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(54) Title of the invention : AN APPARATUS AND TECHNIQUES FOR REPRESENTING MULTIDIMENSIONAL DATA FOR A CELL USING DEEP LEARNING METHODS

(51) International classification	:G06N0003040000, G06N0003080000, G06K0009620000, G06T0007000000, G06K0009000000	(71)Name of Applicant : <b>1)Shubhashish Goswami</b> Address of Applicant :Assistant Proferssor Computer Science & Engineering DBGI campus, Uttarakhand Technical University Navgaon Manduwala Chakrata road Dehradun-248007 Uttarakhand India <b>2)Mr. Somanath Das</b> <b>3)Ketan Anand</b> <b>4)Dr. P. Suresh</b> <b>5)Mrs.R.H. Aswathy</b> <b>6)Dr. Kallakunta Ravi Kumar</b> <b>7)Dr.K.Kiran Kumar</b> <b>8)Himanshu Kumar Diwedi</b> <b>9)Dr. Yogesh Misra</b> <b>10)Mr. Gyanendra Tiwary</b>
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(33) Name of priority country	:NA	
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(57) Abstract :

The present invention discloses a system for representing multidimensional data for a cell using a Deep Learning module and a convolutional neural network unit. The system includes, but not limited to, one or more processors and microcontrollers connected in a computer network with a centralized located processing unit having a biological cell observation unit. Further, the convolutional neural network unit is having utility in analysing data from human tissues tagged with fluorescently labelled for further clustering of the similar cells classification with an optical microscopy technique. In addition, the deep learning module is configured in conjunction with the optical microscopy technique for cell visualization, comparative analysis, and automated difference detection for the clustered data and further analysing large multi-parameter data sets.

No. of Pages : 21 No. of Claims : 8



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### Application Details

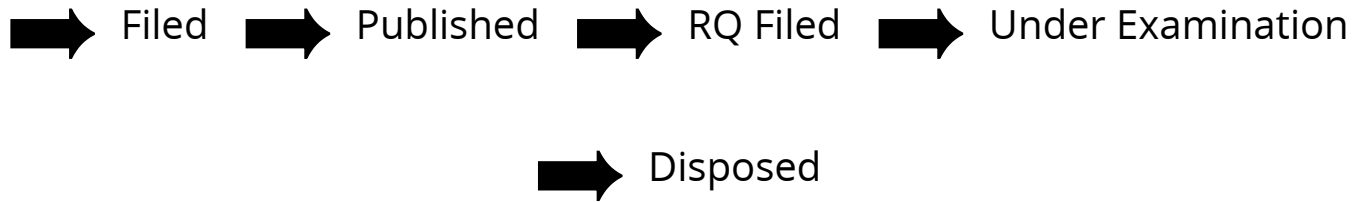
APPLICATION NUMBER	202111028992
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	29/06/2021
APPLICANT NAME	1 . Shubhashish Goswami 2 . Mr. Somanath Das 3 . Ketan Anand 4 . Dr. P. Suresh 5 . Mrs.R.H. Aswathy 6 . Dr. Kallakunta Ravi Kumar 7 . Dr.K.Kiran Kumar 8 . Himanshu Kumar Diwedi 9 . Dr. Yogesh Misra 10 . Mr. Gyanendra Tiwary
TITLE OF INVENTION	AN APPARATUS AND TECHNIQUES FOR REPRESENTING MULTIDIMENSIONAL DATA FOR A CELL USING DEEP LEARNING METHODS
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)	23/07/2021

### Application Status

APPLICATION STATUS

## Awaiting Request for Examination

[View Documents](#)



In case of any discrepancy in status, kindly contact [ipo-helpdesk@nic.in](mailto:ipo-helpdesk@nic.in)



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Department of Industrial Policy & Promotion,  
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Document Name	Created Date/Uploaded Date
202111028992-Proof of Right [09-07-2021(online)].pdf	09/07/2021
202111028992-COMplete SPECIFICATION [29-06-2021(online)].pdf	29/06/2021
202111028992-DECLARATION OF INVENTORSHIP (FORM 5) [29-06-2021(online)].pdf	29/06/2021
202111028992-DRAWINGS [29-06-2021(online)].pdf	29/06/2021
202111028992-FORM 1 [29-06-2021(online)].pdf	29/06/2021
202111028992-FORM-9 [29-06-2021(online)].pdf	29/06/2021
202111028992-REQUEST FOR EARLY PUBLICATION(FORM-9) [29-06-2021(online)].pdf	29/06/2021
202111028992-STATEMENT OF UNDERTAKING (FORM 3) [29-06-2021(online)].pdf	29/06/2021

<b>“FORM 1</b> THE PATENTS ACT 1970 (39 of 1970) and THE PATENTS RULES, 2003 <b>APPLICATION FOR GRANT OF PATENT</b> (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:	
<b>1. APPLICANT'S REFERENCE / IDENTIFICATION NO. (AS ALLOTTED BY OFFICE)</b>					
<b>2. TYPE OF APPLICATION [Please tick (✓) at the appropriate category]</b>					
Ordinary (✓)		Convention ( )		PCT-NP ( )	
Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )
<b>3A. APPLICANT(S)</b>					
Name in Full		Nationality	Country of Residence	Address of the Applicant	
1. Shubhashish Goswami		INDIAN	India	Assistant Proferssor Computer Science & Engineering DBGI campus, Uttarakhand Technical University Navaon Manduwala Chakrata road Dehradun-248007	
2. Mr. Somanath Das		INDIAN	India	Assistant Professor Dept. of Computer Science & Engineering PSIT College of Engineering NH-2 Bhauti, Kanpur, Uttar Pradesh 209305	
3. Ketan Anand		INDIAN	India	Assistant Professor Department of Computer Science and Engineering ACE Engineering College, JNTU, Hyderabad Ankushapur, Ghatkesar, Telangana 501301	
4. Dr. P. Suresh		INDIAN	India	Assistant Professor Computer Science and Engineering, KPR Institute of Engineering and Technology Arasur, Avinasi Road,	

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7. Dr.K.Kiran Kumar	INDIAN	India	Professor, Department of CSE, KLEF, Vaddeswaram, Guntur District.
8. Himanshu Kumar Diwedi	INDIAN	India	Assistant Professor Computer Science & Engineering Pranveer Singh Institute of Technology Kanpur AKTU Uttarpradesh Village Dudiya Pur Jahangir nagar gahura khaga fatehpur PIN-212656 Uttarpradesh
9. Dr. Yogesh Misra	INDIAN	India	Professor Department of Electronics and Communication Engineering, GMR Institute of Technology, Rajam – 532127, Srikakulam district, Andhra Pradesh
10. Mr. Gyanendra Tiwary	INDIAN	India	Asst. Prof. Dept. of Computer Science & Engg. Pranveer Singh Institute of Technology Kanpur - Agra - Delhi, NH2, Bhauti, Kanpur, Uttar Pradesh 209305
<b>3B. CATEGORY OF APPLICANT [Please tick (✓) at the appropriate category]</b>			
Natural Person (✓)	Other than Natural Person		
	Small Entity ( )	Startup ( )	Others ( )
<b>4. INVENTOR(S) [Please tick (✓) at the appropriate category]</b>			
Are all the inventor(s) same as the applicant(s) named above?	Yes (✓)		No ( )
<b>If “No”, furnish the details of the inventor(s)</b>			
Name in Full	Nationality	Country of Residence	Address of the Inventor
Same as Applicant			
<b>5. TITLE OF THE INVENTION</b>			


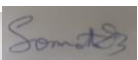
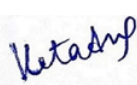



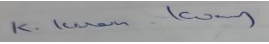
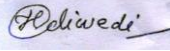

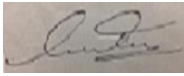
<b>AN APPARATUS AND TECHNIQUES FOR REPRESENTING MULTIDIMENSIONAL DATA FOR A CELL USING DEEP LEARNING METHODS</b>					
<b>6. AUTHORISED REGISTERED PATENT AGENT(S)</b>		IN/PA No.			
		Name			
		Mobile No.			
<b>7. ADDRESS FOR SERVICE OF APPLICANT IN INDIA</b>		Name		Shubhashish Goswami	
		Postal Address		Assistant Proferssor Computer Science & Engineering DBGI campus, Uttarakhand Technical University Navgaon Manduwala Chakrata road Dehradun- 248007	
		Telephone No.			
		Mobile No.		9958310827	
		Fax No.			
		E-mail ID		iprsince2014@hotmail.com	
<b>8. IN CASE OF APPLICATION CLAIMING PRIORITY OF APPLICATION FILED IN-CONVENTION COUNTRY, PARTICULARS OF CONVENTION APPLICATION</b>					
Country	Application Number	Filing date	Name of the applicant	Title of the invention	IPC (as classified in the convention country)
<b>9. IN CASE OF PCT NATIONAL PHASE APPLICATION, PARTICULARS OF INTERNATIONAL APPLICATION FILED UNDER PATENT CO-OPERATION TREATY (PCT)</b>					
International application number			International filing date		
<b>10. IN CASE OF DIVISIONAL APPLICATION FILED UNDER SECTION 16, PARTICULARS OF ORIGINAL (FIRST) APPLICATION</b>					
Original (first) application No.			Date of filing of original (first) application		
<b>11. IN CASE OF PATENT OF ADDITION FILED UNDER SECTION 54, PARTICULARS OF MAIN APPLICATION OR PATENT</b>					
Main application/patent No.			Date of filing of main application		
<b>12. DECLARATIONS</b>					

**(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 29/06/2021

(b) Name	(c) Signature
1. Shubhashish Goswami	
2. Mr. Somanath Das	
3. Ketan Anand	
4. Dr. P. Suresh	
5. Mrs.R.H. Aswathy	
6. Dr. Kallakunta Ravi Kumar	
7. Dr.K.Kiran Kumar	
8. Himanshu Kumar Diwedi	
9. Dr. Yogesh Misra	
10. Mr. Gyanendra Tiwary	

**(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~~



**(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 : 17		
No. of Claim(s)	No. of claims : 08 No. of pages: 02		
Abstract	No. of pages: 01		
No. of Drawing(s)	No. of drawings: 02 No. of pages: 01		

# 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

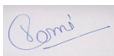
(i) Power of Authority

(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 29<sup>th</sup> day of June, 2021**

Signature: 

Name: Shubhashish Goswami et. al.

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

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”;