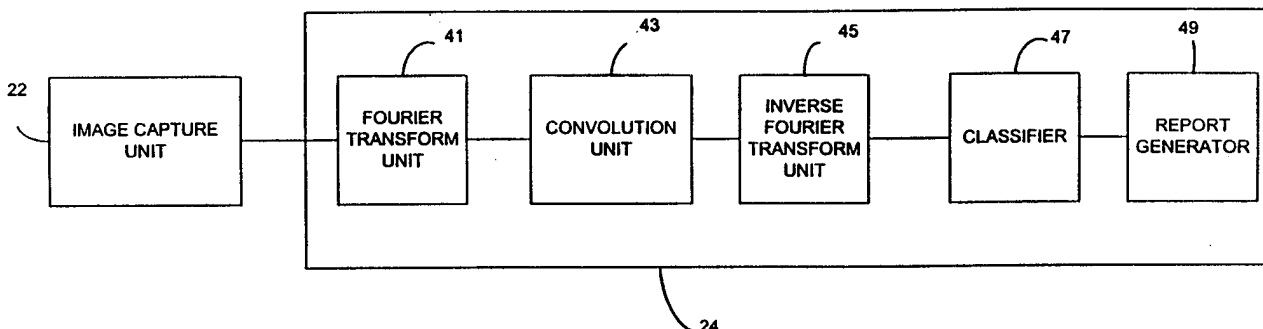




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<p>(21) International Application Number: PCT/US98/09775 (22) International Filing Date: 14 May 1998 (14.05.98)  (30) Priority Data: 60/047,008 14 May 1997 (14.05.97) US  (71) Applicant (for all designated States except US): EMORY UNIVERSITY [US/US]; 1380 South Oxford Road, Atlanta, GA 30322 (US).  (72) Inventor; and (75) Inventor/Applicant (for US only): BROOKS, Kenneth, W. [US/US]; 3051 Elan Way, Marietta, GA 30068 (US).  (74) Agents: PRATT, John, S. et al.; Kilpatrick Stockton LLP, Suite 2800, 1100 Peachtree Street, Atlanta, GA 30309-4530 (US).</p>		<p>(81) Designated States: AU, CA, JP, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report.</i>  (88) Date of publication of the international search report: 3 June 1999 (03.06.99)</p>

(54) Title: SYSTEMS AND METHODS FOR ANALYZING PHANTOM IMAGES



(57) Abstract

A significant metric in federal mammography quality standards is the phantom image quality assessment. A Mammography Quality Control System (MQCS) (20, 20') performs automated image analyses for the American College of Radiology (ACR) mammographic accreditation phantom (MAP) images. The MQCS (20, 20') uses a Fast Fourier Transform unit (41) for low-level processing combined with derivative filters for intermediate-level processing to provide translation and rotation independent localization of test objects in the MAP images. The MQCS (20, 20') uses a Bayesian classifier (47) using threshold contrast. The fifty percent visibility contrast thresholds established by the trained observer's responses were: fibrils 1.010; microcalcifications 1.156; and nodules 1.016. Using these values and given automated localization of test objects, the MQCS (20, 20') scores images with better consistency than the diagnostic physicists. The MQCS (20, 20') thus provides an operator independent, machine-based scoring of MAP images that is used to help eliminate the effect of observer variability.

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INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US98/09775

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(6) :G06K 9/62 US CL :382/132; 378/207, 37 According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) U.S. : 382/132, 278, 279; 378/207, 37; 364/728.01, 728.03, 728.05, 819, 820 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) APS search terms: accreditation, correlation, convolution, fft, fourier, mammography, radiography		
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Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,565,678 A (MANIAN) 15 October 1996, col.2, lines 55-67, col.3, lines 1-57.	1-19
Y	US 5,446,799 A (TUY) 29 August 1995, abstract.	1-19
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Y	US 5,361,307 A (HARTLEY et al.) 01 November 1994, col.5, lines 1-68, col.6, lines 1-15.	1-19
Y	US 5,469,353 A (PINSKY et al.) 21 November 1995, col.6, lines 44-54, col.7, lines 17-41.	14-15 and 17-18
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