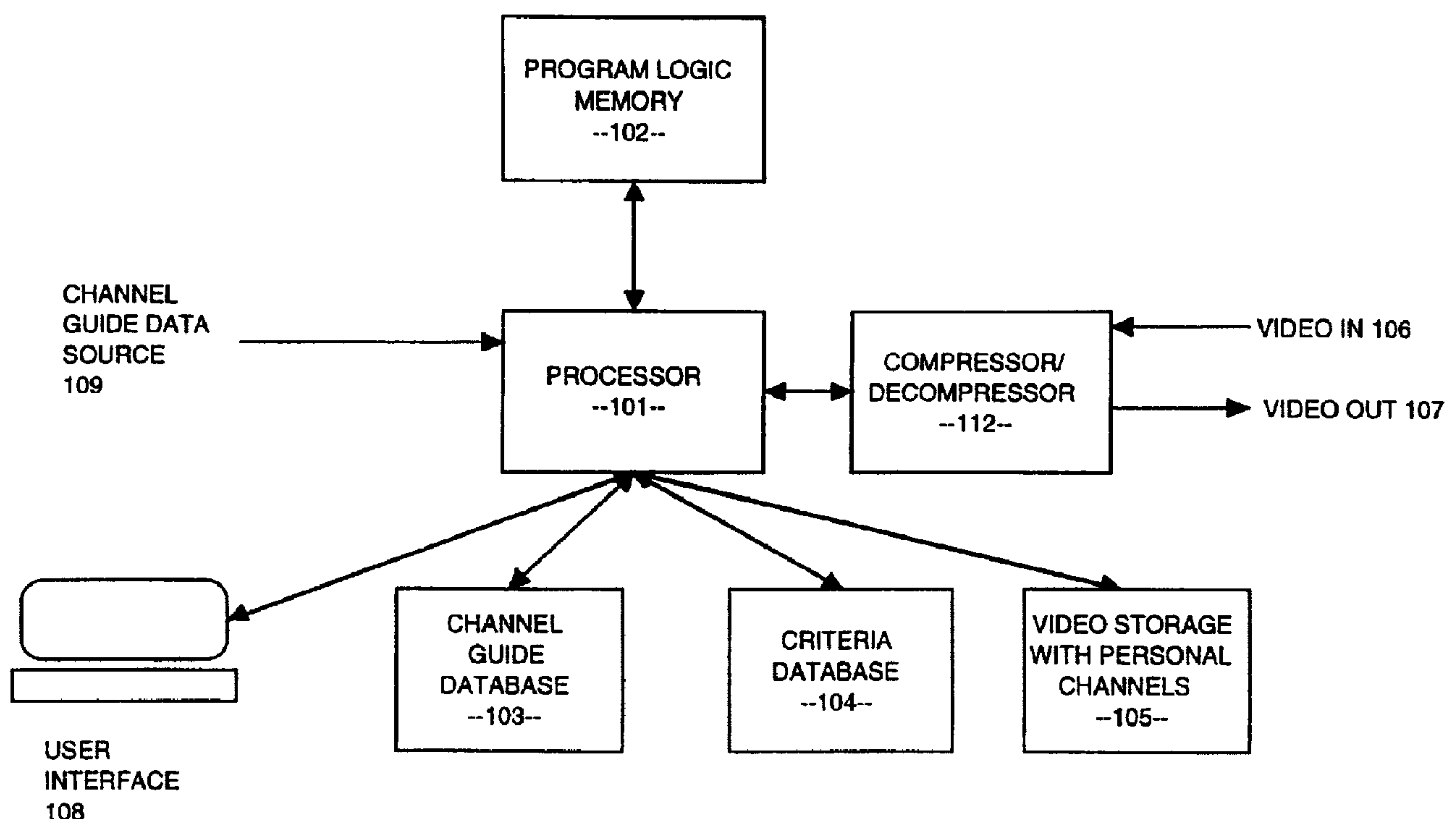
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(54) Titre : PROCEDE ET APPAREIL D'AVANCE RAPIDE OU DE REMBOBINAGE DANS UN DISPOSITIF  
D'ENREGISTREMENT VIDEO

(54) Title: METHOD AND APPARATUS FOR FAST FORWARDING AND REWINDING IN A VIDEO RECORDING  
DEVICE



(57) Abrégé/Abstract:

A method and apparatus providing for "instant replays" and "quick skip" functionality in a media playback device (201). In the case of an instant replay, under user control, the media playback moves temporally backwards (202). In the case of quick skip, under user control, the media playback moves temporally forward (203). In one embodiment, the temporal movement is based on a predetermined time (e.g., move back 5 seconds, move forward 30 seconds). In another embodiment, the temporal movement is based on scene change analysis.

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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top; padding: 5px;"> <b>(21) International Application Number:</b> PCT/US99/17792  <b>(22) International Filing Date:</b> 6 August 1999 (06.08.99)  <b>(30) Priority Data:</b>  <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="text-align: left;">09/130,994</div> <div style="text-align: left;">7 August 1998 (07.08.98)</div> <div style="text-align: left;">US</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="text-align: left;">09/131,092</div> <div style="text-align: left;">7 August 1998 (07.08.98)</div> <div style="text-align: left;">US</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="text-align: left;">09/131,091</div> <div style="text-align: left;">7 August 1998 (07.08.98)</div> <div style="text-align: left;">US</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="text-align: left;">09/290,374</div> <div style="text-align: left;">12 April 1999 (12.04.99)</div> <div style="text-align: left;">US</div> </div>   <b>(71)(72) Applicants and Inventors:</b> WOOD, Anthony [US/US]; 1 Somerset Place, Palo Alto, CA 94301 (US). WOODWARD, Donald, Jr. [US/US]; 610 Nandell Lane, Los Altos, CA 94024 (US). SHANNON, Doug [US/US]; 742 Georgia Avenue, Sunnyvale, CA 94086 (US).    <b>(74) Agents:</b> CALDWELL, Gregory, D. et al.; Blakely, Sokoloff, Taylor &amp; Zafman, 7th floor, 12400 Wilshire Boulevard, Los Angeles, CA 90025-1026 (US).         </td> <td style="width: 50%; vertical-align: top; padding: 5px;"> <b>(81) Designated States:</b> AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).    <b>Published</b>  <i>With international search report.</i> </td> </tr> </table>			<b>(21) International Application Number:</b> PCT/US99/17792 <b>(22) International Filing Date:</b> 6 August 1999 (06.08.99) <b>(30) Priority Data:</b> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="text-align: left;">09/130,994</div> <div style="text-align: left;">7 August 1998 (07.08.98)</div> <div style="text-align: left;">US</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="text-align: left;">09/131,092</div> <div style="text-align: left;">7 August 1998 (07.08.98)</div> <div style="text-align: left;">US</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="text-align: left;">09/131,091</div> <div style="text-align: left;">7 August 1998 (07.08.98)</div> <div style="text-align: left;">US</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="text-align: left;">09/290,374</div> <div style="text-align: left;">12 April 1999 (12.04.99)</div> <div style="text-align: left;">US</div> </div> <b>(71)(72) Applicants and Inventors:</b> WOOD, Anthony [US/US]; 1 Somerset Place, Palo Alto, CA 94301 (US). WOODWARD, Donald, Jr. [US/US]; 610 Nandell Lane, Los Altos, CA 94024 (US). SHANNON, Doug [US/US]; 742 Georgia Avenue, Sunnyvale, CA 94086 (US).  <b>(74) Agents:</b> CALDWELL, Gregory, D. et al.; Blakely, Sokoloff, Taylor & Zafman, 7th floor, 12400 Wilshire Boulevard, Los Angeles, CA 90025-1026 (US).	<b>(81) Designated States:</b> AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i>
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<pre> graph TD     A[TEMPORAL MOVEMENT] --&gt; B[PLAY MEDIA AT A FIRST TEMPORAL LOCATION --201--]     B --&gt; C[USER SELECTS TEMPORAL MOVEMENT FUNCTION --202--]     C --&gt; D[TEMPORALLY MOVE THROUGH AT A FIRST RATE IF THE USER SELECTS THE TEMPORAL MOVEMENT FUNCTION FOR A FIRST PERIOD OF TIME AND AT A SECOND RATE IF THE USER SELECTS THE TEMPORAL MOVEMENT FUNCTION FOR A SECOND PERIOD OF TIME --203--]     D --&gt; E[END]           </pre>				

METHOD AND APPARATUS FOR FAST FORWARDING AND REWINDING  
IN A VIDEO RECORDING DEVICE

BACKGROUND OF THE INVENTION

1. FIELD OF THE INVENTION

The present invention relates to media viewing devices and, more specifically, to video viewing devices. In certain embodiments, the present invention may also have application to audio recording devices.

2. DESCRIPTION OF THE RELATED ART

Video data recorders are well-known in the art. Initially, video data recorders were designed to record video signals on video tape and to allow play back of recorded video signals from the tape. Of course, video tapes require sequential recording and playback limiting the functionality of such machines.

Disk-based video playback machines have been introduced such as video disks and more recently digital video disk machines. These machines may be generally characterized



as providing a removable randomly accessed disk allow for the storage and playback of video signals.

United States Patent No. 5,241,428 (the '428 patent) describes a video recording and playback device. The described system provides for simultaneous playback and recording of video signals on a randomly accessed recording medium. By allowing simultaneous recording and playback of video signals and by allowing for random access of the recording medium, additional functionality may be provided beyond that realized by a video tape recording machine.

While the '428 patent describes a randomly accessed video recording and playback device, it fails to describe or suggest significant functionality which may be implemented in such a device.

Thus, what is needed is an improved video data recorder having increased functionality.

### SUMMARY OF THE INVENTION

A method and apparatus providing for "instant replays" and "quick skip" functionality in a medium playback device is described. In the case of an instant replay, under user control, the medium playback moves temporally backwards. In the case of quick skip, under user control, the medium playback moves temporally forward.

In one embodiment, the temporal movement is based on a predetermined time (e.g., move back 5 seconds, move forward 30 seconds). In another embodiment, the temporal movement is based on scene change analysis.

Accordingly, in one aspect, the present invention provides a method for playback of a medium comprising the steps of: (a) playing the medium; (b) allowing a user to select a function, the medium being played at a first location at the time the user selects the function; and

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(c) playing the medium at a second location responsive to the user selecting the function, the second location a predetermined distance from the first location.

In a further aspect, the present invention provides a method for playback of a medium comprising the steps of: (a) playing the medium; (b) allowing a user to select an instant replay function, the medium being played at a first location at the time the user selects the instant replay function; and (c) playing the medium at a second location responsive to the user selecting the instant replay function, the second location a predetermined temporal distance before the first location.

In a still further aspect, the present invention provides a method for playback of a medium comprising the steps of: (a) playing the medium; (b) allowing a user to select a forward function, the medium being played at a first location at the time the user selects the forward function; and (c) playing the medium at a second location responsive to the user selecting the forward function, the second location a predetermined temporal distance after the first location.

In a further aspect, the present invention provides a method of playback of a medium comprising the steps of: (a) playing the medium; (b) a user activating a temporal movement function; and (c) responsive to the user activating the temporal movement function, temporally moving through the medium at a first speed if the user activates the temporal movement function for a first period of time and at a second speed if the user activates the temporal movement function for a second period of time.

In a further aspect, the present invention provides a method for playback of medium comprising the steps of: (a) playing the medium; (b) a user activating a temporal movement function; and (c) responsive to the user activating the temporal movement function, temporally moving through the medium at a first speed if the user activates the temporal movement function



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for a first period of time and increasing the speed of temporal movement if the user continues to activate the temporal movement function for longer than the first period of time.

In a still further aspect, the present invention provides a method for playback of medium comprising the steps of: (a) playing the medium; (b) allowing a user to select a function, the medium being played at a first location at the time the user selects the function; and (c) playing the medium at a second location responsive to the user selecting the function, the second location determined based on examination of frames of the medium.

In a further aspect, the present invention provides a method comprising: accessing a medium at a first point of access; receiving a command from a user; and accessing the medium at a second point of access in response to receipt of the command, the second point of access a predetermined temporal shift from the first point of access.

In a still further aspect, the present invention provides a method comprising: accessing a medium at a first point of access; receiving a command from a user; examining frames of the medium in response to receipt of the command to determine a second point of access, the second point of access corresponding to a detected scene change; and accessing the medium at the second point of access.

In a further aspect, the present invention provides an apparatus comprising: a user interface; a storage medium; and a processor coupled with the user interface and the storage medium, the processor to: access the storage medium at a first point of access; receive a command from the user interface; and access the storage medium at a second point of access in response to receipt of the command, the second point of access a predetermined temporal shift from the first point of access.

In a still further aspect, the present invention provides an apparatus comprising: a user interface; a storage medium; and a processor coupled with the user interface and the storage

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medium, the processor to: access the storage medium at a first point of access; receive a command from the user interface; examine frames stored on the storage medium in response to receipt of the command to determine a second point of access, the second point of access corresponding to a detected scene change; and access the storage medium at the second point of access.

In a still further aspect, the present invention provides an article of manufacture comprising: a machine accessible medium providing content that, when accessed by a machine, causes the machine to: access a storage medium at a first point of access; receive a command from a user; and access the storage medium at a second point of access in response to receipt of the command, the second point of access a predetermined temporal shift from the first point of access.

In a still further aspect, the present invention provides an article of manufacture comprising: a machine accessible medium providing content that, when accessed by a machine, causes the machine to: access a storage medium at a first point of access; receive a command from a user; examine frames of the storage medium in response to receipt of the command to determine a second point of access, the second point of access corresponding to a detected scene change; and access the storage medium at the second point of access.

### BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a high level block diagram illustrating a video data recorder of an embodiment of the present invention.

Figure 2 is a flow diagram a method of user controlled temporal movement through medium.

Figure 3 is a flow diagram of a second method of user controlled temporal movement through medium.

For ease of reference, it might be pointed out that reference numerals in all of the accompanying drawings typically are in the form "drawing number" followed by two digits, xx; for example, reference numerals on Figure 1 may be numbered 1xx; on Figure 3, reference numerals may be numbered 3xx. In certain cases, a reference numeral may be introduced on one drawing and the same reference numeral may be utilized on other drawings to refer to the same item.

### DETAILED DESCRIPTION OF THE EMBODIMENTS THE PRESENT INVENTION

#### Block Diagram Architecture of the VDR

Figure 1 provides a high-level block diagram view of a video data recorder (VDR) as may utilize the present invention.

A processor 101 is coupled in communication with a channel guide database 103, a criteria database 104, video storage 105 (also referred to as the recording medium), program



logic memory 102, a video compressor/decompressor 112, a video input source 106, a video output 107, a channel guide data source 109 and a user interface 108.

The processor 101 may be any of a plurality of commercially available processors such as the a processor from the Motorola 68000 series of processors, a processor from the Intel 8086 family of processors or a higher level processor such as a processor from the Intel Pentium™ family of processors or from the Motorola PowerPC™ family of processors. The processor in the described embodiment acts under program control by a program stored in program logic memory 102 to perform functions, such as "fast forwarding" and "rewinding", which will be described in greater detail below.

The channel guide data source 109 provides periodic updates to the local channel guide database 103. The channel guide data source 109 provides program titles, start times, end times, channel information and other criteria (such as ratings, descriptions of shows, names of actors, producers, directors, awards and rating information) regarding channel programming. Channel guide data sources are available commercially from TVGuide™, TV Data, and Tribune media. The channel guide source may be accessed periodically to obtain changes and additions over any of a number of communication mediums. For example, the channel guide source may be accessed telephonically by a modem connection to a server or by receiving broadcasted updates and changes from a source such as satellite or terrestrial VBI, national pager network or the internet. In other embodiments, the channel guide source may be obtained periodically such as by subscription and received on a recording medium such as a disk through the mail or other source.

The video input source 106 may be any of a number of sources including cable, over-the-air broadcast and satellite. In certain embodiments, multiple video input sources may be utilized. The video output source 107 is typically coupled with a display device such as a television but may also be coupled with another video data recorder.

The video compressor/decompressor 112 provides for compressing and decompressing the video signal. Any commercially available compression technology may be utilized including by way of example MPEG and MPEG II.

In alternative embodiments, the data may be received in a compressed format. In such an embodiment, the compressor may not be utilized or even required and the decompressor may only be utilized to decompress the compressed signals.

#### Temporal movement through the media

Importantly, the disclosed embodiment provides certain user interface features. For example, in the disclosed embodiment it is possible to fast forward and rewind through recorded programming.

In one embodiment, the user may increase the rate of fast forwarding and/or rewinding by continuing to depress the fast forward and/or rewind button for a period of time. For example, if the button is pressed instantaneously, the system may fast forward or rewind at one speed and the speed may continuously increase the longer the button is depressed. This feature is described in connection with Figure 2 which illustrates initially that the medium is playing at a first temporal location, block 201. The user selects a temporal movement function (e.g., the fast forward or rewind button on the remote control), block 202.

Responsive to selection of the temporal movement function, rate of playback of the medium increased to a first rate if the temporal movement function is selected for a first period of time and at a second rate if the temporal movement function is selected for a second period of time, block 203.

In addition, the described embodiment provides an instant replay function. The user may depress the instant replay button and the system will automatically "rewind" (move the point of viewing of the programming back in time, e.g., back temporally) a predetermined amount (e.g. 5 seconds) in the programming.

The described embodiment also provides a function for quickly advancing a predetermined temporal amount forward (e.g. 30 seconds). In certain embodiments, the predetermined temporal amount to move forward is chosen based on the length of a typical commercial allowing the user to quickly skip through commercials.

Figure 3 illustrates an overall flow diagram of a method of moving a predetermined temporal distance, based on user activation of function. The user function may be activated, for example, by the user depressing a button on a remote control device. As is illustrated by Figure 3, initially, the medium (which is illustrated in the figure as being video but in alternative embodiments may be audio or any other type of medium or media) is playing a first temporal location, block 301. The user selects a temporal movement function, block 302. As was just discussed, the temporal movement may be either a predetermined distance forward or a predetermined distance backward. Responsive to the user selecting the temporal movement function, the play resumes at a second position temporally forward from or temporally backward from the first position.



In both the case of moving temporally forward and temporally backward, the predetermined period of time may be set by the manufacturer of the device or may be user settable.

In an alternative embodiment, the movement backward or forward may be based on scene change analysis. For example, the "instant replay" function may skip back to the immediately preceding scene based on analysis of video frames and attempting to look for a scene change.

It is understood that the present invention may be used with different types of media and is not restricted to one type of medium.

Thus, what has been disclosed is an improved video data recorder.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A method for playback of a medium comprising the steps of:
  - (a) playing the medium;
  - (b) allowing a user to select a function, the medium being played at a first location at the time the user selects the function; and
  - (c) playing the medium at a second location responsive to the user selecting the function, the second location a predetermined distance from the first location.
2. The method as recited by claim 1 wherein the predetermined distance is a temporal distance.
3. The method as recited by claim 2 wherein the predetermined temporal distance is ahead of the first location.
4. The method as recited by claim 2 wherein the predetermined temporal distance is behind the first location.
5. The method as recited by claim 2 wherein the medium comprises a video medium.
6. The method as recited by claim 1 wherein the medium comprises an audio medium.
7. The method as recited by claim 1 wherein the predetermined distance is user selectable.

8. A method for playback of a medium comprising the steps of:
  - (a) playing the medium;
  - (b) allowing a user to select an instant reply function, the medium being played at a first location at the time the user selects the instant replay function; and
  - (c) playing the medium at a second location responsive to the user selecting the instant replay function, the second location a predetermined temporal distance before the first location.
9. The method as recited by claim 8 wherein the medium comprises a video medium.
10. The method as recited by claim 8 wherein the medium comprises an audio medium.
11. The method as recited by claim 8 wherein the predetermined temporal distance is user selectable.
12. A method for playback of a medium comprising the steps of:
  - (a) playing the medium;
  - (b) allowing a user to select a forward function, the medium being played at a first location at the time the user selects the forward function; and
  - (c) playing the medium at a second location responsive to the user selecting the forward function, the second location a predetermined temporal distance after the first location.
13. The method as recited by claim 12 wherein the medium comprises a video medium.



14. The method as recited by claim 12 wherein the medium comprises an audio medium.
15. The method as recited by claim 12 wherein the predetermined temporal distance is user selectable.
16. A method of playback of a medium comprising the steps of:
  - (a) playing the medium;
  - (b) a user activating a temporal movement function; and
  - (c) responsive to the user activating the temporal movement function, temporally moving through the medium at a first speed if the user activates the temporal movement function for a first period of time and at a second speed if the user activates the temporal movement function for a second period of time.
17. The method as recited by claim 16 wherein the medium comprises a video medium.
18. The method as recited by claim 16 wherein the medium comprises an audio medium.
19. The method as recited by claim 16 wherein the temporal movement is forward.
20. The method as recited by claim 16 wherein the temporal movement is backward.
21. A method for playback of medium comprising the steps of:
  - (a) playing the medium;

- (b) a user activating a temporal movement function; and
  - (c) responsive to the user activating the temporal movement function, temporally moving through the medium at a first speed if the user activates the temporal movement function for a first period of time and increasing the speed of temporal movement if the user continues to activate the temporal movement function for longer than the first period of time.
22. The method as recited by claim 21 wherein the medium comprises a video medium.
23. The method as recited by claim 21 wherein the medium comprises an audio medium.
24. The method as recited by claim 21 wherein the temporal movement is forward.
25. The method as recited by claim 21 wherein the temporal movement is backward.
26. A method for playback of medium comprising the steps of:
- (d) playing the medium;
  - (e) allowing a user to select a function, the medium being played at a first location at the time the user selects the function; and
  - (f) playing the medium at a second location responsive to the user selecting the function, the second location determined based on examination of frames of the medium.

27. The method as recited by claim 26 wherein the second location is temporally ahead of the first location.
28. The method as recited by claim 26 wherein the second location is temporally behind the first location.
29. The method as recited by claim 26 wherein the medium comprises a video medium.
30. The method as recited by claim 26 wherein the frames are examined for scene changes.
31. A method comprising:
  - accessing a medium at a first point of access;
  - receiving a command from a user; and
  - accessing the medium at a second point of access in response to receipt of the command, the second point of access a predetermined temporal shift from the first point of access.
32. The method of claim 31, wherein the second point of access is temporally ahead of the first point of access.
33. The method of claim 31, wherein the second point of access is temporally behind the first point of access.
34. The method of claim 31, wherein the medium comprising a video medium.



35. The method of claim 31, wherein the predetermined temporal shift is user selectable.
36. A method comprising:  
accessing a medium at a first point of access;  
receiving a command from a user;  
examining frames of the medium in response to receipt of the command to determine a second point of access, the second point of access corresponding to a detected scene change; and  
accessing the medium at the second point of access.
37. The method of claim 36, wherein the second point of access is temporally ahead of the first point of access.
38. The method of claim 36, wherein the second point of access is temporally behind the first point of access.
39. The method of claim 36, wherein the medium comprises a video medium.
40. An apparatus comprising:  
a user interface;  
a storage medium; and  
a processor coupled with the user interface and the storage medium, the processor to:  
access the storage medium at a first point of access;  
receive a command from the user interface; and

access the storage medium at a second point of access in response to receipt of the command, the second point of access a predetermined temporal shift from the first point of access.

41. The apparatus of claim 40, wherein the second point of access is temporally ahead of the first point of access.

42. The apparatus of claim 40, wherein the second point of access is temporally behind the first point of access.

43. The apparatus of claim 40, wherein the storage medium comprises a randomly accessible storage medium.

44. The apparatus of claim 40, wherein the predetermined temporal shift is user selectable, the user interface to receive selected values of the predetermined temporal shift from a user.

45. The apparatus of claim 40, further comprising a memory coupled with the processor.

46. An apparatus comprising:

a user interface;

a storage medium; and

a processor coupled with the user interface and the storage medium, the processor to:

access the storage medium at a first point of access;

receive a command from the user interface;

examine frames stored on the storage medium in response to receipt of the command to determine a second point of access, the second point of access corresponding to a detected scene change; and  
access the storage medium at the second point of access.

47. The apparatus of claim 46, wherein the second point of access is temporally ahead of the first point of access.

48. The apparatus of claim 46, wherein the second point of access is temporally behind the first point of access.

49. The apparatus of claim 46, wherein the storage medium comprises a randomly accessible storage medium.

50. The apparatus of claim 46, further comprising a memory coupled with the processor.

51. An article of manufacture comprising:

a machine accessible medium providing content that, when accessed by a machine, causes the machine to:

access a storage medium at a first point of access;

receive a command from a user; and

access the storage medium at a second point of access in response to receipt of the command, the second point of access a predetermined temporal shift from the first point of access.



52. The article of manufacture of claim 51, wherein the second point of access is temporally ahead of the first point of access.

53. The article of manufacture of claim 51, wherein the second point of access is temporally behind the first point of access.

54. The article of manufacture of claim 51, wherein the storage medium comprises a video medium.

55. The article of manufacture of claim 51, wherein the predetermined temporal shift is user selectable.

56. An article of manufacture comprising:

a machine accessible medium providing content that, when accessed by a machine, causes the machine to:

access a storage medium at a first point of access;

receive a command from a user;

examine frames of the storage medium in response to receipt of the command to

determine a second point of access, the second point of access corresponding to a

detected scene change; and

access the storage medium at the second point of access.

57. The article of manufacture of claim 56, wherein the second point of access is temporally ahead of the first point of access.

58. The article of manufacture of claim 56, wherein the second point of access is temporally behind the first point of access.

59. The article of manufacture of claim 56, wherein the storage medium comprises a video medium.

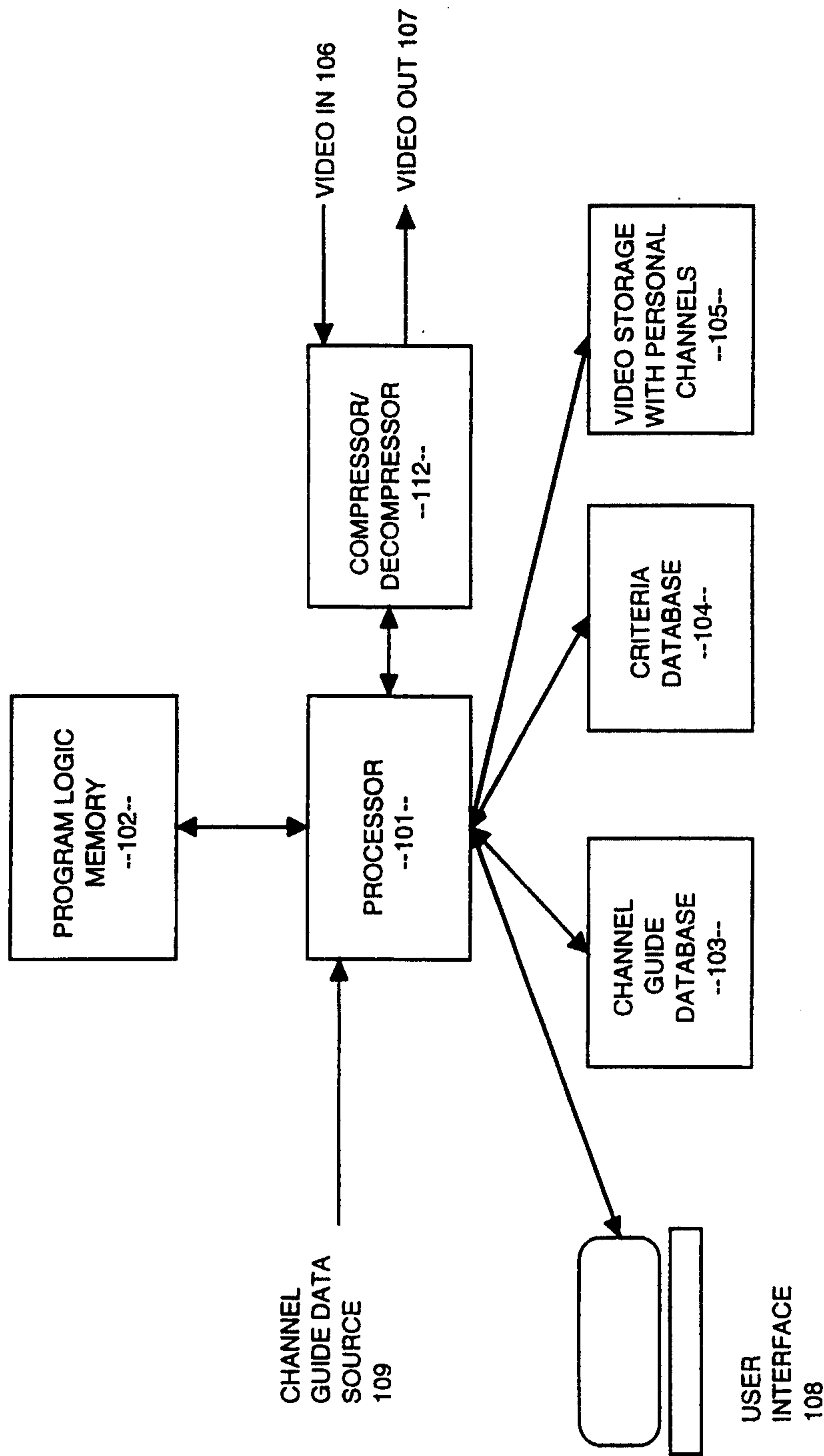


FIGURE 1



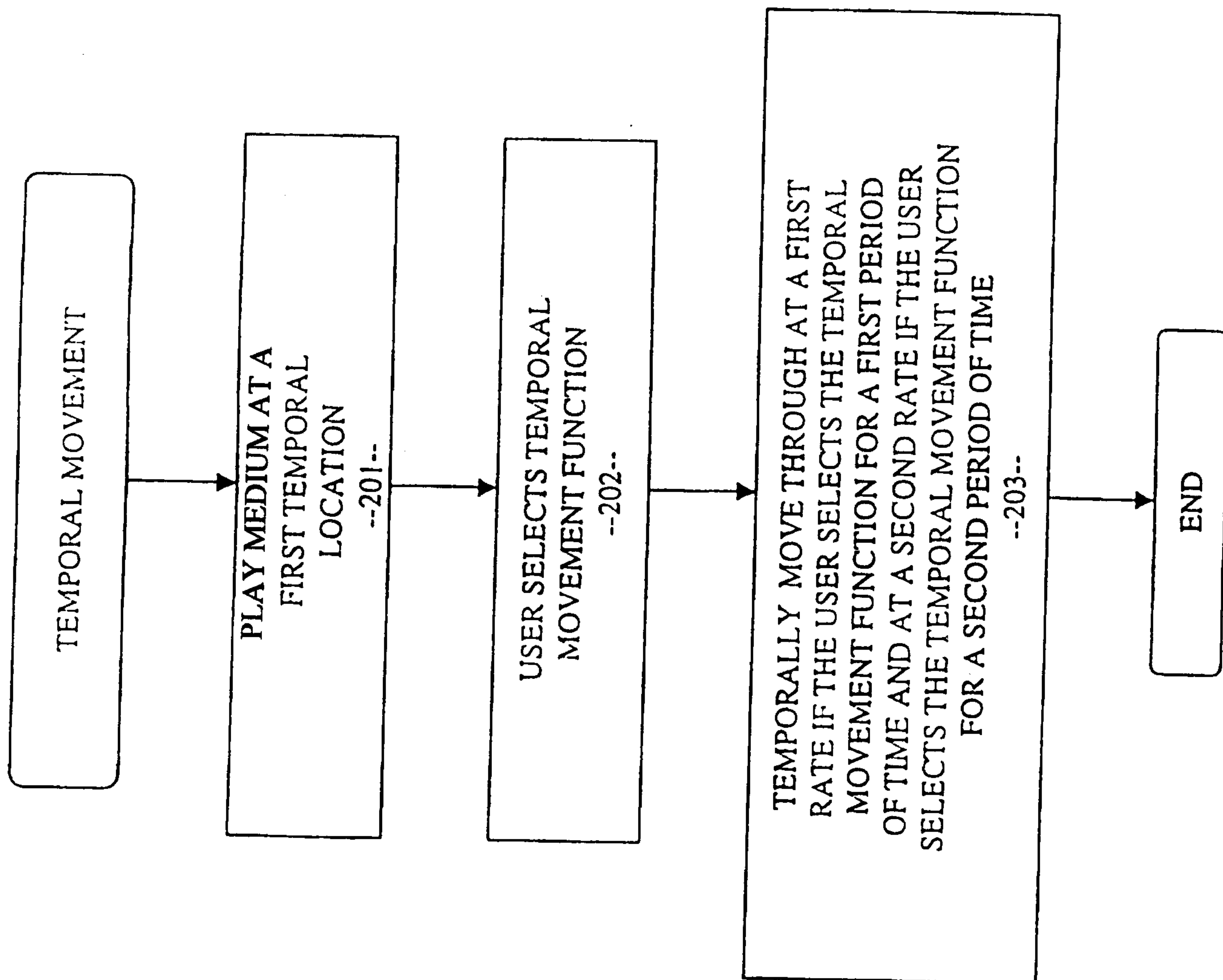


FIGURE 2

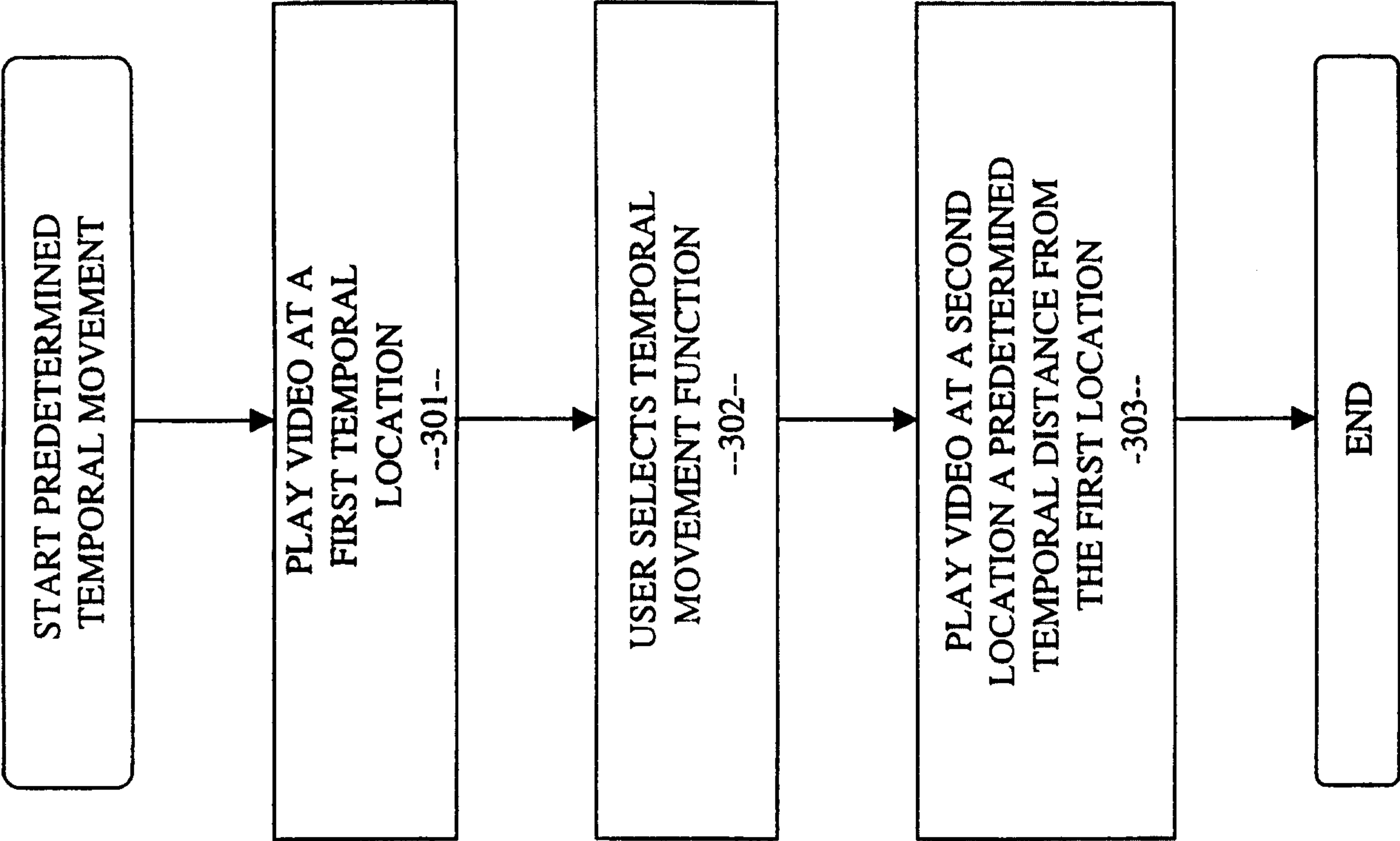


FIGURE 3

