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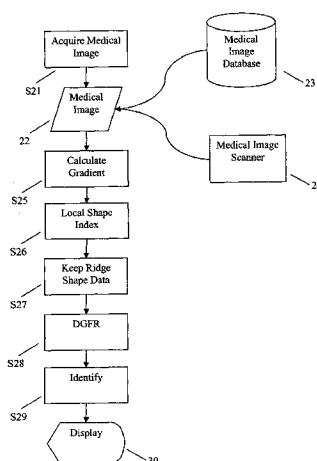
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(54) Title: METHOD FOR DETECTION AND VISIIONAL ENHANCEMENT OF BLOOD VESSELS AND PULMONARY EMBOLI



(57) Abstract: A method for detecting a substantially cylindrical internal structures and dark structures surrounded by bright intensity values (contrast) in a medical image includes acquiring a medical image (22). A gradient of the medical image (22) is calculated. Local shape index information for the calculated gradient of the medical image is calculated. Gradient information in areas having a local shape index not indicative of ridge and rut shapes is removed. Diverging gradient field responses (DGFR) are calculated based on the remaining gradient information. The DGFR responses and relative amount of DGFR responses for the rut and ridge areas is used as a discriminative feature in detecting the substantially cylindrical internal structure as well as darker occluding structures within cylindrical structures such as Pulmonary Emboli.

WO 2008/024359 A3

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

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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)

G06T

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 practical, search terms used)

EPO-Internal, WPI Data, INSPEC, IBM-TDB

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2006/120591 A1 (CATHIER PASCAL [FR] ET AL) 8 June 2006 (2006-06-08) abstract; claims 1-20; figures 1-3 paragraph [0007] - paragraph [0009] paragraph [0014] - paragraph [0057] -----	1-26
A	US 2005/152588 A1 (YOSHIDA HIROYUKI [US] ET AL) 14 July 2005 (2005-07-14) abstract; figures 2,3,35 paragraph [0163] - paragraph [0181] ----- -/--	1-26

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

☒ See patent family annex.

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

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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.

G document member of the same patent family

Date of the actual completion of the international search

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International application No

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	HIROYUKI YOSHIDA* ET AL: "Three-Dimensional Computer-Aided Diagnosis Scheme for Detection of Colonic Polyps" IEEE TRANSACTIONS ON MEDICAL IMAGING, IEEE SERVICE CENTER, PISCATAWAY, NJ, US, vol. 20, no. 12, December 2001 (2001-12), XP011036187 ISSN: 0278-0062 the whole document	1-26
A	FRIMMEL H ET AL: "Virtual Endoscopic Visualization of the Colon by Shape-Scale Signatures" IEEE TRANSACTIONS ON INFORMATION TECHNOLOGY IN BIOMEDICINE, IEEE SERVICE CENTER, LOS ALAMITOS, CA, US, vol. 9, no. 1, March 2005 (2005-03), pages 120-131, XP011127547 ISSN: 1089-7771 the whole document	1-26
A	US 2005/185838 A1 (BOGONI LUCA [US] ET AL) 25 August 2005 (2005-08-25) the whole document	1-26

INTERNATIONAL SEARCH REPORT

Information on patent family members

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