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Application Details

APPLICATION NUMBER	202141037548
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	18/08/2021
APPLICANT NAME	1 . Dr.P.Ashok Babu 2 . Dr.V.Sivanagaraju 3 . Mr.D.Khalandar Basha 4 . Ms.C.Radhika 5 . Ms.M.Lavanya 6 . Ms.N.Manjula 7 . Mr.B.Naresh 8 . Mr.G.Kiran Kumar 9 . Ms.P.Shamili Srimani 10 . Mr.M.Narendra Reddy
TITLE OF INVENTION	A system for artifact reduction with multi-scale deep learning image processing and method thereof
FIELD OF INVENTION	COMPUTER SCIENCE
E-MAIL (As Per Record)	iprsince2014@hotmail.com
ADDITIONAL-EMAIL (As Per Record)	
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	27/08/2021

Application Status

APPLICATION STATUS	**Awaiting Request for Examination**

			View Documents

➡ Filed ➡ Published ➡ RQ Filed ➡ Under Examination ➡ Disposed

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Patent Search

Invention Title	A system for artifact reduction with multi-scale deep learning image processing and method thereof
Publication Number	35/2021
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Priority Country	
Priority Date	
Field Of Invention	COMPUTER SCIENCE
Classification (IPC)	G06T0005000000, G06T0005200000, G06N0003040000, G06N0003080000, G06K0009000000

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Applicant

Name	Address	Country	Nationality
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Ms.N.Manjula	Assistant Professor, Department of Electronics and Communication Engineering, Institute of Aeronautical Engineering, Hyderabad, Telangana, India. Pin Code:500043	India	India
Mr.B.Naresh	Assistant Professor, Department of Electronics and Communication Engineering, Institute of Aeronautical Engineering, Hyderabad, Telangana, India. Pin Code:500043	India	India
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Abstract:

[034] The present invention discloses a system for artifact reduction with multi-scale deep learning image processing and method thereof. The system includes, but not limited to, One or more processing units provided in a computer network to receive digital signal decomposed into a multi-scale representation having detail images representing multiple artifacts and approximation images of which the detail images are derived; a multi-scale approximation image at a scale representing the grey values of the image in which all details at that artifacts have been reduced. Further, the processing unit is configured to translate difference in multiple artifacts and approximation images, which is computed by deep learning data modelling and the evaluated values of the approximation images at various artifacts and the values of translated versions of the approximation image. Accompanied Drawing [FIG. 1]

Complete Specification

Claims:1.   A system for artifact reduction with multi-scale deep learning image processing, comprising:
one or more processing units provided in a computer network to receive digital signal decomposed into a multi-scale representation having detail images representing multiple artifacts and approximation images of which the detail images are derived;
a multi-scale approximation image at a scale representing the grey values of the image in which all details at that artifacts have been reduced; and
wherein the processing unit is configured to translate difference in multiple artifacts and approximation images, which is computed by deep learning data modelling and the evaluated values of the approximation images at various artifacts and the values of translated versions of the approximation image.
2.   The system as claimed in claim 1, wherein a non-linear modification modular of the values of the translation difference in multiple artifacts and approximation images are steered by the values of an orientation map which includes for a plurality of pixels on a specific scale with a local direction of interest or wherein values of various weight functions that are applied to the images and summed up to forming an amplification image, which is further steered by the values of the orientation map which includes for a plurality of pixels on a scale a local direction of interest.
3.   The system as claimed in claim 1, wherein the multiple artifacts and approximation images being weighted function sums of translation difference images are identical to the multi-scale detail images or a close approximation of the multi-scale detail images.
4.   The system as claimed in claim 1, wherein the processing unit is configured to access a trained multi-scale neural network including a plurality of resolution networks to train the suppress artifacts using image training data that include already learned and trained artifact and wherein the resolution network is provided with access the acquired digital image data of the subject that includes a region of interest of the image.

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FORM 1 THE PATENTS ACT 1970 (39 of 1970) and THE PATENTS RULES, 2003 **APPLICATION FOR GRANT OF PATENT** (See section 7, 54 and 135 and sub-rule (1) of rule 20)		(FOR OFFICE USE ONLY)	
	Application No.		
	Filing date:		
	Amount of Fee paid:		
	CBR No:		
	Signature:		
1. APPLICANT'S REFERENCE / IDENTIFICATION NO. (AS ALLOTTED BY OFFICE)			

2. TYPE OF APPLICATION [Please tick (✓) at the appropriate category]

Ordinary (✔)		Convention ( )		PCT-NP ( )	
Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )

3A. APPLICANT(S)

Name in Full	Nationality	Country of Residence	Address of the Applicant
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3. Mr.D.Khalandar Basha	INDIAN	India	Associate Professor, Department of Electronics and Communication Engineering, Institute of Aeronautical Engineering, Hyderabad, Telangana, India. Pin Code:500043
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			Engineering, Institute of Aeronautical Engineering, Hyderabad, Telangana, India. Pin Code:500043
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6. Ms.N.Manjula	INDIAN	India	Assistant Professor, Department of Electronics and Communication Engineering, Institute of Aeronautical Engineering, Hyderabad, Telangana, India. Pin Code:500043
7. Mr.B.Naresh	INDIAN	India	Assistant Professor, Department of Electronics and Communication Engineering, Institute of Aeronautical Engineering, Hyderabad, Telangana, India. Pin Code:500043
8. Mr.G.Kiran Kumar	INDIAN	India	Assistant Professor, Department of Electronics and Communication Engineering, Institute of Aeronautical Engineering, Hyderabad, Telangana, India. Pin Code:500043
9. Ms.P.Shamili Srimani	INDIAN	India	Assistant Professor, Department of Electronics and Communication Engineering, Institute of Aeronautical Engineering, Hyderabad, Telangana, India. Pin Code:500043
10. Mr.M.Narendra Reddy	INDIAN	India	Assistant Professor, Department of Electronics and Communication Engineering, Institute of Aeronautical Engineering, Hyderabad, Telangana, India. Pin Code:500043

3B. CATEGORY OF APPLICANT [Please tick (✔) at the appropriate category]

Natural Person (✔)	Other than Natural Person		
	Small Entity ( )	Startup ()	Others ()

4. INVENTOR(S) [Please tick (✔) at the appropriate category]

Are all the inventor(s)	Yes (✔)	No ()

2

same as the applicant(s) named above?		

If "No", furnish the details of the inventor(s)

Name in Full	Nationality	Country of Residence	Address of the Inventor
Same as Applicant			

5. TITLE OF THE INVENTION

A system for artifact reduction with multi-scale deep learning image processing and method thereof

6. AUTHORISED REGISTERED PATENT AGENT(S)	IN/PA No.	
	Name	
	Mobile No.	

7. ADDRESS FOR SERVICE OF APPLICANT IN INDIA	Name	Dr.P.Ashok Babu
	Postal Address	Professor and Head, Department of Electronics and Communication Engineering, Institute of Aeronautical Engineering, Hyderabad, Telangana, India. Pin Code:500043
	Telephone No.	
	Mobile No.	9542354100
	Fax No.	
	E-mail ID	iprsince2014@hotmail.com

8. IN CASE OF APPLICATION CLAIMING PRIORITY OF APPLICATION FILED IN CONVENTION
COUNTRY, PARTICULARS OF CONVENTION APPLICATION

Country	Application Number	Filing date	Name of the applicant	Title of the invention	IPC (as classified in the convention country)

9. IN CASE OF PCT NATIONAL PHASE APPLICATION, PARTICULARS OF INTERNATIONAL APPLICATION FILED UNDER PATENT CO-OPERATION TREATY (PCT)

International application number	International filing date

10. IN CASE OF DIVISIONAL APPLICATION FILED UNDER SECTION 16, PARTICULARS OF
ORIGINAL (FIRST) APPLICATION

Original (first) application No.	Date of filing of original (first) application

11. IN CASE OF PATENT OF ADDITION FILED UNDER SECTION 54, PARTICULARS OF MAIN APPLICATION OR PATENT

Main application/patent No.	Date of filing of main application
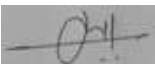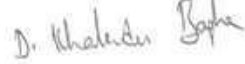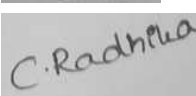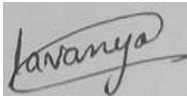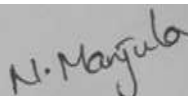
12. DECLARATIONS

  (i) Declaration by the inventor(s)
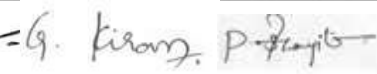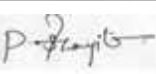
   (In case the applicant is an assignee: the inventor(s) may sign herein below or the applicant may upload the assignment or enclose the assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period).

  I/We, the above named inventor(s) is/are the true & first inventor(s) for this Invention and declare that the applicant(s) herein is/are my/our assignee or legal representative.

    (a) Date 18/08/2021

(b) Name	(c) Signature
1 Dr.P.Ashok Babu 2 Dr.V.Sivanagaraju 3 Mr.D.Khalandar Basha 4 Ms.C.Radhika 5 Ms.M.Lavanya 6 Ms.N.Manjula 7 Mr.B.Naresh 8 Mr.G.Kiran Kumar 9 Ms.P.Shamili Srimani 10 Mr.M.Narendra Reddy	*(signatures)*

(ii) Declaration by the applicant(s) in the convention country

(In case the applicant in India is different than the applicant in the convention country: the applicant in the convention country may sign herein below or applicant in India may upload the assignment from the applicant in the convention country or enclose the said assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period)

I/We, the applicant(s) in the convention country declare that the applicant(s) herein is/are my/our assignee or legal representative.

(a) Date

(b) Signature(s)

(c) Name(s) of the signatory

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(iii) Declaration by the applicant(s)

I/We the applicant(s) hereby declare(s) that: -

- ☐ ~~I am/~~ We are in possession of the above-mentioned invention.
- ☐ The ~~provisional~~/complete specification relating to the invention is filed with this application.
- ☐ ~~The invention as disclosed in the specification uses the biological material from India and the necessary permission from the competent authority shall be submitted by me/us before the grant of patent to me/us.~~
- ☐ There is no lawful ground of objection(s) to the grant of the Patent to me/us.
- ☐ ~~I am/~~we are the true & first inventor(s).
- ☐ ~~I am/we are the assignee or legal representative of true & first inventor(s).~~
- ☐ ~~The application or each of the applications, particulars of which are given in Paragraph-8, was the first application in convention country/countries in respect of my/our invention(s).~~
- ☐ ~~I/We claim the priority from the above mentioned application(s) filed in convention country/countries and state that no application for protection in respect of the invention had been made in a convention country before that date by me/us or by any person from which I/We derive the title.~~
- ☐ ~~My/our application in India is based on international application under Patent Cooperation Treaty (PCT) as mentioned in Paragraph-9.~~
- ☐ ~~The application is divided out of my /our application particulars of which is given in Paragraph-10 and pray that this application may be treated as deemed to have been filed on DD/MM/YYYY under section 16 of the Act.~~
- ☐ The said invention is an improvement in or modification of the invention particulars of which are given in Paragraph-11.

13. FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION

(a) Form 2

Item	Details	Fee	Remarks
Complete/ ~~Provisional~~ specification)#	No. of pages : 19		
No. of Claim(s)	No. of claims : 09 No. of pages: 03		
Abstract	No. of pages: 01		
No. of Drawing(s)	No. of drawings: 01 No. of pages: 01		

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In case of a complete specification, if the applicant desires to adopt the drawings filed with his provisional specification as the drawings or part of the drawings for the complete specification under rule 13(4), the number of such pages filed with the provisional specification are
required to be mentioned here.

(b) Complete specification (in conformation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable (2 copies).

(c) Sequence listing in electronic form

(d) Drawings (in conformation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable (2 copies).

(e) Priority document(s) or a request to retrieve the priority document(s) from DAS (Digital Access Service) if the applicant had already requested the office of first filing to make the priority document(s) available to DAS.

(f) Translation of priority document/Specification/International Search Report/International Preliminary Report on Patentability.

(g) Statement and Undertaking on Form 3

(h) Declaration of Inventorship on Form 5

(i) Power of Authority

(j)**Total fee ₹..........in Cash/ Banker's Cheque /Bank Draft bearing No..........**
Date on .... Bank.

I/We hereby declare that to the best of my/our knowledge, information and belief the fact and matters slated herein are correct and I/We request that a patent may be granted to me/us for the said invention.
Dated this 18th day of August, 2021

Signature:
Name: Dr.P.Ashok Babu et. al.

To,
The Controller of Patents
The Patent Office, at Chennai

Note: -
* Repeat boxes in case of more than one entry.
* To be signed by the applicant(s) or by authorized registered patent agent otherwise where mentioned.
* Tick ()/cross (x) whichever is applicable/not applicable in declaration in paragraph-12.
* Name of the inventor and applicant should be given in full, family name in the beginning.
* Strike out the portion which is/are not applicable.
* For fee: See First Schedule";