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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/146,770	09/28/2018	Jaganathan Vellagoundar	20176/320538	4717

101057 7590 06/02/2020

Hanley, Flight & Zimmerman, LLC (GE)
150 S. Wacker Drive
Suite 2200
Chicago, IL 60606

EXAMINER	
OSINSKI, MICHAEL S	

ART UNIT	PAPER NUMBER
2664	

NOTIFICATION DATE	DELIVERY MODE
06/02/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@hfzlaw.com

Office Action Summary	Application No. 16/146,770	Applicant(s) Vellagoundar et al.	
	Examiner MICHAEL S OSINSKI	Art Unit 2664	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 9/28/2018.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-20 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-5,7-12,14-17 and 19-20 is/are rejected.

8) ☑ Claim(s) 6,13 and 18 is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 9/28/2018 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

1. The following Office action is in response to communications filed on 9/28/2018. Claims 1-20 are currently pending within this application.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 9/28/2018 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections – 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a)(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

4. ***Claims 1-5, 8-12, 14-17, and 19 are rejected under 35 U.S.C. 102(a)(2) as being anticipated by Park (US PGPub 2019/0282214) [hereafter Park].***

5. As to claim 1, Park discloses an apparatus (ultrasound diagnosis apparatus 100 and medical imaging apparatus 300 shown in Figs 1-3) comprising: a memory (storage 340 with neural network processor 325) storing a first neural network (as shown in Fig 4) that is trained to map image quality metrics (feature values) to corresponding scan parameters (parameters), and a processor (processor 320 with neural network processor 325) configured to receive specified image quality metrics (input feature values), instruct the trained first neural network to generate scan parameters (output parameter values) based on the specified image quality metrics to configure an imaging device (ultrasound system 605) for image acquisition, and instruct the imaging device to acquire one or more resulting images using the generated scan parameters (Paragraphs 0042-0043, 0050, 0063-0066, 0069-0078, 0083-0084, 0086-0091, 0093-0096, 0104).

6. As to claim 2, Park discloses a second neural network (deep learning network used by processor 320 for calculation of optimization coefficient) that is trained to map image datasets (training image data set) to corresponding image quality metrics (optimization coefficients corresponding to various feature types), wherein the first neural network is trained by the image quality metrics output from the second neural network and scan parameters associated with corresponding image datasets (Paragraphs 0072-0078, 0086-0087).

7. As to claim 3, Park discloses the first neural network is a shallow neural network and the second neural network is a deep neural network, the second neural network including more hidden layers than the first neural network (Paragraphs 0077, 0086).

8. As to claim 4, Park discloses the second neural network is to periodically update the first neural network (Paragraphs 0076-0078, 0085-0086).

9. As to claim 5, Park discloses the first neural network is to be fine-tuned based on a usage pattern associated with at least one of the imaging device or a site at which the imaging device is located (Paragraphs 0088-0094).

10. As to claims 8-12, 14-17, and 19, the claimed limitations are fully disclosed as explained with respect to the above citations and explanations of claims 1-5.

Claim Rejections – 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102 of this title, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

12. ***Claims 7 and 20 are rejected under 35 U.S.C 103 as being unpatentable over Park (US PGPub 2019/0282214) [hereafter Park] in view of Bhatia (US PGPub 2015/0199478) [hereafter Bhatia].***

13. As to claims 7 and 20, Park discloses the imaging device is a magnetic resonance imaging device, the image quality metrics include at least one of signal-to-noise ratio (SNR), contrast, scan time, and patient comfort level (Paragraphs 0037, 0041, 0065, 0067, 0072).

It is however noted that Park fails to particularly disclose the scan parameters include at least one of slice thickness (ST), flip angle (FA), echo time (TE), repetition time (TR), inversion time (TI), echo train length (ETL), spatial resolution, number of excitations (Nex), number of signal averages/acquisitions (Nsa), receiver bandwidth (rBW).

On the other hand, Bhatia discloses determining scan parameters that include at least one of slice thickness (ST), flip angle (FA), echo time (TE), repetition time (TR), inversion time (TI), echo train length (ETL), spatial resolution, number of excitations (Nex), number of signal averages/acquisitions (Nsa), receiver bandwidth (rBW) (Paragraphs 0021, 0039-0042).

It would have been obvious to one having ordinary skill in the art before the effective filing date of the claimed invention to include generating scanning parameters such as at least one of slice thickness (ST), flip angle (FA), echo time (TE), repetition time (TR), inversion time (TI), echo train length (ETL), spatial resolution, number of excitations (Nex), number of signal averages/acquisitions (Nsa), receiver bandwidth (rBW) as taught by Bhatia with the apparatus taught by Park because the cited prior art are directed towards deriving scanning parameters from image quality features using neural networks and because the claimed limitations are fully disclosed within the

combination of the prior art references and would yield predictable results of increasing the amount of relevant medical imaging parameters to be achieved during imaging operations of the imaging device.

Claims

14. Claims 6, 13, and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL S OSINSKI whose telephone number is (571) 270-3949. The examiner can normally be reached on Monday - Friday, 10:00am - 6:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on 571-272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MO
/MICHAEL S OSINSKI/
Primary Examiner, Art Unit 2664

Notice of References Cited	Application/Control No. 16/146,770	Applicant(s)/Patent Under Reexamination Vellagoundar et al.	
	Examiner MICHAEL S OSINSKI	Art Unit 2664	Page 1 of 3

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20150199478-A1	07-2015	BHATIA; Vivek Naresh	A61B6/503	382/128
*	B	US-10572998-B2	02-2020	Bhatia; Vivek Naresh	A61B6/032	1/1
*	C	US-20200098106-A1	03-2020	MORIYASU; Kenta	G06T7/0012	1/1
*	D	US-20200088824-A1	03-2020	TAKESHIMA; Hidenori	G01R33/5673	1/1
*	E	US-20200082943-A1	03-2020	SAKAGUCHI; Takuya	G06N20/00	1/1
*	F	US-20200075165-A1	03-2020	Lieberman; Daniel M.	G06F40/30	1/1
*	G	US-20200075164-A1	03-2020	Lieberman; Daniel M.	G16H50/20	1/1
*	H	US-20190164312-A1	05-2019	Sunkavalli; Kalyan K.	G06N3/08	1/1
*	I	US-20200069292-A1	03-2020	Abolmaesumi; Purang	A61B8/463	1/1
*	J	US-20200069214-A1	03-2020	Takeshima; Hidenori	A61B5/055	1/1
*	K	US-20200043602-A1	02-2020	KIM; SEUNGSOO	G16H50/20	1/1
*	L	US-20200005100-A1	01-2020	KIM; Sungsik	G06K9/6217	1/1
*	M	US-20190374165-A1	12-2019	POOLE; Ian	G16H30/40	1/1

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
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	O					
	P					
	Q					
	R					
	S					
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Notice of References Cited	Application/Control No. 16/146,770	Applicant(s)/Patent Under Reexamination Vellagoundar et al.	
	Examiner MICHAEL S OSINSKI	Art Unit 2664	Page 2 of 3

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20190365341-A1	12-2019	CHAN; Chung	G06T7/0012	1/1
*	B	US-20190355114-A1	11-2019	MUEHLBERG; Alexander	G06T7/11	1/1
*	C	US-20190340754-A1	11-2019	HONKALA; Mikko	A61B6/5211	1/1
*	D	US-20190294930-A1	09-2019	KOIKE; Tetsuya	G01N21/64	1/1
*	E	US-20190282214-A1	09-2019	PARK; Jonggeun	G06T7/11	1/1
*	F	US-20190282205-A1	09-2019	Tung; Yu-Teng	A61B8/5253	1/1
*	G	US-20190057504-A1	02-2019	KOBAYASHI; Tsuyoshi	G06T7/0014	1/1
*	H	US-20180349759-A1	12-2018	Isogawa; Kenzo	G06N3/084	1/1
*	I	US-20180160981-A1	06-2018	Tsymbalenko; Yelena Viktorovna	A61B8/5215	1/1
*	J	US-20180071452-A1	03-2018	Sharma; Puneet	G16H40/60	1/1
*	K	US-20170154054-A1	06-2017	Gao; Haoyuan	G06F16/51	1/1
*	L	US-20170143312-A1	05-2017	HEDLUND; Martin	G06N3/0445	1/1
*	M	US-10198799-B2	02-2019	Park; Hyun-wook	G06T5/001	1/1

FOREIGN PATENT DOCUMENTS

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Notice of References Cited	Application/Control No. 16/146,770	Applicant(s)/Patent Under Reexamination Vellagoundar et al.	
	Examiner MICHAEL S OSINSKI	Art Unit 2664	Page 3 of 3

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20120190962-A1	07-2012	Glaser-Seidnitzer; Karlheinz	G16H40/63	600/407
*	B	US-10387765-B2	08-2019	Mailhe; Boris	G06N3/084	1/1
*	C	US-10241175-B2	03-2019	Benner; Thomas	G01R33/56527	1/1
*	D	US-10043088-B2	08-2018	Odry; Benjamin L.	G06K9/627	1/1
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FOREIGN PATENT DOCUMENTS

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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/146,770	Vellagoundar et al.
	Examiner	Art Unit
	MICHAEL S OSINSKI	2664

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	05/27/2020								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
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	17	✓								
	18	O								
	19	✓								
	20	✓								

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/146,770	Vellagoundar et al.
	Examiner	Art Unit
	MICHAEL S OSINSKI	2664

CPC - Searched*		
Symbol	Date	Examiner

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
EAST Search	05/26/2020	MO
Consider references cited in IDS	05/26/2020	MO
Google Patents Search	05/27/2020	MO
Inventor Search	05/27/2020	MO

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/MICHAEL S OSINSKI/ Primary Examiner, Art Unit 2664	

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2018-09-28
First Named Inventor	Jaganathan Vellagoundar
Art Unit	
Examiner Name	
Attorney Docket Number	20176/320538

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.S.O/

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	4835690		1989-05-30	Gangarosa et al.	
	2	6687527		2004-02-03	Wu et al.	
	3	6781375		2004-08-24	Miyazaki et al.	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20060255801		2006-11-16	Ikeda	
	2	20070276221		2007-11-29	Warntjes	
	3	20180144466		2018-05-24	Hsieh et al.	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	Application Number	
	Filing Date	2018-09-28
	First Named Inventor	Jaganathan Vellagoundar
	Art Unit	
	Examiner Name	
	Attorney Docket Number	20176/320538

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.S.O/

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2017116011	WO		2017-07-06	Samsung Electronics Co., LTD.		

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

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EXAMINER SIGNATURE

Examiner Signature	/MICHAEL S OSINSKI/	Date Considered	05/27/2020

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2018-09-28
	First Named Inventor	Jaganathan Vellagoundar
	Art Unit	
	Examiner Name	
	Attorney Docket Number	20176/320538

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Christopher N. George/	Date (YYYY-MM-DD)	2018-09-28
Name/Print	Christopher N. George	Registration Number	51728

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L7	6	("20060255801"|"20070276221"|"20180144466"|"4835690"|"6687527"|"6781375").PN.	US-PGPUB; USPAT	OR	ON	2020/05/27 19:52
L8	1	(VELLAGOUNDAR adj JAGANATHAN).in. (KUMAR adj REDDY adj ASHOK adj KUMAR).in. (JAYAPALAN adj MANIVANNAN).in.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/05/27 21:34
L9	166	"105142513" "2533626" "10565477".pn. "10628943".pn. "104603630" "101273277" "9271661".pn. "101659142" "8634616".pn. "2010057899" "104583799" "10241175".pn. "10043088".pn. "9684979".pn. "7725154".pn. "8059879".pn. "20120190962" "9928589".pn. "20110228998" "9507003".pn. "8131043".pn. "10387765".pn. "20160038796"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/05/27 21:37

EAST Search History (Prior Art)

S1	673	((CNN DNN RNN SVM (support NEAR3 (vector machine)) (machine NEAR3 learning) ((convolution convolutional learning classification classifying train training trained deep shallow) NEAR3 (network neural nonlinear non-linear model layer tree)) ((neural nonlinear non-linear) NEAR3 network) Convnet) WITH (receive receiving reception received acquire acquiring acquisition acquired acquirement obtain obtaining obtained obtainment attain attained attaining attainment input inputting inputted output outputting outputted supply supplying supplied generate generating generation generated produce producing production produced provide providing provided read reading readout sense sensing sensed transfer transmit transferring transferred transmission transmitting transmitted send sending sent forward forwarding forwarded relay relaying relayed communicate communicating communicated communication deliver delivering delivery delivered detect detecting detection detected decide deciding decision decided sense sensing sensed calculate calculating calculation calculated measure measuring measured measurement compute computing computation computed derive deriving derivation derived determine determining determination determined map mapping mapped) WITH ((score grade confident confidence rank quality contrast noise SNR (signal NEAR3 noise) sharp sharpness clarity focus focusing focused condition characteristic error fidelity feature trait blur blurring blurred aspect condition attribute) NEAR5 (image still static picture photo photograph video frame movie JPEG MPEG stream live-view through-image preview-image scene)) WITH ((parameter property time resolution bandwidth echo degree level thickness angle timing length quantity number count size) NEAR5 (camera camcorder imager imaging imaged scanner scanning scanned capture capturing PET x-ray CT tomography CAT MRI DICOM (magnetic NEAR3 resonance) medial ultrasound MR pickup pick-up record recording photograph photographing monitor$3 surveillance survey$3))) AND ((receive receiving reception received acquire acquiring acquisition acquired acquirement obtain obtaining obtained obtainment attain attained attaining attainment input inputting inputted interface GUI supply supplying supplied generate generating generation generated produce producing production produced provide providing provided read reading readout	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/05/27 12:34

EAST Search History (Prior Art)

S2	673	S1 and (((CNN DNN RNN SVM (support NEAR3 (vector machine)) (machine NEAR3 learning) ((convolution convolutional learning classification classifying train training trained deep shallow) NEAR3 (network neural nonlinear non-linear model layer tree)) ((neural nonlinear non-linear) NEAR3 network) Convnet) WITH (receive receiving reception received acquire acquiring acquisition acquired acquirement obtain obtaining obtained obtainment attain attained attaining attainment input inputting inputted output outputting outputted supply supplying supplied generate generating generation generated produce producing production produced provide providing provided read reading readout sense sensing sensed transfer transmit transferring transferred transmission transmitting transmitted send sending sent forward forwarding forwarded relay relaying relayed communicate communicating communicated communication deliver delivering delivery delivered detect detecting detection detected decide deciding decision decided sense sensing sensed calculate calculating calculation calculated measure measuring measured measurement compute computing computation computed derive deriving derivation derived determine determining determination determined) WITH ((parameter property time resolution bandwidth echo degree level thickness angle timing length quantity number count size) NEAR5 (camera camcorder imager imaging imaged scanner scanning scanned capture capturing PET x-ray CT tomography CAT MRI DICOM (magnetic NEAR3 resonance) medial ultrasound MR pickup pick-up record recording photograph photographing monitor$3 surveillance survey$3))) SAME (((score grade confident confidence rank quality contrast noise SNR (signal NEAR3 noise) sharp sharpness clarity focus focusing focused condition characteristic error fidelity feature trait blur blurring blurred aspect condition attribute) NEAR5 (image still static picture photo photograph video frame movie JPEG MPEG stream live-view through-image preview-image scene))))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/05/27 12:42

EAST Search History (Prior Art)

S3	574	S2 and ((camera camcorder imager imaging imaged scanner scanning scanned capture capturing captured PET x-ray CT tomography CAT MRI DICOM (magnetic NEAR3 resonance) medial ultrasound MR pickup pick-up record recording photograph photographing monitor$3 surveillance survey$3 acquire acquiring acquisition acquired acquirement obtain obtaining obtained obtainment attain attained attaining attainment generate generating generation generated produce producing production produced) WITH (image still static picture photo photograph video frame movie JPEG MPEG stream live-view through-image preview-image scene data info information) WITH ((receive receiving reception received acquire acquiring acquisition acquired acquirement obtain obtaining obtained obtainment attain attained attaining attainment input inputting inputted output outputting outputted supply supplying supplied generate generating generation generated produce producing production produced provide providing provided read reading readout sense sensing sensed transfer transmit transferring transferred transmission transmitting transmitted send sending sent forward forwarding forwarded relay relaying relayed communicate communicating communicated communication deliver delivering delivery delivered detect detecting detection detected decide deciding decision decided sense sensing sensed calculate calculating calculation calculated measure measuring measured measurement compute computing computation computed derive deriving derivation derived determine determining determination determined) NEAR5 (parameter property time resolution bandwidth echo degree level thickness angle timing length quantity number count size)))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/05/27 12:45
S4	673	S2 S3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2020/05/27 12:49

EAST Search History (Interference)

		<This search history is empty>				

Similar Documents

Publication	Publication Date	Title
CN105142513B	2019-03-01	Medical image provides equipment and its medical image processing method
RU2533626C2	2014-11-20	Automatic successive scheduling of mr scanning
Rutz et al.	2008	Accelerated whole-heart 3D CSPAMM for myocardial motion quantification
US10586477B2	2020-02-18	Deep learning medical systems and methods for image reconstruction and quality evaluation
US10628943B2	2020-04-21	Deep learning medical systems and methods for image acquisition
CN104603630B	2017-12-12	Magnetic resonance imaging system with the motion detection based on omniselector
CN101273277B	2013-01-02	System and method for acquiring magnetic resonance imaging (MRI) data
Dar et al.	2019	Image synthesis in multi-contrast MRI with conditional generative adversarial networks
US9271661B2	2016-03-01	Method for free-breathing magnetic resonance imaging using iterative image-based respiratory motion correction
KR101659142B1	2016-09-22	Method to generate image data
US8634616B2	2014-01-21	Method, apparatus, and computer program product for acquiring medical image data
JP2010057899A	2010-03-18	Identifying white matter fiber tract using magnetic resonance imaging (mri)
CN104583799B	2018-12-18	Motion tracking based on rapid image acquisition
US10241175B2	2019-03-26	Medical imaging apparatus having multiple subsystems, and operating method therefor
US10043088B2	2018-08-07	Image quality score using a deep generative machine-learning model
US9684979B2	2017-06-20	MRI 3D cine imaging based on intersecting source and anchor slice data
US7725154B2	2010-05-25	Method and medical imaging apparatus for planning an image acquisition based on a previously-generated reference image
US8059879B2	2011-11-15	Brain function analysis apparatus and method
US20120190962A1	2012-07-26	Method for computer-assisted configuration of a medical imaging device
US9928589B2	2018-03-27	Apparatus and method for supporting acquisition of multi-parametric images
US20110228998A1	2011-09-22	System and method for automatic computation of mr imaging scan parameters
US9507003B2	2016-11-29	System and method for imaging of vascular structures using non-contrast enhanced magnetic resonance imaging
US8131043B2	2012-03-06	Method and apparatus for detecting interventricular dyssynchrony
US10387765B2	2019-08-20	Image correction using a deep generative machine-learning model
KR20160038798A	2016-04-07	Operation of a medical imaging examination device comprising a plurality of subsystems

Priority And Related Applications

Priority Applications (1)

Application	Priority date	Filing date	Title
US16/146,770	2018-09-28	2018-09-28	Image quality-guided magnetic resonance imaging configuration

Applications Claiming Priority (1)

Application	Filing date	Title
US16/146,770	2018-09-28	Image quality-guided magnetic resonance imaging configuration

Legal Events

Date	Code	Title	Description
2018-09-28	AS	Assignment	**Owner name**: GENERAL ELECTRIC COMPANY, NEW YORK **Free format text**: ASSIGNMENT OF ASSIGNORS INTEREST;ASSIGNORS:VELLAGOUNDAR, JAGANATHAN;KUMAR REDDY, ASHOK KUMAR P;JAYAPALAN, MANIVANNAN;REEL/FRAME:047011/0271 **Effective date**: 20180927

Bibliographic Data

Application No: 16/146,770

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☑ No ☐ Met After Allowance

Verified and Acknowledged: /MICHAEL S OSINSKI/ Examiner's Signature | Initials

Title: IMAGE QUALITY-GUIDED MAGNETIC RESONANCE IMAGING CONFIGURATION

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
09/28/2018	382	2664	20176/320538
RULE			

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CONTINUING DATA

FOREIGN APPLICATIONS

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10/19/2018

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$1,720