



US 20140378836A1

(19) **United States**(12) **Patent Application Publication**
Lee(10) **Pub. No.: US 2014/0378836 A1**(43) **Pub. Date: Dec. 25, 2014**(54) **ULTRASOUND SYSTEM AND METHOD OF
PROVIDING REFERENCE IMAGE
CORRESPONDING TO ULTRASOUND
IMAGE****Publication Classification**(51) **Int. Cl.**
A61B 8/08 (2006.01)
A61B 8/00 (2006.01)(52) **U.S. Cl.**
CPC *A61B 8/5207* (2013.01); *A61B 8/4245*
(2013.01)USPC **600/443**(71) Applicant: **SAMSUNG MEDISON CO., LTD.**,
Gangwon-Do (KR)(72) Inventor: **Jun-Kyo Lee**, Gangwon-Do (KR)(73) Assignee: **SAMSUNG MEDISON CO., LTD.**(21) Appl. No.: **14/312,216**(22) Filed: **Jun. 23, 2014**(30) **Foreign Application Priority Data**

Jun. 24, 2013 (KR) 10-2013-0072488

(57) **ABSTRACT**

Provided are an ultrasound system and a method of providing a reference image corresponding to an ultrasound image of a target. The ultrasound system includes: a storage unit configured to store a plurality of images corresponding to respective targets; and a processor configured to generate an ultrasound image which depicts the target included in a subject by using ultrasound data acquired from the subject, extract at least one reference image corresponding to the ultrasound image from among the plurality of images, and control a display of the reference image extracted.

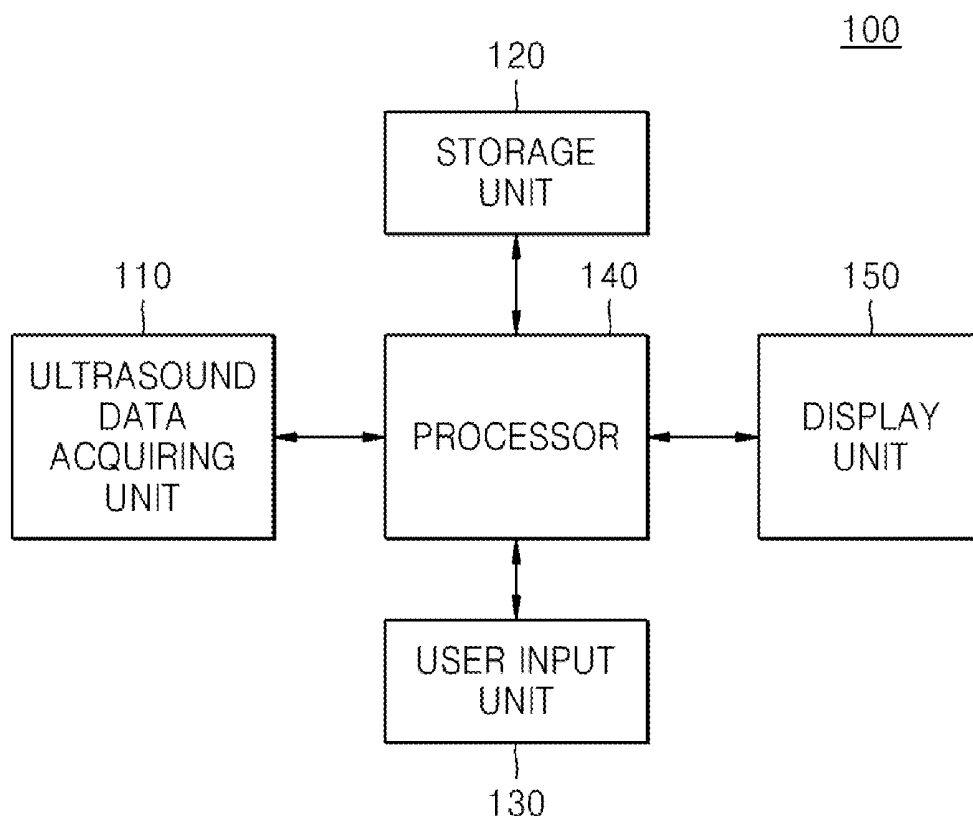


FIG. 1

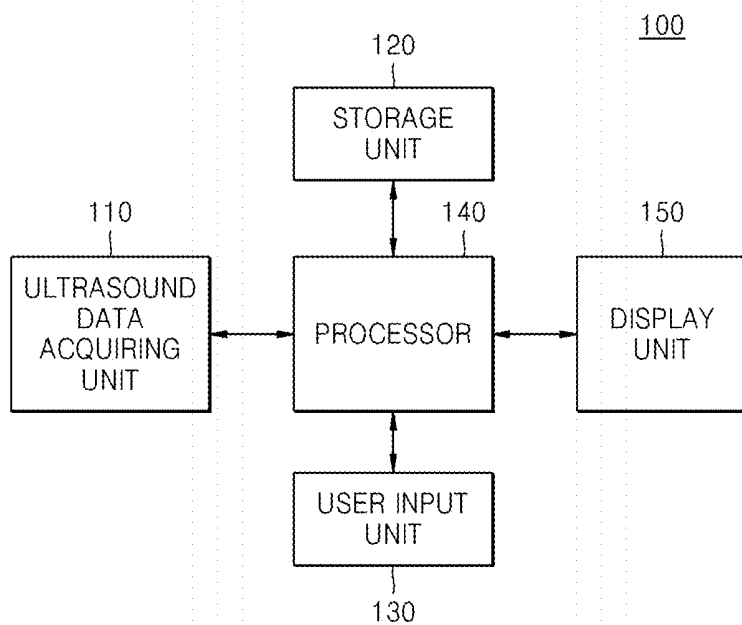


FIG. 2

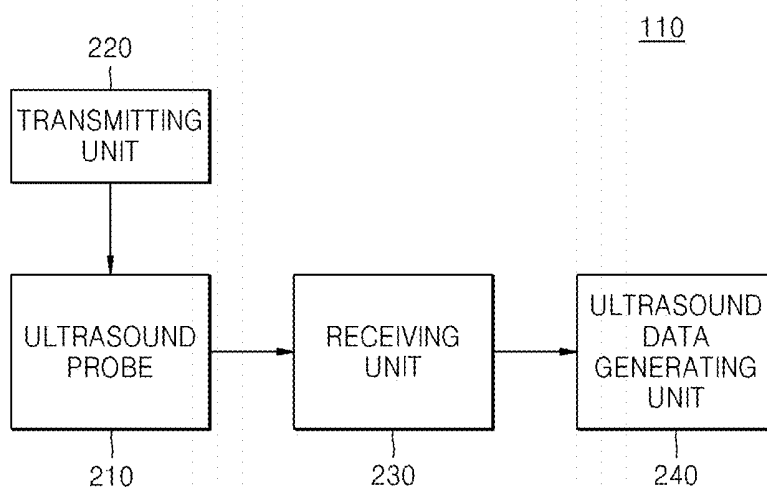


FIG. 3

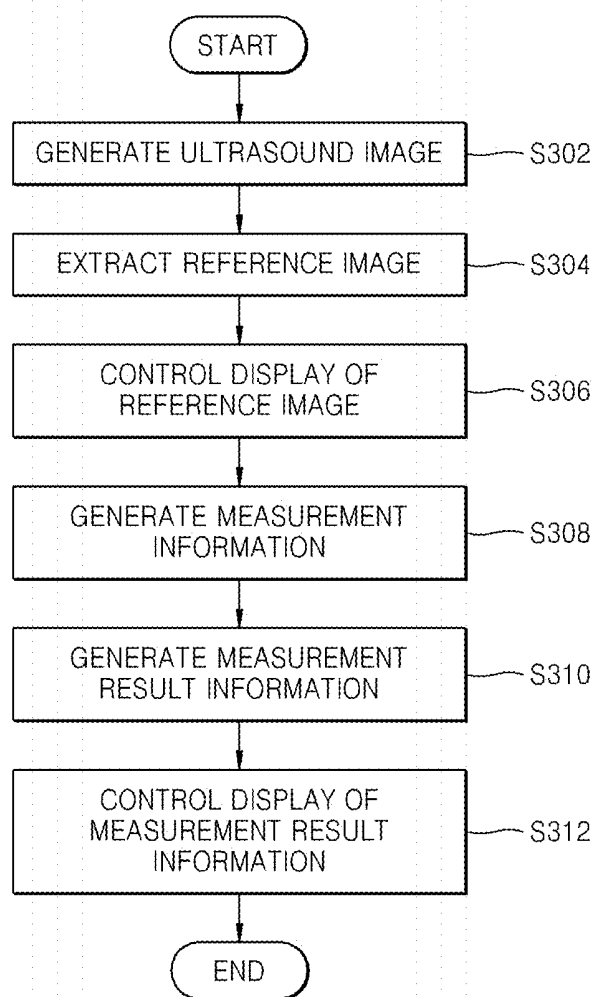


FIG. 4

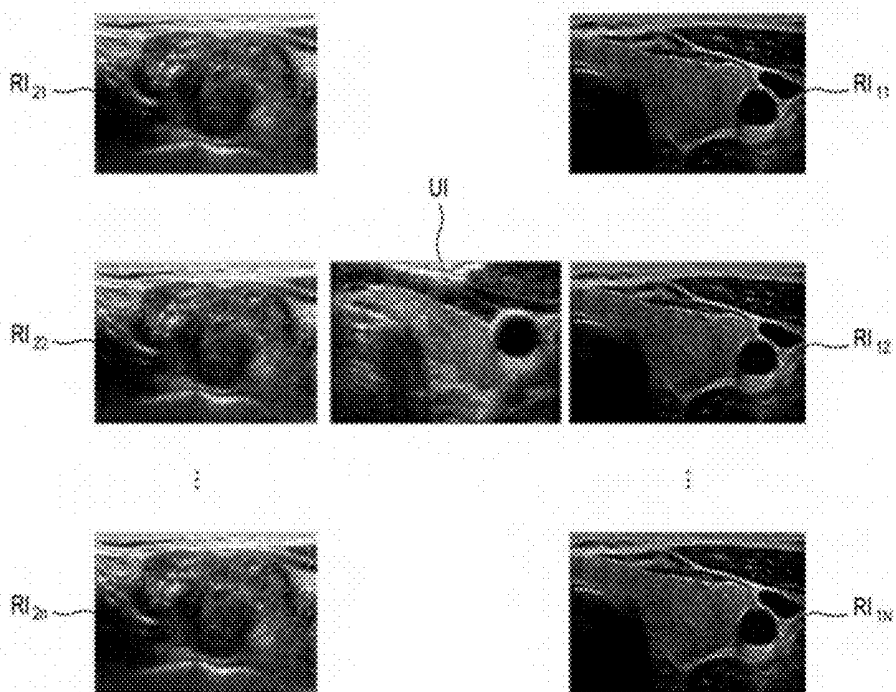
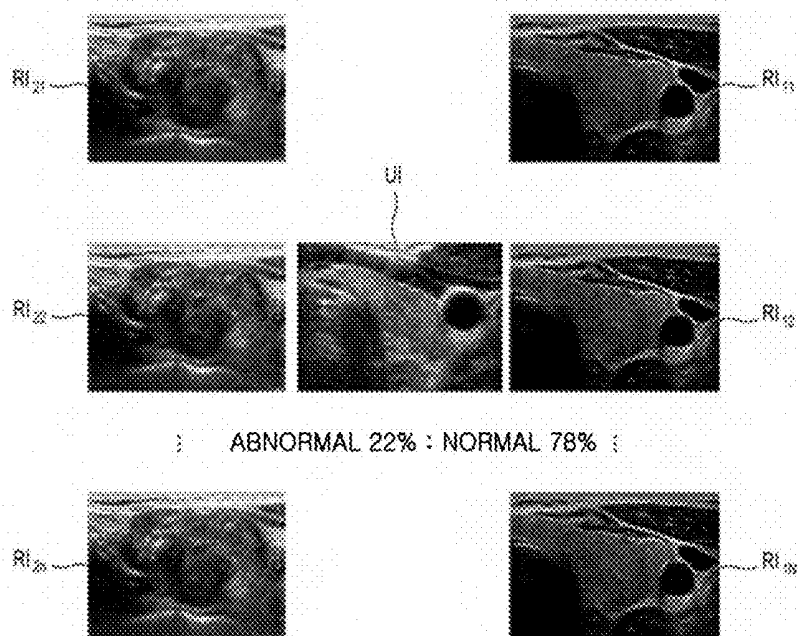


FIG. 5



ULTRASOUND SYSTEM AND METHOD OF PROVIDING REFERENCE IMAGE CORRESPONDING TO ULTRASOUND IMAGE

RELATED APPLICATIONS

[0001] This application claims the benefit of Korean Patent Application No. 10-2013-0072488, filed on Jun. 24, 2013, in the Korean Intellectual Property Office, the disclosure of which is incorporated herein in its entirety by reference.

BACKGROUND

[0002] 1. Field

[0003] One or more embodiments of the present invention relate to ultrasound systems, and more particularly, to ultrasound systems and methods of providing a reference image corresponding to an ultrasound image.

[0004] 2. Description of the Related Art

[0005] Since ultrasound systems have noninvasive and nondestructive characteristics, they are widely used in medical treatment for obtaining information from a subject. Such systems are very important because they may provide medical practitioners with real-time high-resolution images of internal tissues of a subject without performing a surgical operation by directly incising and observing inner parts of the subject.

[0006] An ultrasound system transmits an ultrasound signal to a subject including a target (for example, a liver, an unborn child, or a bloodstream) and receives an ultrasound signal (i.e., an ultrasound echo signal) reflected from the subject to thereby generate an ultrasound image.

[0007] Whether the target is normal is determined based on the ultrasound image, and the accuracy of determination may depend on the degree of skill of a medical practitioner. Also, even when provided with the ultrasound image, a patient may have difficulties in understanding whether the target is normal.

SUMMARY

[0008] One or more embodiments of the present invention include ultrasound systems and methods of storing a plurality of normal reference images and a plurality of abnormal reference images corresponding to a plurality of applications in a storage unit, extracting at least one reference image from the storage unit, from among a normal reference image and an abnormal reference image corresponding to an ultrasound image of a target including the target, and providing the at least one reference image.

[0009] Additional aspects will be set forth in part in the description which follows and, in part, will be apparent from the description, or may be learned by practice of the presented embodiments.

[0010] According to one or more embodiments of the present invention, an ultrasound system includes: a storage unit configured to store a plurality of images corresponding to respective targets; and a processor configured to generate an ultrasound image which depicts the target included in a subject by using ultrasound data acquired from the subject, extract at least one reference image corresponding to the ultrasound image from among the plurality of images, and control a display of the reference image extracted.

[0011] According to one or more embodiments of the present invention, a method of providing a reference image

includes: generating an ultrasound image which depicts the target included in a subject by using ultrasound data acquired from the subject; extracting at least one reference image corresponding to the ultrasound image from among a plurality of images stored in a storage unit configured to store the plurality of images corresponding to respective targets; and controlling a display of the reference image extracted.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] These and/or other aspects will become apparent and more readily appreciated from the following description of the embodiments, taken in conjunction with the accompanying drawings in which:

[0013] FIG. 1 is a block diagram illustrating a configuration of an ultrasound system according to an embodiment of the present invention;

[0014] FIG. 2 is a block diagram illustrating a configuration of an ultrasound data acquiring unit according to an embodiment of the present invention;

[0015] FIG. 3 is a flowchart illustrating a process of providing a reference image and measurement result information, according to an embodiment of the present invention;

[0016] FIG. 4 is a diagram illustrating an example of an ultrasound image and a reference image according to an embodiment of the present invention; and

[0017] FIG. 5 is a diagram illustrating an example of an ultrasound image, a reference image, and measurement information according to an embodiment of the present invention.

DETAILED DESCRIPTION

[0018] Reference will now be made in detail to embodiments, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to like elements throughout. In this regard, the present embodiments may have different forms and should not be construed as being limited to the descriptions set forth herein. Accordingly, the embodiments are merely described below, by referring to the figures, to explain aspects of the present description. As used herein, the term “and/or” includes any and all combinations of one or more of the associated listed items. Expressions such as “at least one of,” when preceding a list of elements, modify the entire list of elements and do not modify the individual elements of the list.

[0019] Hereinafter, embodiments of the present invention will be described in detail with reference to the accompanying drawings.

[0020] FIG. 1 is a block diagram illustrating a configuration of an ultrasound system according to an embodiment of the present invention. Referring to FIG. 1, an ultrasound system 100 includes an ultrasound data acquiring unit 110, a storage unit 120, a user input unit 130, a processor 140, and a display unit 150.

[0021] The ultrasound data acquiring unit 110 transmits an ultrasound signal to a target. The target may include, for example, various organs such as a heart, an unborn child, and a bloodstream. Also, the ultrasound data acquiring unit 110 receives an ultrasound signal (i.e., an ultrasound echo signal) reflected from the target to thereby acquire ultrasound data corresponding to an ultrasound image.

[0022] FIG. 2 is a block diagram illustrating a configuration of the ultrasound data acquiring unit 110 according to an embodiment of the present invention. Referring to FIG. 2, the ultrasound data acquiring unit 110 includes an ultrasound

probe **210**, a transmitting unit **220**, a receiving unit **230**, and an ultrasound data generating unit **240**.

[0023] The ultrasound probe **210** includes a plurality of transducer elements (not illustrated) that convert an electrical/ultrasound signal into an ultrasound/electrical signal. The ultrasound probe **210** transmits an ultrasound signal to the target and receives an ultrasound echo signal reflected from target to thereby generate an electrical signal (hereinafter referred to as a reception signal). The reception signal is an analog signal. For example, the ultrasound probe **210** includes a convex probe, a linear probe, and a three-dimensional (3D) probe.

[0024] The ultrasound data acquiring unit **110** includes the transmitting unit **220**. The transmitting unit **220** controls transmission of the ultrasound signal. Also, the transmitting unit **220** includes a plurality of pulsers (not illustrated) that generate a plurality of pulse signals. In consideration of a transducer element and a focus point, the transmitting unit **220** delays by a predetermined period the pulse signals output from the pulsers to thereby output a transmission pulse signal with a predetermined transmission profile. The ultrasound probe **210** generates and outputs an ultrasound signal in response to the transmission pulse signal received from the transmitting unit **220**. The ultrasound probe **210** may output the ultrasound signal by forming a beam in a predetermined direction (for example, a scan line) according to the profile of a transmission pulse. Also, the ultrasound probe **210** receives the ultrasound echo signal reflected from the target to thereby output an electrical reception signal.

[0025] The receiving unit **230** converts the reception signal received from the ultrasound probe **210** into a digital signal. Also, in consideration of the transducer element and the focus point, the receiving unit **230** performs reception beamforming on the digital signal to generate a reception focus signal. In an embodiment, the receiving unit **230** may perform the reception beamforming by using an application specific integrated circuit (ASIC) in which physical delay units such as resistors are integrated, or by using a digital signal processor (DSP) operating based on a software algorithm. Since the reception beamforming may be performed by various well-known methods, a detailed description thereof will be omitted herein.

[0026] The ultrasound data generating unit **240** generates, by using the reception focus signal received from the receiving unit **230**, ultrasound data corresponding to the ultrasound image. The ultrasound data includes radio frequency (RF) data. However, the ultrasound data is not limited thereto. Also, the ultrasound data acquiring unit **110** may perform various signal processing (for example, gain control) on the reception focus signal to thereby generate the ultrasound data. In an embodiment, the ultrasound data acquiring unit **110** may be implemented by one or more DSPs.

[0027] In the above embodiment, it has been described that the ultrasound data acquiring unit **110** transmits the ultrasound signal to the target, receives the ultrasound echo signal reflected from the target, and acquires the ultrasound data corresponding to the ultrasound image. However, in another embodiment, the ultrasound data acquiring unit **110** may receive the ultrasound data from an external device (not illustrated) that is connected to the ultrasound system **100** in a wired or wireless manner.

[0028] Referring to FIG. 1, the storage unit **120** stores the ultrasound data acquired by the ultrasound data acquiring unit **110**. Also, the storage unit **120** stores a plurality of images

corresponding to each of a plurality of targets. The target corresponds to an organ to be diagnosed (i.e., a target of which ultrasound image is to be formed) from among a plurality of organs included in a subject (i.e., a patient). For example, if a user wants to diagnose a liver included in the subject, the target corresponds to the liver.

[0029] In an embodiment, with respect to each of the targets, the storage unit **120** stores a plurality of first images acquired when each target is normal, and a plurality of second images acquired when each target is abnormal. Also, with respect to each of the first images, the storage unit **120** may store diagnosis information about a diagnosis result, and medical information such as a medical treatment corresponding to the diagnosis result, and a plurality of progress images representing a change in the target according to the progress of the medical treatment. According to an embodiment, the first images, the diagnosis information, the medical information, and the progress images may be stored in the form of a mapping table. For example, the storage unit **120** includes a random access memory (RAM), a nonvolatile RAM (NVRAM), a flash memory, a compact disk, and a magnetic or optical data storage device.

[0030] In the above embodiment, it has been described that a plurality of images (i.e., the first images and the second images) are stored in the storage unit **120** of the ultrasound system **100**. However, in another embodiment, a plurality of images (i.e., the first images and the second images) may be stored in an external storage device (not illustrated) that is connected to the ultrasound system **100** in a wired or wireless manner.

[0031] The user input unit **130** receives from a user an input of various user commands for driving the ultrasound system **100**. In an embodiment, the user commands include a selection command for selecting at least one of the images. As an example, the user commands include a selection command for selecting at least one of the first images. As another example, the user commands include a selection command for selecting at least one of the second images. As another example, the user commands include a selection command for selecting at least one of the first images and at least one of the second images. Also, the user commands include a target selection command for selecting at least one of the target. In an embodiment, the user commands include a command for providing, when a first reference image of the first images is selected, at least one of the diagnosis information corresponding to the selected first reference image, the corresponding medical information, and the corresponding progress images. However, the user commands are not limited thereto. For example, the user input unit **130** includes a control panel, a track ball, a keyboard, a touchscreen, and a mouse.

[0032] The processor **130** is connected to the ultrasound data acquiring unit **110**, the storage unit **120**, and the user input unit **130**. For example, the processor **140** includes a central processing unit (CPU), a microprocessor, and a graphic processing unit (GPU).

[0033] FIG. 3 is a flowchart illustrating a process of providing a reference image together with an ultrasound image, according to an embodiment of the present invention. Referring to FIG. 3, the processor **140** generates an ultrasound image by using the ultrasound data received from the ultrasound data acquiring unit **110** (**S302**). For example, the ultrasound image includes a brightness mode (B mode) image, a spectral Doppler mode (D mode) image, a color Doppler mode (C mode) image, and an elasticity image.

[0034] By using a probability model, the processor **140** extracts at least one reference image (the first reference image and/or the second reference image) corresponding to the ultrasound image, from the images (the first images and the second images) stored in the storage unit **120** (**S304**). Since the probability model may be performed by various well-known methods, a detailed description thereof will be omitted herein.

[0035] For example, the processor **140** performs contour detection processing on the ultrasound image to detect a contour (hereinafter referred to as a first contour) of the target from the ultrasound image. The contour may be detected by using an eigenvalue difference based on a mask (for example, a Sobel mask, a Prewitt mask, a Robert mask, or a Canny mask) or a structure tensor. The processor **140** performs contour detection processing on each of the images stored in the storage unit **120**, to detect a contour (hereinafter referred to as a second contour) of the target from each of the images. The processor **140** detects at least one third contour corresponding to the first contour from among the second contours which are extracted from the images stored in the storage unit **120** by using the probability model. The processor **140** extracts at least one reference image (the first reference image and/or the second reference image) corresponding to the detected third contour, as the reference image of the target corresponding to the ultrasound image, from the storage unit **120**.

[0036] In the above embodiment, it has been described that the reference image corresponding to the ultrasound image (i.e., the target of the ultrasound image) is extracted from the storage unit **120** by using the probability model. However, in another embodiment, the reference image corresponding to the ultrasound image (i.e., the target of the ultrasound image) may be extracted from the storage unit **120** based on the input information received from the user input unit **130**.

[0037] The processor **140** controls a display of the extracted reference image (**S306**). In an embodiment, the processor **140** operates such that the extracted first reference image or second reference image is displayed at one side with respect to the ultrasound image. As an example, as illustrated in FIG. 4, the processor **140** operates such that an extracted first reference image RI_{1i} ($1 \leq i \leq N$) is displayed at the right side with respect to an ultrasound image UI and an extracted second reference image RI_{2i} ($1 \leq i \leq N$) is displayed at the left side with respect to the ultrasound image UI. As another example, the processor **140** operates such that the extracted first reference image and second reference image is displayed at the left side or the right side with respect to the ultrasound image. In another embodiment, the processor **140** operates such that the extracted first reference image is displayed at one side with respect to the ultrasound image. In another embodiment, the processor **140** operates such that the extracted second reference image is displayed at one side with respect to the ultrasound image.

[0038] Alternatively, in response to a user command (i.e., a reference image selection command) received from the user input unit **130**, the processor **140** may re-extract an image corresponding to the user command from the at least one reference image and operates such that the re-extracted image is displayed at one side with respect to the ultrasound image.

[0039] By using the ultrasound image and the extracted reference image, the processor **140** generates measurement information corresponding to the degree of normality of the target in the ultrasound image (**S308**). In an embodiment, the processor **140** detects the degree of similarity between the

ultrasound image and the extracted reference image. For example, as illustrated in FIG. 5, the processor **140** detects the degree of similarity (normal: 78%, abnormal: 22%) between the ultrasound image and the extracted reference image. The processor **140** generates the measurement information including the detected degree of similarity. Since the degree of similarity may be detected by various well-known methods, a detailed description thereof will be omitted herein. In another embodiment, the processor **140** performs a relation analysis between the ultrasound image and the extracted reference image to generate measurement information including a relation analysis result. For example, as illustrated in FIG. 5, the processor **140** performs a relation analysis between the ultrasound image and the extracted reference image to generate measurement information including a relation analysis result (normal: 78%, abnormal: 22%). Since the relation analysis may be performed by various well-known methods, a detailed description thereof will be omitted herein.

[0040] Based on the measurement information, the processor **140** generates measurement result information corresponding to the target in the ultrasound image (**S310**). In an embodiment, the processor **140** compares the measurement information including the degree of similarity with a predetermined critical value, and generates measurement result information indicating that the target in the ultrasound image is normal or abnormal, depending on whether the degree of similarity is greater than the predetermined critical value. In another embodiment, the processor **140** compares the measurement information including the relation analysis result with a predetermined critical value, and generates measurement result information indicating that the target in the ultrasound image is normal or abnormal, depending on whether the relation analysis result is greater than the predetermined critical value.

[0041] The processor **140** controls a display of the measurement result information (**S312**). In the present embodiment, the processor **140** operates such that the measurement result information is displayed at one side of the ultrasound image.

[0042] In response to a command input through the user input unit **130**, the processor **140** extracts at least one of the diagnosis information corresponding to the selected first reference image, the corresponding medical information, and the corresponding progress images, from the storage unit **120**.

[0043] Referring to FIG. 1, the display unit **150** displays the ultrasound image generated by the processor **140**. Also, the display unit **150** displays the reference image (the first reference image and/or the second reference image) detected by the processor **140**. Also, the display unit **150** displays the measurement result information generated by the processor **140**. In an embodiment, the display unit **150** displays at least one of the diagnosis information corresponding to the selected first reference image, the corresponding medical information, and the corresponding progress images.

[0044] As described above, according to the one or more of the above embodiments of the present invention, at least one of the normal reference image and the abnormal reference image corresponding to the ultrasound image of the target may be provided. Therefore, the user may use the reference image to easily determine whether the target is normal. The normal reference image and/or the abnormal reference image may be provided to the patient, thereby assisting the patient in understanding whether the target is normal.

[0045] Also, the diagnosis information, the medical information, and the progress images corresponding to the abnormal reference image may be provided, thereby facilitating the communication between the user and the patient in providing the diagnosis result and the medical treatment.

[0046] It should be understood that the exemplary embodiments described herein should be considered in a descriptive sense only and not for purposes of limitation. Descriptions of features or aspects within each embodiment should typically be considered as available for other similar features or aspects in other embodiments.

[0047] While one or more embodiments of the present invention have been described with reference to the figures, it will be understood by those of ordinary skill in the art that various changes in form and details may be made therein without departing from the spirit and scope of the present invention as defined by the following claims.

[0048] As an example, communication between the user and the patient may be facilitated by storing a plurality of normal reference images and a plurality of abnormal reference images in the storage unit **120**, automatically or manually extracting the reference image, which is most similar to the ultrasound image of the target (i.e., an ultrasound image representing present state of the target) included in the subject (i.e., the patient), from the storage unit **120**, and providing to the user and the patient at least one of the diagnosis information corresponding to the extracted reference image, the corresponding medical information, and the corresponding progress images.

What is claimed is:

1. An ultrasound system comprising:
 - a storage unit configured to store a plurality of images corresponding to respective targets; and
 - a processor configured to generate an ultrasound image which depicts the target included in a subject by using ultrasound data acquired from the subject, extract at least one reference image corresponding to the ultrasound image from among the plurality of images, and control a display of the reference image extracted.
2. The ultrasound system of claim 1, wherein the processor is configured to extract the at least one reference image corresponding to the ultrasound image from the plurality of images by using a probability model.
3. The ultrasound system of claim 2, wherein the processor is configured to:
 - detect a first contour of the target from the ultrasound image by performing contour detection processing on the ultrasound image;
 - detect second contours of the target from each of the plurality of images by performing contour detection processing on each of the plurality of images;
 - detect at least one third contour corresponding to the first contour from among the second contours by using the probability model; and
 - extract the reference image corresponding to the third contour detected as the reference image corresponding to the ultrasound image from the storage unit.
4. The ultrasound system of claim 2, further comprising a user input unit configured to receive from a user reference image selection information for selecting the at least one reference image from the reference image extracted.

5. The ultrasound system of claim 4, wherein the processor is configured to re-extract an image corresponding to the reference image selection information from the at least one reference image extracted.

6. The ultrasound system of claim 1, further comprising a user input unit configured to receive from a user reference image selection information for selecting the reference image corresponding to the ultrasound image.

7. The ultrasound system of claim 6, wherein the processor is configured to extract the reference image corresponding to the reference image selection information from the storage unit.

8. The ultrasound system of claim 1, wherein the processor is configured to generate measurement information corresponding to a degree of normality of the target in the ultrasound image by using the ultrasound image and the reference image extracted.

9. The ultrasound system of claim 8, wherein the processor is configured to:

- detect a degree of similarity between the ultrasound image and the reference image extracted; and
- generate the measurement information including the degree of similarity detected.

10. The ultrasound system of claim 8, wherein the processor unit is configured to generate the measurement information including a relation analysis result by performing a relation analysis between the ultrasound image and the reference image extracted.

11. The ultrasound system of claim 8, wherein the processor is further configured to generate, based on the measurement information, measurement result information corresponding to a normality or abnormality of the target in the ultrasound image.

12. The ultrasound system of claim 11, wherein the processor is configured to compare the measurement information including the degree of similarity between the ultrasound image and the reference image extracted with a predetermined critical value, and generate the measurement result information indicating that the target in the ultrasound image is normal or abnormal depending on whether the degree of similarity is greater than the predetermined critical value.

13. The ultrasound system of claim 11, wherein the processor is configured to compare the measurement information including the relation analysis result between the ultrasound image and the reference image extracted with a predetermined critical value, and generate the measurement result information indicating that the target in the ultrasound image is normal or abnormal depending on whether the relation analysis result is greater than the predetermined critical value.

14. A method of providing a reference image, comprising:

- generating an ultrasound image which depicts the target included in a subject by using ultrasound data acquired from the subject;
- extracting at least one reference image corresponding to the ultrasound image from among a plurality of images stored in a storage unit configured to store the plurality of images corresponding to respective targets; and
- controlling a display of the reference image extracted.

15. The method of claim 14, wherein the extracting of at least one reference image comprises extracting the at least one reference image corresponding to the ultrasound image from the plurality of images by using a probability model.

16. The method of claim 15, wherein the extracting of at least one reference image comprises:

detecting a first contour of the target from the ultrasound image by performing contour detection processing on the ultrasound image;

detecting second contours of the target from each of the plurality of images by performing contour detection processing on each of the plurality of images;

detecting at least one third contour corresponding to the first contour from among the second contours by using the probability model; and

extracting the reference image corresponding to the third contour detected as the reference image corresponding to the ultrasound image from the storage unit.

17. The method of claim **15**, wherein the extracting of at least one reference image comprises receiving from a user reference image selection information for selecting the at least one reference image from the reference image extracted.

18. The method of claim **17**, wherein the extracting of at least one reference image comprises re-extracting an image corresponding to the reference image selection information from the at least one reference image extracted.

19. The method of claim **14**, wherein the extracting of at least one reference image comprises receiving from a user reference image selection information for selecting the reference image corresponding to the ultrasound image.

20. The method of claim **19**, wherein the extracting of at least one reference image comprises extracting the reference image corresponding to the reference image selection information from the storage unit.

21. The method of claim **14**, further comprising generating measurement information corresponding to a degree of normality of the target in the ultrasound image by using the ultrasound image and the reference image extracted.

22. The method of claim **21**, wherein the generating of the measurement information comprises:

detecting a degree of similarity between the ultrasound image and the reference image extracted; and

generating the measurement information including the degree of similarity detected.

23. The method of claim **21**, wherein the generating of the measurement information comprises generating the measurement information including a relation analysis result by performing a relation analysis between the ultrasound image and the reference image extracted.

24. The method of claim **21**, further comprising generating, based on the measurement information, measurement result information corresponding to a normality or abnormality of the target in the ultrasound image.

25. The method of claim **24**, wherein the generating of the measurement result information comprises comparing the measurement information including the degree of similarity between the ultrasound image and the reference image extracted with a predetermined critical value, and generating the measurement result information indicating that the target in the ultrasound image is normal or abnormal depending on whether the degree of similarity is greater than the predetermined critical value.

26. The method of claim **24**, wherein the generating of the measurement result information comprises comparing the measurement information including the relation analysis result between the ultrasound image and the reference image extracted with a predetermined critical value, and generating the measurement result information indicating that the target in the ultrasound image is normal or abnormal depending on whether the relation analysis result is greater than the predetermined critical value.

* * * * *

专利名称(译)	超声系统和提供与超声图像对应的参考图像的方法		
公开(公告)号	US20140378836A1	公开(公告)日	2014-12-25
申请号	US14/312216	申请日	2014-06-23
[标]申请(专利权)人(译)	三星麦迪森株式会社		
申请(专利权)人(译)	三星MEDISON CO. , LTD.		
当前申请(专利权)人(译)	三星MEDISON CO. , LTD.		
[标]发明人	LEE JUN KYO		
发明人	LEE, JUN-KYO		
IPC分类号	A61B8/08 A61B8/00		
CPC分类号	A61B8/4245 A61B8/5207 A61B8/463 A61B8/467 A61B8/52 A61B8/5223 A61B8/56 G06F19/321 G06T7/0014 G06T2207/10132 G16H30/40 G16H50/20		
优先权	1020130072488 2013-06-24 KR		
外部链接	Espacenet USPTO		

摘要(译)

提供了一种超声系统和提供与目标的超声图像对应的参考图像的方法。超声系统包括：存储单元，被配置为存储与各个目标对应的多个图像；处理器，被配置为通过使用从对象获取的超声数据生成描绘包括在对象中的目标的超声图像，从多个图像中提取对应于超声图像的至少一个参考图像，并控制显示提取的参考图像。

