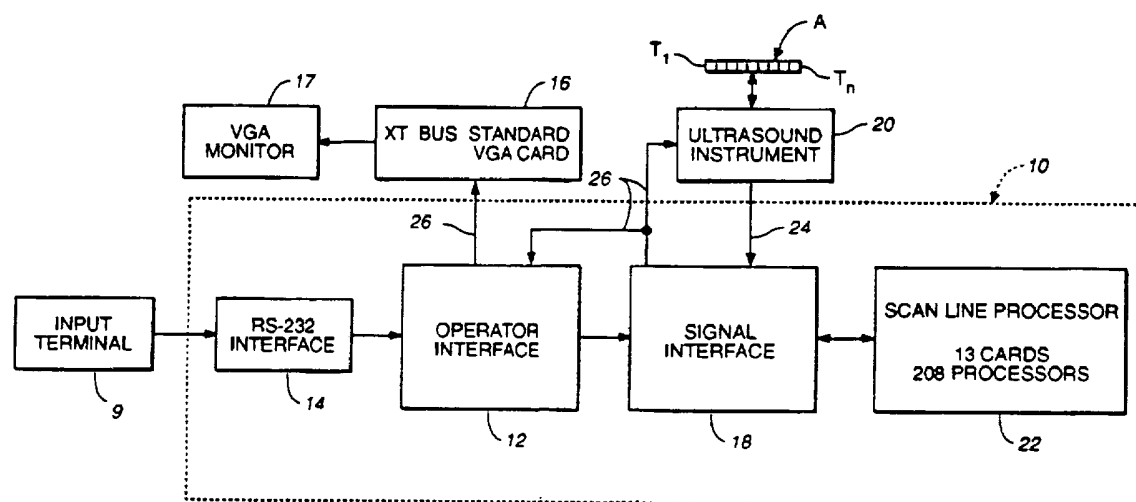




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(54) Title: APPARATUS AND METHOD FOR ULTRASONIC IMAGE PROCESSING



(57) Abstract

An apparatus (10) and method for real-time reduction of noise components from echographic images. A plurality of scan line processor circuits (22) are connected through an interface (18) to an echographic imaging apparatus (20), such as an ultrasonic imaging device. Each scan line processor circuit (22) receives a row of dirty image signals (24) and simultaneously and independently performs a one-dimensional side lobe subtraction of noise components (a deconvolution of the dirty beam pattern) from the row of signals using a CLEAN algorithm. After subtraction, the resulting clean components are convolved by the scan line processor circuits (22) with a clean beam pattern to smooth the image for display. Finally, the clean image signals optionally can be masked by a masking multiplier (52) to remove processing artifacts and compressed by a compression device (56) to enhance contrast. The resulting masked and compressed clean image signals (26) are then displayed on a display device (17, 20). A sufficient number of scan line processor circuits (22), relative to the number of rows in a complete image frame, are provided to effect real-time processing of image frames.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US93/12384**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(5) : A61B 8/00

US CL : 73/602; 128/660.07; 364/413.25

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)

U.S. : 73/602; 128/660.07; 364/413.25

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

None

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

None

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 5,105,814, (DRUKAREY ET AL.), 21 April 1992. See column 6 line 47 to column 10 line 60.	1-71
A	US, A, 5,111,823, (COHEN), 12 May 1992. See entire document.	1-71

☐ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

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