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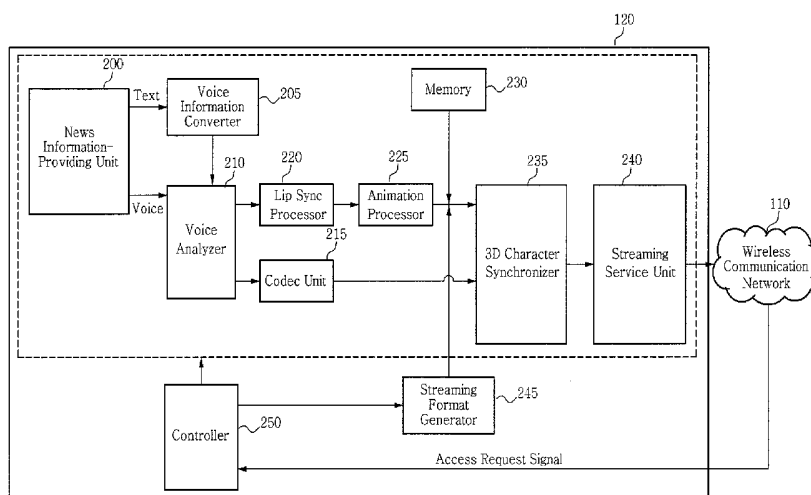
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(54) Title: METHOD AND SYSTEM FOR PROVIDING NEWS INFORMATION BY USING THREE DIMENSIONAL CHARACTER FOR USE IN WIRELESS COMMUNICATION NETWORK



(57) Abstract: Disclosed is a method for providing by a news information-providing server news information using a 3D character to a wireless communication terminal having accessed the news information-providing server through a wireless communication network, the method including the steps of : (a) generating voice information by converting news information received in real-time into voice data, and analyzing content of the voice information; (b) extracting mouth shape data and facial expression data corresponding to the content of the voice information analyzed at step (a) ; (c) applying the mouth shape data and facial expression data to the 3D character, and generating 3D character data by synthesizing the 3D character with an background image and/or background music; (d) generating 3D character news by synchronizing the voice information with the 3D character data; and (e) transmitting the 3D character news to the wireless communication terminal in a streaming mode.

WO 2006/088313 A1

**METHOD AND SYSTEM FOR PROVIDING NEWS INFORMATION BY USING
THREE DIMENSIONAL CHARACTER FOR USE IN WIRELESS
COMMUNICATION NETWORK**

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Technical Field

The present invention relates to a method and a system for providing news information by using a three-dimensional
10 (hereinafter, referred to as 3D) character for use in a wireless communication network. More particularly, the present invention relates to a method and a system for providing news information by using a 3D character for use in a wireless communication network, in which the content of
15 voice information obtained by converting real-time news information into voice data is analyzed, mouth shape data and facial expression data corresponding to the analyzed content of the voice information are extracted, the extracted mouth shape data and facial expression data are
20 applied to a 3D character, 3D character data are generated by synthesizing the 3D character with an background image and/or background music, 3D character news are generated by synchronizing the 3D character data with the voice information, and the 3D character news are transmitted to a
25 wireless communication terminal in a streaming mode.

Background Art

With the establishment of the Internet based on a Transmission Control Protocol/ Internet Protocol (TCP/IP), a system has been rapidly developed, in which a user can access the Internet by using his/her own computer in any
5 place in which on-line connection is possible, and retrieve various information or transmit various data including characters, voice, images, moving pictures, etc., in real-time. Further, with the development of a wireless communication technology, a wireless Internet service has
10 been activated, in which a user can use an Internet service based on mobility through a wireless communication network.

Accordingly, a service provided by a wireless communication system is being developed into a multimedia communication service capable of transmitting data, such as
15 circuit data and packet data, as well as voice. In addition, hardware and software have also been developed, which can improve performance of a wireless communication terminal such as a mobile PC, a Personal Digital Assistant (PDA) and a mobile phone.

20 Nowadays, a wireless communication terminal has been replacing conventional personal computers, and it is possible to receive various types of content, such as a news-providing service, a music file download service, a game service and a bank (stock) business service, by means
25 of a wireless communication terminal, which can perform high speed wireless communication, through a wireless

communication network. The news-providing service enables a wireless communication terminal user to receive news information processed for a mobile use.

However, in an existing news-providing service provided to the wireless communication terminal, the wireless communication terminal user downloads and receives a series of automatic characters or news information provided through voice messages, which are previously stored in a server, or public broadcasting news are forwarded as is. Therefore, receiving the news information unilaterally from the server, the user cannot extract the information he desires, making the user receive even unnecessary information.

Further, a news-providing service provided in the form of text or voice message cannot give a feeling of presence like when a TV announcer actually performs a broadcast. Furthermore, since a news-providing service merely forwarding public broadcasting news involves audio and video signals, the service becomes monotonous. Therefore, it is impossible to satisfy the various information selection tastes of a user.

Disclosure of the Invention

Therefore, the present invention has been made in view of the above-mentioned problems, and it is an object of the

present invention to provide a method and a system for providing news information by using a 3D character for use in a wireless communication network, in which the content of voice information obtained by converting real-time news information into voice data is analyzed, mouth shape data and facial expression data corresponding to the analyzed content of the voice information are extracted, the extracted mouth shape data and facial expression data are applied to a 3D character, 3D character data are generated by synthesizing the 3D character with an background image and/or background music, 3D character news are generated by synchronizing the 3D character data with the voice information, and the 3D character news are transmitted to a wireless communication terminal in a streaming mode.

It is another object of the present invention to provide a method and a system which, even in the middle of providing a 3D character news service to a wireless communication terminal, can provide the 3D character news service to another wireless communication terminal, which has accessed a news information-providing server, starting from a predetermined segment of news, which corresponds to the access time point of said another wireless communication terminal.

It is further another object of the present invention to provide a method and a system for providing news information, which is created by wireless communication

service subscribers itself, through 3D character news by using a mobile broadcasting server.

According to one aspect of the present invention, there is provided a method for providing news information by using a 3-dimensional (3D) character to a wireless communication terminal having accessed a news information-providing server through a wireless communication network, the method including the steps of: (a) generating voice information by converting news information into voice data, and analyzing content of the voice information; (b) extracting mouth shape data and facial expression data corresponding to the content of the voice information analyzed at step (a); (c) applying the mouth shape data and facial expression data to the 3D character, and generating 3D character data by synthesizing the 3D character with an background image and/or background music; (d) generating 3D character news by synchronizing the voice information with the 3D character data; and (e) transmitting the 3D character news to the wireless communication terminal in a streaming mode.

According to another aspect of the present invention, there is provided a method for providing 3-dimensional (3D) character news to a second wireless communication terminal having accessed a news information-providing server in the middle of providing the 3D character news to a first wireless communication terminal having accessed the news

information-providing server through a wireless communication network, the method including the steps of: (a) receiving a news information request from the second wireless communication terminal, and generating streaming
5 format data for use in synchronizing the 3D character news so that the 3D character news are provided to the second wireless communication terminal; (b) selecting sync marks included in the streaming format data as a reference time point, and generating the 3D character news by synchronizing
10 3D character data with voice information, the 3D character data being obtained by synthesizing a 3D character with an background image and/or background music; and (c) transmitting the 3D character news to the second wireless communication terminal in a streaming mode, starting from
15 the reference time point.

According to further another aspect of the present invention, there is provided a news information-providing server for providing a news service expressed by a 3-dimensional (3D) character for a wireless communication
20 terminal having accessed the news information-providing server through a wireless communication network, the news information-providing server including: a news information-providing unit for receiving and providing real-time news information including text data or voice data; a voice
25 information converter for converting the news information including the text data into voice data; a voice analyzer

for receiving voice information constituting the news information from the news information-providing unit or the voice information converter, and for analyzing content of the voice information; a lip sync processor for extracting
5 mouth shape data corresponding to the content of the voice information analyzed by the voice analyzer; an animation processor for extracting facial expression data corresponding to the content of the voice information analyzed by the voice analyzer; a codec unit for converting
10 the voice information, which is received from the voice analyzer, through a voice coding process; a memory for storing a 3D character, background images and background music; a 3D character synchronizer for applying the mouth shape data and the facial expression data to the 3D
15 character, generating 3D character data by synthesizing the 3D character with the background image and/or the background music, and generating 3D character news by synchronizing the voice information outputted from the codec unit with the 3D character data; a streaming service unit for transmitting
20 the 3D character news to the wireless communication terminal in a streaming mode; and a controller for controlling an operation of the news information-providing server so that the 3D character news are generated and transmitted to the wireless communication terminal.

25

Brief Description of the Drawings

The foregoing and other objects, features and advantages of the present invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings in which:

5 FIG. 1 is a block diagram illustrating the construction of a system for providing news information by using a 3D character for use in a wireless communication network according to a preferred embodiment of the present invention;

10 FIG. 2 is a block diagram illustrating the construction of a news information-providing server according to a preferred embodiment of the present invention;

15 FIG. 3 is a flow diagram illustrating a method by which a news information-providing server provides news information by using a 3D character according to a preferred embodiment of the present invention;

20 FIG. 4 is a flow diagram illustrating a method by which a news information-providing server provides 3D character news to a different wireless communication terminal having accessed the news information-providing server while providing the 3D character news according to a preferred embodiment of the present invention; and

25 FIG. 5 is a block diagram illustrating the construction of a system for providing 3D character news information by means of a mobile broadcasting server

according to a preferred embodiment of the present invention.

Best Mode for Carrying Out the Invention

5 Reference will now be made in detail to the preferred embodiment of the present invention. It should be noted that the similar components are designated by similar reference numerals although they are illustrated in different drawings. Also, in the following description, a
10 detailed description of known functions and configurations incorporated herein will be omitted when it may obscure the subject matter of the present invention.

 FIG. 1 is a block diagram illustrating the construction of a system for providing news information by
15 using a 3D character for use in a wireless communication network according to a preferred embodiment of the present invention.

 As illustrated in FIG. 1, the system according to the preferred embodiment of the present invention includes a
20 wireless communication terminal 100, a wireless communication network 110, a news information-providing server 120, etc.

 The wireless communication terminal 100 according to the present invention represents a terminal which is capable
25 of performing telephone communication with a communication partner in a wireless manner via the wireless communication

network 110, and retrieving desired information by using an information retrieval function upon accessing the wireless Internet. The wireless communication terminal 100 stores a wireless Internet platform for operating wireless Internet-related applications, and installs therein a wireless Internet access browser for accessing the wireless Internet.

The wireless Internet platform may include a Wireless Internet Platform for Interoperability (hereinafter, referred to as WIPI), a Wireless Internet-Terminal Open Platform (WI-TOP) developed based on the WIPI by SK Telecom, a Java 2 Micro Edition (J2ME), etc. The wireless Internet access browser may use a Microsoft Internet Explorer (MIE) based on a Hypertext Markup Language (HTML) using a Hypertext Transfer Protocol (HTTP), a Handheld Device Transport Protocol (HDTP), an I-mode of NTT Dokomo, a 'NATE' OF SK Telecom, etc., as well as a Wireless Application Protocol (hereinafter, referred to as WAP) browser based on a WAP.

The wireless communication terminal 100 according to the present invention has access to the news information-providing server 120 through the wireless communication network 110, select desired news information, and request the news information-providing server 120 to transmit the selected news information. Further, the wireless communication terminal 100 receives and views 3D character news transmitted in real-time from the news information-

providing server 120. For this, the wireless communication terminal 100 stores software used for viewing the 3D character news, and may use software developed so as to operate in a corresponding platform according to the type of
5 a wireless Internet platform.

The wireless communication terminal 100 according to the present invention is one of various wireless communication terminals such as a Personal Digital Assistant (PDA), a cellular phone, a Personal Communication Service
10 (PCS) phone, a hand-held PC, a Global System for Mobile (hereinafter, referred to as GSM) phone, a Wideband CDMA (hereinafter, referred to as WCDMA) phone, a CDMA-2000 phone, and a Mobile Broadband System (hereinafter, referred to as MBS) phone. The MBS phone represents a wireless
15 communication terminal suited for a 4G system.

The wireless communication network 110 according to the present invention transmits/receives wireless signals containing voice and data, which may include a base transceiver station, a base station controller, a mobile
20 communication switching center, a Packet Data Serving Node (hereinafter, referred to as PDSN), etc.

The base transceiver station corresponds to a network endpoint equipment which performs a wired/wireless conversion, transmission/reception of radio signals, etc.,
25 between the wireless communication terminal 100 and the base station controller, and is directly connected to the

wireless communication terminal 100. The base station controller supervises the base transceiver station, and performs radio channel allocation and release for the wireless communication terminal 100, transmit power control
5 of the wireless communication terminal 100 and the base transceiver station, determination of soft handoff and hard handoff, transcoding and vocoding, operation and maintenance for a wireless access network, etc.

The mobile communication switching center includes a
10 plurality of electronic exchanges, and performs a processing function for basic and supplementary services, a processing function for incoming and originating calls of a subscriber, a location registration procedure processing function, a handoff procedure processing function, an inter-working
15 function with another network, etc. The PDSN manages a session so that radio data can be provided after being converted into packet data, performs a routing processing function of the packet data, and connects the wireless communication network 110 to a packet data network.

20 The wireless communication network 110 according to the present invention may include a wireless access network based on various mobile communication network such as an Interim Standard (IS)-95 network, a GSM network, a CDMA 2000 1X network, a CDMA 2000 3X network, a CDMA 2000 Evolution-
25 Data only (EV-DO) network, a WCDMA network, and a Wireless Broadband Internet (WiBro) network.

The news information-providing server 120 according to the present invention generates 3D character news by using real-time new information received from external news content servers, and transmits the 3D character news in real-time through the wireless communication network 110. To achieve this, the news information-providing server 120 analyzes the content of the voice information obtained by converting the received new information into voice data, extracts mouth shape data and facial expression data corresponding to the analyzed content of the voice information, applies the extracted mouth shape data and facial expression data to a 3D character, generates 3D character news by synchronizing 3D character data, which is obtained by synthesizing the 3D character with an background image and/or background music, with the voice information, and provides the wireless communication terminal 100 with the generated 3D character news in a streaming mode. The internal construction of the news information-providing server 120 will be described in detail with reference to FIG. 2.

The news information-providing server 120 may be realized as a network server. Typically, the network server represents a hardware run by computer software (network server program) for connecting to a subordinate device, which performs communications with another network server, through a computer network such as a private intranet and

the Internet, accepting an operation request, performing a corresponding operation, and producing results of the operation. Apart from such network server program, the network server includes a series of application programs
5 operating on the network server, and various databases included in the network server if required. Such a network server may be realized by means of network server programs variously provided according to an operating system such as DOS, Windows, Linux, Unix and Macintosh.

10 FIG. 2 is a block diagram illustrating the construction of the news information-providing server 120 according to the preferred embodiment of the present invention.

As illustrated in FIG. 2, the news information-providing server 120 according to the present invention may
15 include a news information-providing unit 200, a voice information converter 205, a voice analyzer 210, a codec unit 215, a lip sync processor 220, an animation processor 225, a memory 230, a 3D character synchronizer 235, a
20 streaming service unit 240, a streaming format generator 245, a controller 250, etc.

The news information-providing unit 200 receives real-time news information in the form of text data or voice data from external news content servers, and provides the
25 received news information for the voice information converter 205 and/or the voice analyzer 210.

The voice information converter 205 receives the news information including the text data from the news information-providing unit 200, and generates voice information by converting the text data into the voice data.

5 The voice information converter 205 converts the text data into the voice data by using a Text To Speech (TTS) technology. For this, the voice information converter 205 analyzes the grammatical structure of the inputted text document, generates rhythm along which a person reads
10 sentences, and collects basic units of a phoneme according to the generated rhythm, thereby generating synchronized sound.

The voice analyzer 210 receives the voice information making up the news information from the news information-
15 providing unit 200 or the voice information converter 205, and analyzes the content of the voice information. For example, the voice analyzer 210 analyzes the strength and weakness, the highness and lowness, etc., of sound in the received voice information, and compares the analyzed
20 results with voice material stored in the database of the voice analyzer 210, thereby determining a linguistic meaning contained in the voice.

The codec unit 215 converts the voice information through a voice coding process in order to enhance the sound
25 quality of the voice information. Herein, the codec unit 215 may employ various codec schemes such as an Enhanced

Variable Rate Codec (EVRC), an Improved Multi-Band
Excitation (IMBE), a Department of Defense Code Excited
Linear prediction (DoD-CELP), a Vector Sum Excited Linear
prediction (VSELP), a Qualcomm Code Excited Linear
5 prediction (QCELP), a Low Delay CELP (LD-CELP), an Adaptive
Differential Pulse Code Modulation (ADPCM), an A-law, and a
μ-law.

The lip sync processor 220 extracts mouth shape data
corresponding to the content of the voice information
10 analyzed by the voice analyzer 210 in order to realize the
mouth shape of a 3D character resembling an announcer
reading the news. The animation processor 225 extracts
facial expression data corresponding to the content of the
voice information analyzed by the voice analyzer 210 in
15 order to change the facial expression of the 3D character.
That is, the animation processor 225 can extract facial
expression data, which involves the eye, mouth, eyebrow,
nose, facial muscle, etc., of the 3D character for
expressing pleasure, amazement, sadness, etc., according to
20 the content of the voice information analyzed by the voice
analyzer 210. The memory 230 stores a plurality of 3D
characters, background images, background music, etc., in
order to provide the 3D character news service of the
present invention, which may be realized by various data
25 storage units such as a hard disk, a flash memory and a RAM.

The 3D character synchronizer 235 receives the mouth

shape data and the facial expression data from the lip sync processor 220 and the animation processor 225, receives the voice information from the codec unit 215, and receives the 3D character, background images and background music from the memory 230. The 3D character synchronizer 235 applies the mouth shape data and the facial expression data to the 3D character, generates 3D character data by synthesizing the 3D character with the background image and/or the background music, and generates 3D character news by synchronizing the generated 3D character data with the voice information in order to enable the 3D character to move according to the voice information.

The streaming service unit 240 transmits the 3D character news generated by the 3D character synchronizer 235 to the wireless communication terminal 102 via the wireless communication network 110 in a streaming mode in order to realize real-time transmission.

If another wireless communication terminal 104 accesses the news information-providing server 120 and requests the service in the middle of providing the 3D character news to the wireless communication terminal 102, the streaming format generator 245 generates streaming format data for providing the wireless communication terminal 104 with the 3D character news to be provided to the wireless communication terminal 102, and transfers the streaming format data to the 3D character synchronizer 235.

Herein, the streaming format data include sync marks which periodically (e.g. 1 to 3 seconds) occur from the time point at which the wireless communication terminal 104 has requested the service. The streaming format generator 245
5 requests synchronization of the 3D character news based on the sync marks. Then, the 3D character synchronizer 235 synchronizes the 3D character data with the voice information based on the sync marks of the streaming format data. Accordingly, the wireless communication terminal 104
10 employs the sync mark as a reference time point even when accessing the news information-providing server 120 while the 3D character news are provided to the wireless communication terminal 102, and can receive the 3D character news from the reference time point.

15 The controller 250 generally manages and controls the elements of the news information-providing server 120 as described above, generates the 3D character news by means of the news information received in real-time, and controls the 3D character news to be transmitted to the wireless
20 communication terminal 102 through the wireless communication network 110. Further, if a news information request is received from the wireless communication terminal 104, the controller 250 controls the streaming format generator 245 to generate the streaming format data, and
25 controls the streaming service unit 240 to provide the wireless communication terminal 104 with the 3D character

news, starting from the time point at which the wireless communication terminal 104 has accessed the news information-providing server 120.

FIG. 3 is a flow diagram illustrating a method by which the news information-providing server 120 provides the news information by using the 3D character according to the preferred embodiment of the present invention.

The news information-providing server 120 of the present invention receives the real-time news information from external news content servers, generates the 3D character news, and provides the 3D character news in real-time to the wireless communication terminal 100 having accessed the news information-providing server 120 through the wireless communication network 110. Hereinafter, a process in which the news information-providing server 120 provides the 3D character news will be described in detail.

As illustrated in FIG. 3, the news information-providing unit 200 of the news information-providing server 120 receives a plurality of real-time news information including text data or voice data from the external news content servers (S300). Then, the news information-providing unit 200 determines if the received news information corresponds to text data or voice data (S302). If the received news information corresponds to the text data, the voice information converter 205 converts the news information into the voice information, and transfers the

voice information to the voice analyzer 210 (S304). However,
if the received news information corresponds to the voice
data, the received news information is directly transferred
to the voice analyzer 210 without the voice conversion
5 process.

The voice analyzer 210 analyzes the content of the
received voice information, and transfers the analyzed
content to the lip sync processor 220 and the animation
processor 225. The lip sync processor 220 extracts the
10 mouth shape data corresponding to the analyzed content of
the voice information, and the animation processor 225
extracts the facial expression data, which relate to eyes, a
mouth, eyebrows, etc., corresponding to the analyzed content
of the voice information. If the mouth shape data and the
15 facial expression data used for expressing the 3D character
are extracted, the mouth shape data and the facial
expression data are applied to the 3D character by means of
3D characters, background images and background music, etc.,
which are stored in the memory 230 of the news information-
20 providing server 120, and the 3D character data are
generated by synthesizing the 3D character with the
background image and/or the background music (306). Further,
the voice information of the voice analyzer 210 is also
transferred to the codec unit 215. The codec unit 215
25 converts the voice information through a voice coding
process in order to elevate the sound quality of the voice

information.

The 3D character data and the voice information are transferred to the 3D character synchronizer 235, and the 3D character news are generated through synchronization of the 3D character data and the voice information so that the 3D character can move according to the voice information (308). Then, the 3D character news, which are generated by means of the news information received in real-time, are transmitted from the streaming service unit 240 in a streaming mode via the wireless communication network 110 (310). In this way, the users of the wireless communication terminal 100 can select and view desired 3D character news.

In the meantime, the news information-providing server 120 of the present invention can provide a menu screen used for providing the 3D character news service of the present invention to the wireless communication terminal 100 having accessed the news information-providing server 120 through the wireless communication network 110. The menu screen may include a news selection menu and a screen setup menu. The news selection menu is classified into politics, economy, society, entertainment, sports, etc., according to each category. Accordingly, the users of the wireless communication terminal 100 can select desired news information, and receive and view the 3D character news generated and transmitted in real-time.

The screen setup menu enables the 3D characters,

background images and background music used for generation of the 3D character news to be selected, and enables the 3D character news service, which satisfies the tastes of the users of the wireless communication terminal 100, to be provided. That is, the users of the wireless communication terminal 100 set the 3D characters, background images and background music in the screen setup menu before viewing of the 3D character news service according to the present invention, so that they can receive the selected news information through the 3D character news expressed by the 3D character set by them.

FIG. 4 is a flow diagram illustrating a method by which the news information-providing server 120 provides the 3D character news to the different wireless communication terminal 104 having accessed the news information-providing server 120 while providing the 3D character news according to the preferred embodiment of the present invention.

As illustrated in FIG. 4, the news information-providing server 120 receives the news information in real-time, generates the 3D character news, and transmits the 3D character news through the wireless communication network 110, thereby enabling the wireless communication terminal 102 to receive and display the 3D character news (S400). While the news information-providing server 120 provides the 3D character news in real-time, the wireless communication terminal 104 may also access the news information-providing

server 120 and request news information (S402). In such a case, the controller 250 of the news information-providing server 120 receives an access request signal of the wireless communication terminal 104 through the wireless communication network 110, and the streaming format generator 245 generates the streaming format data used for synchronizing the 3D character news during broadcasting under the control of the controller 250 so that the 3D character news can be provided to the wireless communication terminal 104, and transfers the streaming format data to the 3D character synchronizer 235 (S404).

The 3D character synchronizer 235 selects one of the sync marks included in the streaming format data as a reference time point, and synchronizes the 3D character data with the voice information (S406). The synchronized 3D character news are transmitted in real-time to the wireless communication terminal 104 through the streaming service unit 240, so that the wireless communication terminal 104 can display the 3D character news from the reference time point (S408). Accordingly, the wireless communication terminal 104, which has accessed the news information-providing server 120 in the middle of providing the 3D character news in real-time to the wireless communication terminal 102, can receive the 3D character news from a predetermined segment of the news, which corresponds to the time point at which the wireless communication terminal 104

has requested the service.

FIG. 5 is a block diagram illustrating the construction of a system for providing 3D character news information by means of a mobile broadcasting server according to the preferred embodiment of the present invention.

The system for providing the 3D character news information in FIG. 5 may include the wireless communication terminal 100, the wireless communication network 110, the news information-providing server 120, the mobile broadcasting server 500, etc. Hereinafter, a description about the elements for performing the same functions as those of the elements in FIG. 1 will be omitted.

The mobile broadcasting server 500 receives personal news information, generates 3D character news from the personal news information, and transfers the 3D character news to the news information-providing server 120 so that the 3D character news can be provided to the wireless communication terminal 100. The personal news information may be received from the wireless communication terminal 100 through the wireless communication network 110, and may include various information inputted from various terminals, such as desktop computers and notebook computers, through a wired communication network.

Further, the mobile broadcasting server 500 may receive news information from the news information-providing

unit 200 of the news information-providing server 120,
generate secondary news information by modifying or adding
the content of the news information, and transmit the
secondary news information to the news information-providing
5 unit 200 of the news information-providing server 120 so
that the secondary news information can be provided through
the 3D character news service.

Accordingly, it is possible to generate the 3D
character news based on news information created by wireless
10 communication service subscribers itself, as well as news
information provided by a wireless communication service
provider through the mobile broadcasting server 500, and to
provide the generated 3D character news.

While this invention has been described in connection
15 with what is presently considered to be the most practical
and preferred embodiment, it is to be understood that the
present invention is not limited to the disclosed embodiment
and the drawings, but, on the contrary, it is intended to
cover various modifications and variations within the spirit
20 and scope of the appended claims.

Industrial Applicability

As described above, the present invention can provide
25 desired news information through a wireless communication
network regardless of place and time, and provide news

information expressed by a 3D character, thereby providing a news service, which gives an effect like when a TV announcer actually performs a broadcast, through a wireless communication service.

5 Further, according to the present invention as described above, in the middle of providing a 3D character news service to a wireless communication terminal, even when another wireless communication terminal accesses a news information-providing server, it is possible to provide said
10 another wireless communication terminal with the 3D character news service starting from a predetermined segment of news, which corresponds to the access time point of said another wireless communication terminal. Furthermore, it is possible to provide news information created by wireless
15 communication service subscribers itself through 3D character news.

Claims

1. A method for providing news information by using a 3-dimensional (3D) character to a wireless communication terminal having accessed a news information-providing server through a wireless communication network, the method comprising the steps of:

(a) generating voice information by converting news information into voice data, and analyzing content of the voice information;

(b) extracting mouth shape data and facial expression data corresponding to the content of the voice information analyzed at step (a);

(c) applying the mouth shape data and facial expression data to the 3D character, and generating 3D character data by synthesizing the 3D character with an background image and/or background music;

(d) generating 3D character news by synchronizing the voice information with the 3D character data; and

(e) transmitting the 3D character news to the wireless communication terminal in a streaming mode.

2. The method as claimed in claim 1, wherein, at step (a), when the news information includes voice data, the content of the voice information is analyzed without a voice conversion process.

3. The method as claimed in claim 1, wherein, before
step (a), a screen setup menu is provided to the wireless
communication terminal, and a selection signal for selecting
the 3D character, the background image and the background
5 music, which are used for generating the 3D character news,
is received from the wireless communication terminal.

4. The method as claimed in claim 1, wherein, at step
(c), the voice information is converted through a voice
10 coding process.

5. A method for providing 3-dimensional (3D) character
news to a second wireless communication terminal having
accessed a news information-providing server in the middle
15 of providing the 3D character news to a first wireless
communication terminal having accessed the news information-
providing server through a wireless communication network,
the method comprising the steps of:

(a) receiving a news information request from the
20 second wireless communication terminal, and generating
streaming format data for use in synchronizing the 3D
character news so that the 3D character news are provided to
the second wireless communication terminal;

(b) selecting sync marks included in the streaming
25 format data as a reference time point, and generating the 3D
character news by synchronizing 3D character data with voice

information, the 3D character data being obtained by synthesizing a 3D character with an background image and/or background music; and

(c) transmitting the 3D character news to the second
5 wireless communication terminal in a streaming mode, starting from the reference time point.

6. The method as claimed in claim 5, wherein, at step
(b), one of the sync marks, which periodically occur from a
10 time point at which the news information request is received from the second wireless communication terminal, is selected as the reference time point.

7. A news information-providing server for providing a
15 news service expressed by a 3-dimensional (3D) character for a wireless communication terminal having accessed the news information-providing server through a wireless communication network, comprising:

a news information-providing unit for receiving and
20 providing real-time news information including text data or voice data;

a voice information converter for converting the news information including the text data into voice data;

a voice analyzer for receiving voice information
25 making up the news information from the news information-providing unit or the voice information converter, and for

analyzing content of the voice information;

a lip sync processor for extracting mouth shape data corresponding to the content of the voice information analyzed by the voice analyzer;

5 an animation processor for extracting facial expression data corresponding to the content of the voice information analyzed by the voice analyzer;

a codec unit for converting the voice information, which is received from the voice analyzer, through a voice coding process;

10 a memory for storing a 3D character, background images and background music;

a 3D character synchronizer for applying the mouth shape data and the facial expression data to the 3D character, generating 3D character data by synthesizing the 3D character with the background image and/or the background music, and generating 3D character news by synchronizing the voice information outputted from the codec unit with the 3D character data;

20 a streaming service unit for transmitting the 3D character news to the wireless communication terminal in a streaming mode; and

a controller for controlling an operation of the news information-providing server so that the 3D character news are generated and transmitted to the wireless communication terminal.

8. The news information-providing server as claimed in claim 7, further comprising a streaming format generator for, if a news information request is received from another wireless communication terminal in the middle of providing the 3D character news to the wireless communication terminal, generating streaming format data used for synchronizing the 3D character news so that the 3D character news are provided to said another wireless communication terminal, and transferring the streaming format data to the 3D character synchronizer.

9. The news information-providing server as claimed in claim 8, wherein the 3D character synchronizer selects sync marks included in the streaming format data as a reference time point, and generates the 3D character news by synchronizing the 3D character data with the voice information.

10. The news information-providing server as claimed in claim 9, wherein the 3D character synchronizer selects one of the sync marks, which periodically occur from a time point at which the news information request is received from the second wireless communication terminal, as the reference time point.

11. The news information-providing server as claimed

in claim 7, wherein the system further comprises a mobile
broadcasting server for receiving personal news information,
generating the 3D character news from the personal news
information, and transferring the 3D character news to the
5 news information-providing server.

12. The news information-providing server as claimed
in claim 11, wherein the mobile broadcasting server receives
the news information from the news information-providing
10 server, generates secondary news information by processing
the received news information, and transfers the secondary
news information to the news information-providing server.

13. The news information-providing server as claimed
15 in claim 7, wherein the facial expression data include eye,
mouth, eyebrow, nose and facial muscle data for expressing
feelings of the 3D character according to the content of the
voice information.

1/5

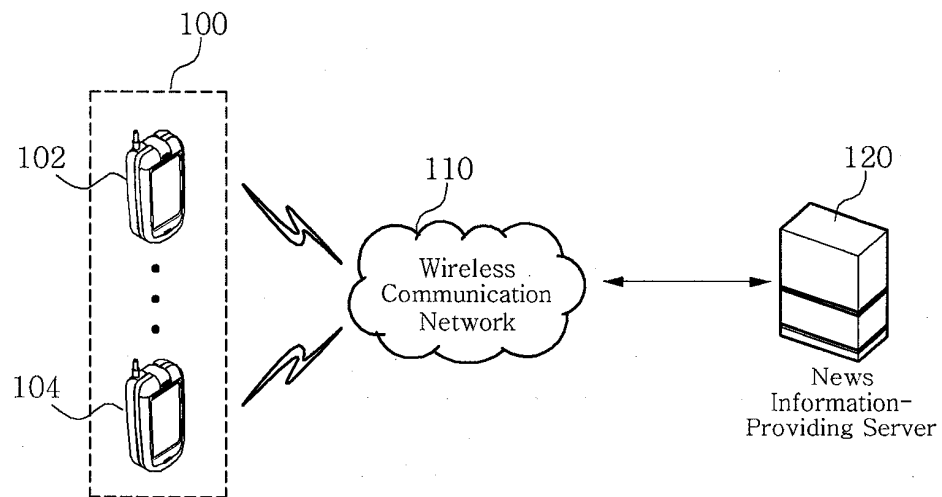


FIG. 1

2/5

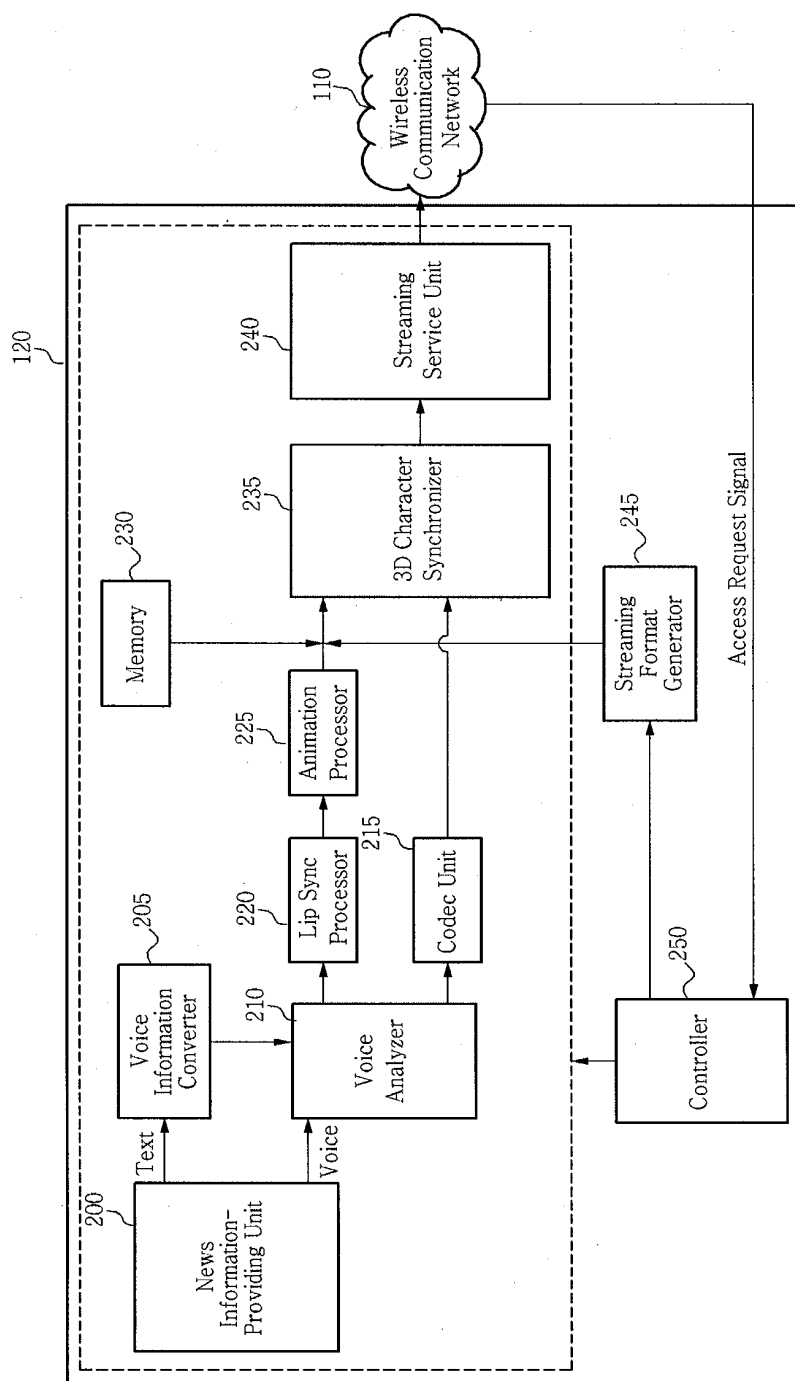


FIG. 2

3/5

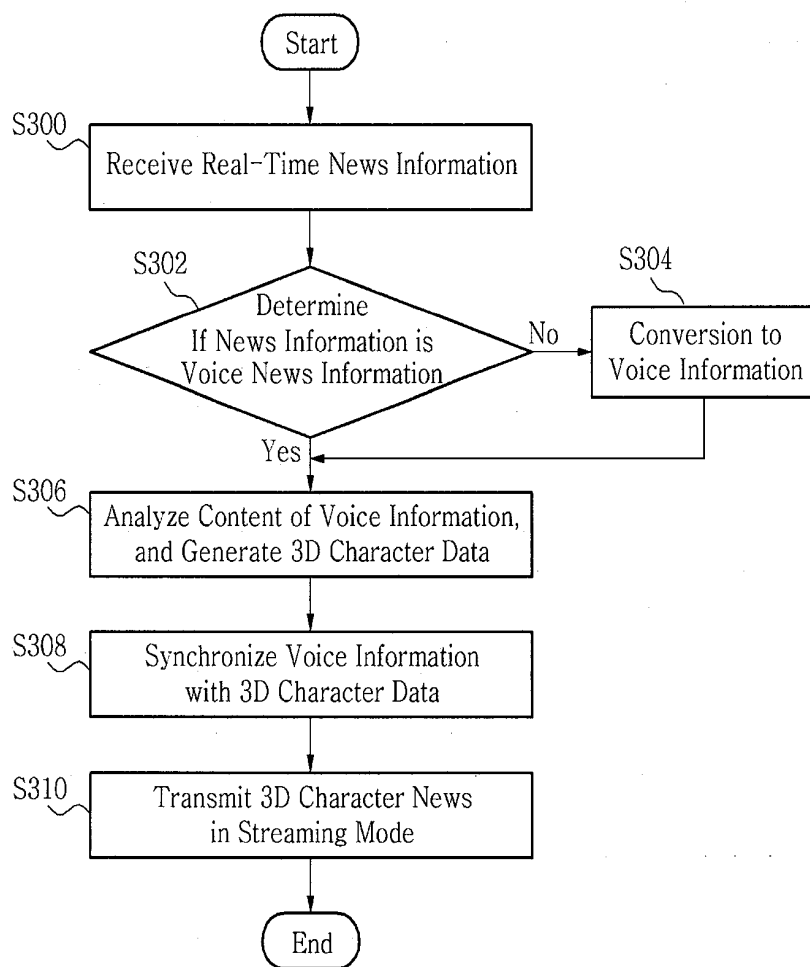


FIG. 3

4/5

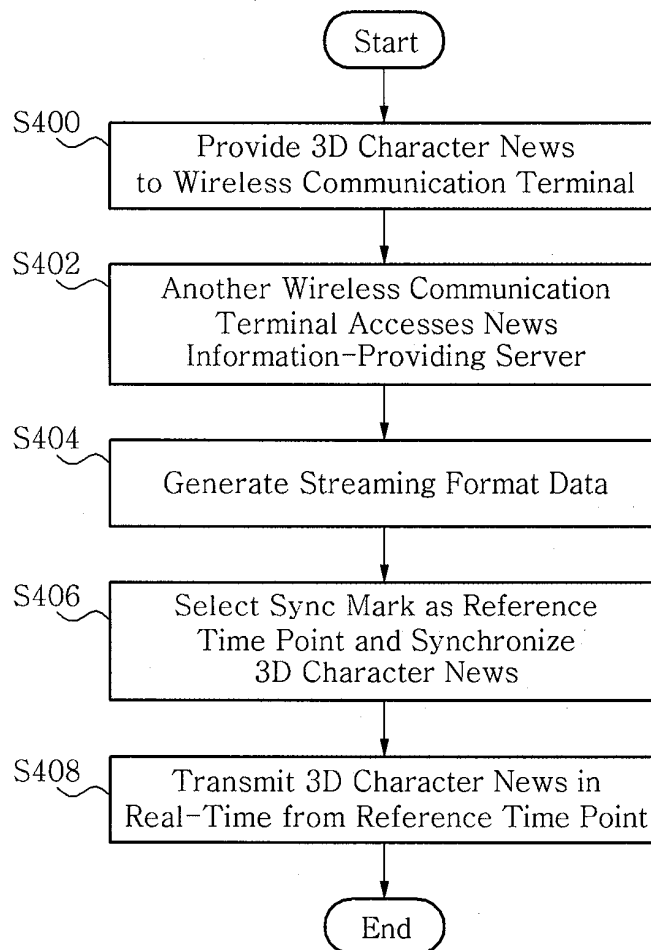


FIG. 4

5/5

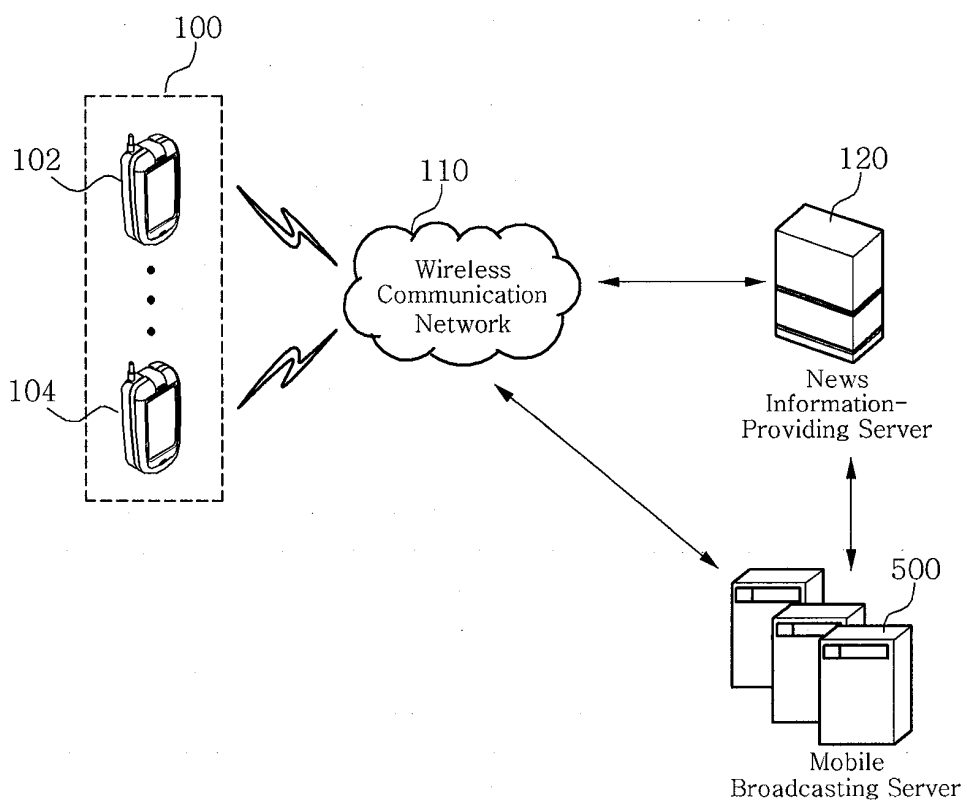


FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2006/000527**A. CLASSIFICATION OF SUBJECT MATTER****G06F 19/00(2006.01)i**

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)

IPC8 G06F17/00, G06F19/00, G06Q10/00~99/00

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

Korean Patents and applications for inventions since 1975

Korean Utility models and applications for Utility models since 1975

Japanese Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PAJ, FPD, USPAT, eKIPASS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	KR 2002-22504 A (ADAMSOFT CORPORATION) 27 MARCH 2002 abstract, claims 1-6, figure6	1-13
Y	KR 2003-39019 A (SHIN, SUN HAE) 17 MAY 2003 abstract, claim 1, claim 5, figures 15a-16	1-13
A	KR 2001-911 A (SEO, EWI HWAN) 05 JANUARY 2001 abstract, claim 1	1-13
A	KR 2002-26617 A (IMUSICSOFT CO., LTD.) 12 APRIL 2002 abstract, claim 1	1-13



Further documents are listed in the continuation of Box C.



See patent family annex.

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"&" document member of the same patent family

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11 MAY 2006 (11.05.2006)

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