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(71) Applicant: **ARCELIK ANONIM SIRKETI** [TR/TR]; E5 Ankara Asfalti Uzeri, Tuzla, 34950 ISTANBUL (TR).

(72) Inventors: **KAYAHAN, Dilek**; E5 Ankara Asfalti Uzeri, Tuzla, 34950 Istanbul (TR). **SONMEZ, Cagatay**; E5 Ankara Asfalti Uzeri, Tuzla, 34950 Istanbul (TR). **UZUMCUOGLU, Anil**; E5 Ankara Asfalti Uzeri, Tuzla, 34950 Istanbul (TR). **DUMAN, Serkan**; E5 Ankara Asfalti Uzeri, Tuzla, 34950 Istanbul (TR).

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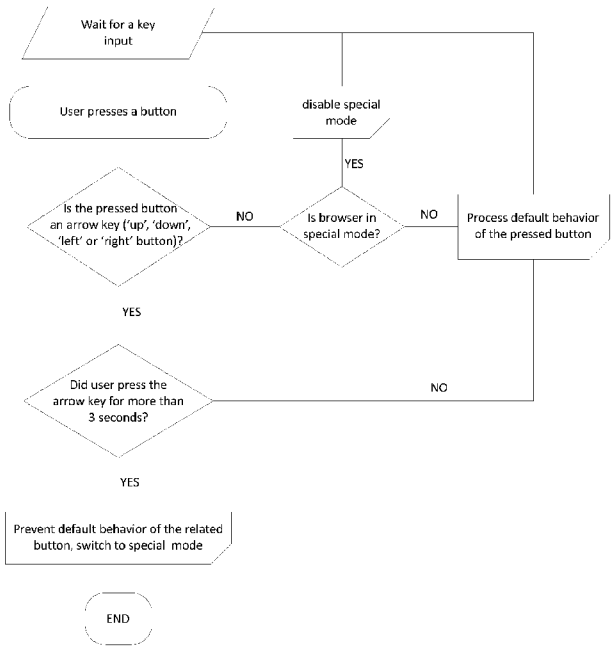
(54) Title: REMOTE CONTROL HAVING DIRECTIONAL BUTTONS WITH EXTENDED BROWSING FUNCTIONALITY

Fig. 1



(57) Abstract: The present invention relates to a method for imparting extended Internet browsing functionality to a remote control. The present invention also relates to an image display device comprising an electronic control unit, said electronic control unit performing operation of directional buttons of a remote control in remote signal communication with said image display device during scrolling and/or navigating modes of a web browser.

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Description

REMOTE CONTROL HAVING DIRECTIONAL BUTTONS WITH EXTENDED BROWSING FUNCTIONALITY

[0001] The present invention relates to a method for imparting extended Internet browsing functionality to a remote control.

[0002] It is well-known that due to the decreases in costs of hardware manufacture, tablets and smartphones have become more preferable over personal computers in terms of uses related to entertainment such as content viewing and Internet browsing. In addition to their superior display capabilities, Smart TVs can connect to the Internet and their processing and storage capabilities are currently being improved which allows them to have a wider range of applications compared to that of conventional TVs.

[0003] The main issue to be resolved to realize these wide range of applications appears to be usability. In order to solve the problem of usability, new functionalities are added to the remote controls using reasonable and easy to understand means based on current user habits. As users have begun to prefer easy to use devices having few buttons, companies have begun to simplify their products. In this regard, remote controls have slowly evolved to simple devices having few buttons. Therefore, it is preferable to keep the user interface as simple as possible while adding new functionalities to the remote control in order to achieve the targeted user accessibility. Conventional TV remote controls contain buttons for page up/page down, prev/next, etc. functionalities but simplified remote controls do not have these buttons. However, it is possible to still provide these functionalities by using the existing buttons in a variety of ways.

[0004] Among others, a prior art publication in the technical field of the invention may be referred to as US7872590, which discloses s system and method for providing expanded functionality from a remote control handset, wherein multiple command functions are realized by the actuation of a single key or control surface. A remote control handset is programmed to recognize the actuation of keys or control surfaces associated with multiple-functionality. In response to a standard actuation of a multiple-functionality key, a primary remote control signal is generated by

the remote control handset for purposes of controlling a first remote system or component. The remote control handset is further adapted to test for and recognize a non-standard actuation (such as double-clicking or prolonged depression) of a multiple-functionality key, and responsively generate a second remote control signal. This second remote control signal can be generated for purposes of providing and alternate command to same system or component that is controlled by the primary remote control signal associated with the actuated key, or to a completely separate system or component. Other prior art publications may be referred to as US2012266069, US2015070590, US2009249399 or EP1497753.

[0005] The present invention, on the other hand, addresses the situation where a new version for utilizing the “Browsing in Page” functionality commonly used in internet browsers of Smart TVs is proposed. The present invention provides an easier method of moving the cursor and navigating over the screen along the TV browser using different combinations of buttons found on conventional remote controls.

[0006] Therefore, the present invention is devised under the recognition that conventional TV remote controls are inadequate for browsing the Internet on Smart TVs. The present invention provides a fast and easy method for utilizing the “Browsing in Page” functionality commonly used in Internet browsers of Smart TVs. In addition, instead of adding new buttons to the remote control to fulfil these new functionalities, the aim is to assign new functionalities to the buttons already present on the remote control to provide simplicity. The present invention improves the users’ experience while browsing the internet on Smart TVs, which will allow this application to become more widespread.

[0007] The present invention provides a method for imparting extended Internet browsing functionality to a remote control, as provided by the characterizing features defined in Claim 1.

[0008] Primary object of the present invention is to provide a method for imparting extended Internet browsing functionality to a remote control.

[0009] The present invention proposes an image display device allowing scrolling

or navigating modes of the web browser in response to prolonged pressing of predetermined directional buttons of the remote control. The scrolling speed is increased temporarily and intermittently in response to continuous pressing of a directional button during scrolling mode and initial saccade distance between two saccade endpoints during repetitive saccades of the cursor on the page is decreased in response to continuous pressing of a directional button during navigating mode.

[0010] Accompanying drawings are given solely for the purpose of exemplifying an image display device in the form of a Smart TV and a method for operating the same, whose advantages over prior art were outlined above and will be explained in brief hereinafter.

[0011] The drawings are not meant to delimit the scope of protection as identified in the Claims, nor should they be referred to alone in an effort to interpret the scope identified in said Claims without recourse to the technical disclosure in the description of the present invention.

[0012] Fig. 1 demonstrates a block diagram of activating scrolling/navigating functionality of a Smart TV using a remote control according to the present invention.

[0013] Fig. 2 demonstrates a diagram of activating scrolling functionality interface of a Smart TV according to the present invention.

[0014] The present invention proposes a method for activating scrolling or navigating mode for “Browsing in Page” functionalities in Internet browsers of Smart TVs. Activation of navigating or scrolling mode is achieved by the user pressing the directional buttons on the remote control for an extended period of time. If the user keeps a directional button pressed, this indicates that the user wants to scroll on the page in the corresponding direction. On the other hand, if the user keeps another predetermined directional button pressed, this indicates that the user wants to navigate on the page in the corresponding direction as will be delineated hereinafter. It is therefore noted that any directional button can be assigned to initiate a respective special mode.

[0015] When a special mode is selected, for instance when the scrolling mode as one of the alternative browser modes is activated, the user can effortlessly

scroll on the page using the four directional buttons on the remote control. When the scrolling mode is activated, the up, down, left and right buttons on the remote control can be used to scroll in the respective directions. Other buttons can be used to deactivate the scrolling mode.

[0016] In one embodiment of the invention, when the scrolling mode is initiated, the period during which a respective directional button is pressed conventionally increases the scrolling speed (therefore the distance along which the page is displaced) temporarily and intermittently. In a more specific manner, the longer the respective directional button is pressed, the faster the page moves (therefore sweeping a larger area of the page) but the scrolling speed decreases starting at a predetermined position even if the user continues to press the button. This is particularly advantageous in that intermittent scrolling allows the user to better locate an area of interest and stop scrolling. In the alternative case, i.e. if the user continues to press the button, the scrolling speed increases again to displace another larger area of the scrolling page to again reach a decreased level. This arrangement both serves for fast scrolling using standard buttons as well as better locating interested parts of the webpage.

[0017] When a special mode is selected, for instance when the navigating mode as the other alternative browser mode is activated with long press of the assigned button, the user can effortlessly navigate on the page using the four directional buttons on the remote control. The up, down, left and right buttons on the remote control are used to move the cursor in the specified direction. Other buttons can be used to deactivate the special mode.

[0018] In another embodiment of the invention, when the navigating mode is initiated, the period during which a respective directional button is pressed decreases the saccade distance between saccade endpoints of the cursor moving on the page. When the button is kept pressed, the cursor saccades from one location to another in an intermittent manner with gradually decreasing saccade distance, i.e. with temporary fixations the distance between the two subsequent ones of which decreases gradually and if the button is still kept pressed, the saccade distance returns to its

predetermined initial level until it is further gradually decreased with temporary fixations between subsequent saccades. Again, this is particularly advantageous in that intermittent navigating allows the user to better locate and catch hyperlinks on the page. It should be noted that the problem of catching hyperlinks is a unique problem in Smart TVs. This arrangement both serves for fast navigating using standard buttons as well as more practically clicking hyperlinks.

[0019] In a nutshell, the present invention proposes an image display device comprising an electronic control unit, said electronic control unit performing operation of directional buttons of a remote control in remote signal communication with said image display device during scrolling and/or navigating modes of a web browser.

[0020] In one aspect of the present invention, said electronic control unit is configured to initiate scrolling or navigating modes of the web browser in response to prolonged pressing of predetermined directional buttons of the remote control during at least a predetermined time duration.

[0021] In a further aspect of the present invention, said electronic control unit is configured to increase the scrolling speed temporarily and intermittently in response to continuous pressing of a directional button during scrolling mode.

[0022] In a further aspect of the present invention, said electronic control unit is configured to decrease initial saccade distance between two saccade endpoints during repetitive saccades of the cursor on the page in response to continuous pressing of a directional button during navigating mode.

[0023] In a further aspect of the present invention, the scrolling speed decreases starting at a predetermined position during continuous pressing of a directional button in scrolling mode.

[0024] In a further aspect of the present invention, the scrolling speed increases once again during further continued pressing of said directional button in scrolling mode to reach again a decreased level.

[0025] In a further aspect of the present invention, the cursor saccades from one location to another in an intermittent manner with gradually decreasing saccade distance during continuous pressing of a directional button in

navigating mode.

[0026] In a further aspect of the present invention, the saccade distance returns to its predetermined initial level during further continued pressing of said directional button in navigating mode until it is further gradually decreased with temporary fixations between subsequent saccades.

[0027] In a further aspect of the present invention, a method is proposed to operate an image display device using directional button of a remote control in remote signal communication with said image display device during scrolling and/or navigating modes of a web browser, said method comprising the steps of (a) initiating scrolling or navigating modes of the web browser in response to prolonged pressing of predetermined directional buttons of the remote control during at least a predetermined time duration, (b) increasing the scrolling speed temporarily and intermittently in response to continuous pressing of a directional button during scrolling mode and/or, (c) decrease initial saccade distance between two saccade endpoints during repetitive saccades of the cursor on the page in response to continuous pressing of a directional button during navigating mode.

[0028] Therefore, the invention provides intermittent scrolling allowing the user to better locate an area of interest and stop scrolling at the moment needed. Likewise, intermittent navigating allows the user to better locate and catch hyperlinks on the page.

Claims

1. An image display device comprising an electronic control unit, said electronic control unit performing operation of directional buttons of a remote control in remote signal communication with said image display device during scrolling and/or navigating modes of a web browser **characterized in that**;
said electronic control unit is configured to initiate scrolling or navigating modes of the web browser in response to prolonged pressing of predetermined directional buttons of the remote control during at least a predetermined time duration,
said electronic control unit is configured to increase the scrolling speed temporarily and intermittently in response to continuous pressing of a directional button during scrolling mode and,
said electronic control unit is configured to decrease initial saccade distance between two saccade endpoints during repetitive saccades of the cursor on the page in response to continuous pressing of a directional button during navigating mode.
2. An image display device as in Claim 1, **characterized in that** the scrolling speed decreases starting at a predetermined position during continuous pressing of a directional button in scrolling mode.
3. An image display device as in Claim 2, **characterized in that** the scrolling speed increases once again during further continued pressing of said directional button in scrolling mode to reach again a decreased level.
4. An image display device as in Claim 1, **characterized in that** the cursor saccades from one location to another in an intermittent manner with gradually decreasing saccade distance during continuous pressing of a directional button in navigating mode.
5. An image display device as in Claim 4, **characterized in that** the saccade distance returns to its predetermined initial level during further continued pressing of said directional button in navigating mode until it is further gradually decreased with temporary fixations between subsequent saccades.
6. A method for operating an image display device using directional buttons of a remote control in remote signal communication with said image display device during scrolling and/or navigating modes of a web browser, said method

comprising the steps of:

initiating scrolling or navigating modes of the web browser in response to prolonged pressing of predetermined directional buttons of the remote control during at least a predetermined time duration,

increasing the scrolling speed temporarily and intermittently in response to continuous pressing of a directional button during scrolling mode and/or,

decrease initial saccade distance between two saccade endpoints during repetitive saccades of the cursor on the page in response to continuous pressing of a directional button during navigating mode.

Fig. 1

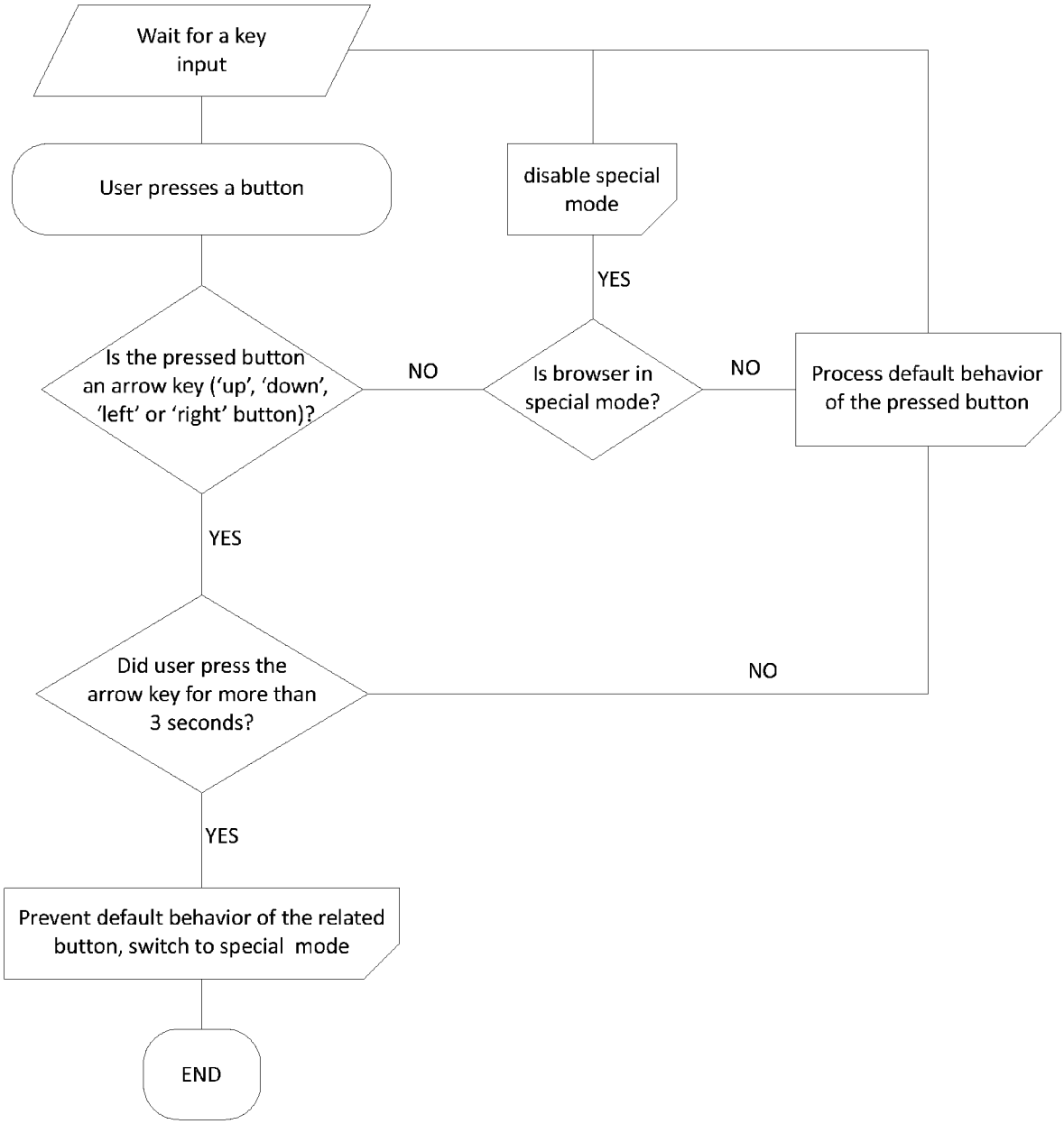
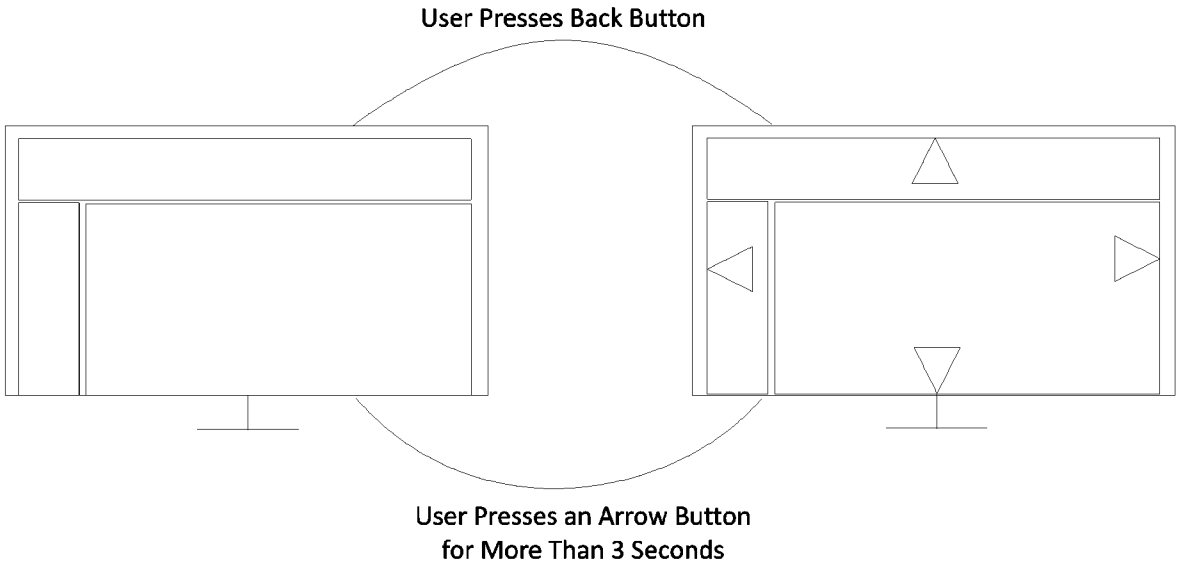

Wait for a key input
User presses a button
disable special mode
YES
Is the pressed button an arrow key ('up', 'down', 'left' or 'right' button)?
NO
Is browser in special mode?
NO
Process default behavior of the pressed button
YES
Did user press the arrow key for more than 3 seconds?
NO
YES
Prevent default behavior of the related button, switch to special mode
END

Fig. 2


User Presses Back Button
User Presses an Arrow Button
for More Than 3 Seconds

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/073976

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F3/048 G06F3/0485
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2009/007007 A1 (VOROS KRISTINA M [US] ET AL) 1 January 2009 (2009-01-01) abstract figures 1-7 paragraph [0015] - paragraph [0021] -----	1-6

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"P" document published prior to the international filing date but later than the priority date claimed

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Appeltant, Lennert

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2017/073976

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2009007007 A1	01-01-2009	AU 2008268413 A1	31-12-2008
		CN 101689100 A	31-03-2010
		EP 2171571 A2	07-04-2010
		JP 2010532060 A	30-09-2010
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