

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT5605996

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
JAYAVARDHANA RAMA GUBBI LAKSHMINARASIMHA	07/09/2018
KARTHIK SEEMAKURTHY	07/09/2018
SANDEEP NK	07/06/2018
ASHLEY VARGHESE	07/09/2018
SHAILESH SHANKAR DESHPANDE	07/10/2018
MARIASWAMY GIRISH CHANDRA	07/09/2018
BALAMURALIDHAR PURUSHOTHAMAN	07/09/2018
ANGSHUL MAJUMDAR	07/09/2018
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	TATA CONSULTANCY SERVICES LIMITED
<b>Street Address:</b>	NIRMAL BUILDING
<b>Internal Address:</b>	9TH FLOOR, NARIMAN POINT
<b>City:</b>	MUMBAI
<b>State/Country:</b>	INDIA
<b>Postal Code:</b>	400021
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	16504196
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(202)408-4400
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>	
<b>Phone:</b>	202.408-4000
<b>Email:</b>	Regional-Desk@finnegan.com
<b>Correspondent Name:</b>	TATA CONSULTANCY SERVICES/FINNEGAN
<b>Address Line 1:</b>	901 NEW YORK AVE., NW
<b>Address Line 4:</b>	WASHINGTON, D.C. 20001
<b>ATTORNEY DOCKET NUMBER:</b>	13178.0494-00000
<b>NAME OF SUBMITTER:</b>	KIMBERLY SLAZER

<b>SIGNATURE:</b>	/Kimberly Slazer/
<b>DATE SIGNED:</b>	07/05/2019
<b>Total Attachments: 9</b> source=IDF-1027729-017_Combined_Decl_Assgn-Signed-as-filed#page1.tif source=IDF-1027729-017_Combined_Decl_Assgn-Signed-as-filed#page2.tif source=IDF-1027729-017_Combined_Decl_Assgn-Signed-as-filed#page3.tif source=IDF-1027729-017_Combined_Decl_Assgn-Signed-as-filed#page4.tif source=IDF-1027729-017_Combined_Decl_Assgn-Signed-as-filed#page5.tif source=IDF-1027729-017_Combined_Decl_Assgn-Signed-as-filed#page6.tif source=IDF-1027729-017_Combined_Decl_Assgn-Signed-as-filed#page7.tif source=IDF-1027729-017_Combined_Decl_Assgn-Signed-as-filed#page8.tif source=IDF-1027729-017_Combined_Decl_Assgn-Signed-as-filed#page9.tif	

## ASSIGNMENT AND DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION

### ASSIGNMENT:

WHEREAS I/We, the below named inventor(s), (hereinafter referred to as Assignor(s)), have made an invention entitled:

Method and system for solving inverse problems in image processing using Deep Dictionary Learning (DDL)  
for which I/WE executed an application for United States Letters Patent concurrently herewith; and

WHEREAS, Tata Consultancy Services Limited

a corporation of India

whose post office address is Nirmal Building, 9th Floor, Nariman Point, Mumbai 400021, Maharashtra, India

(hereinafter referred to as Assignee), is desirous of securing the entire right, title, and interest in and to this invention in all countries throughout the world, and in and to the application for United States Letters Patent on this invention and the Letters Patent to be issued upon this application;

NOW THEREFORE, be it known that, for good and valuable consideration the receipt of which from Assignee is hereby acknowledged, I/We, as Assignor(s), have sold, assigned, transferred, and set over, and do hereby sell, assign, transfer, and set over unto the Assignee, its lawful successors and assigns, my/our entire right, title, and interest in and to this invention and this application, and all divisions, and continuations thereof, and all Letters Patent of the United States which may be granted thereon, and all reissues thereof, as well as all rights to claim priority on the basis of this application in any foreign country, and all applications for Letters Patent which may hereafter be filed for this invention in any foreign country and all Letters Patent which may be granted on this invention in any foreign country, and all extensions, renewals, and reissues thereof; and I/We hereby authorize and request the Director of the United States Patent and Trademark Office and any official of any foreign country whose duty it is to issue patents on applications as described above, to issue all Letters Patent for this invention to Assignee, its successors and assigns, in accordance with the terms of this Assignment;

AND, I/WE HEREBY covenant that I/We have the full right to convey the interest assigned by this Assignment, and I/We have not executed and will not execute any agreement in conflict with this Assignment;

AND, I/WE HEREBY further covenant and agree that I/We will, without further consideration, communicate with Assignee, its successors and assigns, any facts known to me/us respecting this invention, and testify in any legal proceeding, sign all lawful papers when called upon to do so, execute and deliver any and all papers that may be necessary or desirable to perfect the title to this invention in said Assignee, its successors or assigns, execute all divisional, continuation, and reissue applications, make all rightful oaths and generally do everything possible to aid Assignee, its successors and assigns, to obtain and enforce proper patent protection for this invention in the United States and any foreign country, it being understood that any expense incident to the execution of such papers shall be borne by the Assignee, its successors and assigns.

AND, I/WE HEREBY authorize and request that the attorneys having Power of Attorney in this application, insert here in parentheses (Application No. \_\_\_\_\_, filed \_\_\_\_\_) the filing date and application number of said application when known.

### DECLARATION:

As a named inventor below, I hereby declare that: (1) This declaration is directed to the above-identified application; (2) the above-identified application was made or authorized to be made by me; (3) my residence and mailing address are as stated below next to my name; and (4) I believe I am an original inventor or an original joint inventor of a claimed invention in the application. I hereby acknowledge that any willful false statements made in this declaration are punishable by fine or imprisonment of not more than five (5) years, or both, under section 1001 of Title 18 of the United States Code.

As a below named inventor, I have reviewed and understand the contents of the application, including the claims, and am aware of the duty to disclose to the US PTO all information known to me to be material to patentability as defined in 37C.F.R. § 1.56.

**Authorization To Permit Access To Application by Participating Offices:**

☒ If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the above-identified patent application is filed access to the above-identified patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the Applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the above-identified application is filed to have access to the above-identified patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the above-identified patent application with respect to: 1) the above-identified patent application-as-filed; 2) any foreign application to which the above-identified patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the above-identified patent application; and 3) any U.S. application-as-filed from which benefit is sought in the above-identified patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing the Authorization to Permit Access to Application by Participating Offices.

IN TESTIMONY WHEREOF, I/We have hereunto set our hands.

1. FULL NAME OF SOLE OR FIRST ASSIGNOR GUBBI LAKSHMINARASIMHA, Jayavardhana Rama	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka , India		
2. FULL NAME OF SECOND ASSIGNOR, IF ANY SEEMAKURTHY, Karthik	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka , India		RESIDENCE India
3. FULL NAME OF THIRD ASSIGNOR, IF ANY NK, Sandeep	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka , India		RESIDENCE India
4. FULL NAME OF FOURTH ASSIGNOR, IF ANY VARGHESE, Ashley	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka , India		
5. FULL NAME OF FIFTH ASSIGNOR, IF ANY DESHPANDE, Shailesh Shankar	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka , India		RESIDENCE India
6. FULL NAME OF SIXTH ASSIGNOR, IF ANY CHANDRA, Mariaswamy Girish	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka , India		RESIDENCE India
7. FULL NAME OF SEVENTH ASSIGNOR, IF ANY PURUSHOTHAMAN, Balamuralidhar	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka , India		

8. FULL NAME OF EIGHT ASSIGNOR, IF ANY MAJUMDAR, Angshul	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Indraprastha Institute of Information Technology, Okhla Industrial Estate, Phase III, Near Govind Puri Metro Station, New Delhi - 110020, India		RESIDENCE India

SOLE/JOINT INVENTION  
(Worldwide Rights)

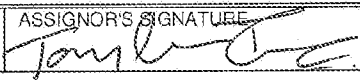


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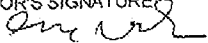
IN TESTIMONY WHEREOF, I/We have hereunto set our hands.

1. FULL NAME OF SOLE OR FIRST ASSIGNOR GUBBI LAKSHMINARASIMHA, Jayavardhana Rama	ASSIGNOR'S SIGNATURE 	DATE 9/7/2018
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147, 157 & 158), Hoody Village, Bangalore - 560066, Karnataka, India		
2. FULL NAME OF SECOND ASSIGNOR, IF ANY SEEMAKURTHY, Karthik	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147, 157 & 158), Hoody Village, Bangalore - 560066, Karnataka, India		RESIDENCE India
3. FULL NAME OF THIRD ASSIGNOR, IF ANY NK, Sandeep	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147, 157 & 158), Hoody Village, Bangalore - 560066, Karnataka, India		RESIDENCE India
4. FULL NAME OF FOURTH ASSIGNOR, IF ANY VARGHESE, Ashley	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147, 157 & 158), Hoody Village, Bangalore - 560066, Karnataka, India		
5. FULL NAME OF FIFTH ASSIGNOR, IF ANY DESHPANDE, Shallesh Shankar	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147, 157 & 158), Hoody Village, Bangalore - 560066, Karnataka, India		RESIDENCE India
6. FULL NAME OF SIXTH ASSIGNOR, IF ANY Chandra, Mariaswamy Girish	ASSIGNOR'S SIGNATURE 	DATE 9/7/2018
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147, 157 & 158), Hoody Village, Bangalore - 560066, Karnataka, India		RESIDENCE India
7. FULL NAME OF SEVENTH ASSIGNOR, IF ANY PURUSHOTHAMAN, Balemuralidhar	ASSIGNOR'S SIGNATURE 	DATE 09-JUL-2018
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147, 157 & 158), Hoody Village, Bangalore - 560066, Karnataka, India		

[IDF-1027729-017-IN]

**PATENT**  
**REEL: 049677 FRAME: 0649**

SOLE/JOINT INVENTION  
(Worldwide Rights)

8. FULL NAME OF EIGHT ASSIGNOR, IF ANY MAJUMDAR, Angshul	ASSIGNOR'S SIGNATURE 	DATE 09-JULY-2018
MAILING ADDRESS Indraprastha Institute of Information Technology, Okhla Industrial Estate, Phase III, Near Govind Puri Metro Station, New Delhi - 110020, India		RESIDENCE India

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MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka , India		
5. FULL NAME OF FIFTH ASSIGNOR, IF ANY DESHPANDE, Shailesh Shankar	ASSIGNOR'S SIGNATURE	DATE
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MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560086, Karnataka, India		
2. FULL NAME OF SECOND ASSIGNOR, IF ANY SEEMAKURTHY, Karthik	ASSIGNOR'S SIGNATURE <i>[Signature]</i>	DATE 09-July-2018
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560086, Karnataka, India		RESIDENCE India
3. FULL NAME OF THIRD ASSIGNOR, IF ANY NK, Sandeep	ASSIGNOR'S SIGNATURE	DATE
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5. FULL NAME OF FIFTH ASSIGNOR, IF ANY DESHPANDE, Shalish Shankar	ASSIGNOR'S SIGNATURE	DATE
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7. FULL NAME OF SEVENTH ASSIGNOR, IF ANY PURUSHOTHAMAN, Balamuralidhar	ASSIGNOR'S SIGNATURE	DATE
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2. FULL NAME OF SECOND ASSIGNOR, IF ANY SEEMAKURTHY, Karthik	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka, India		
3. FULL NAME OF THIRD ASSIGNOR, IF ANY NK, Sandeep	ASSIGNOR'S SIGNATURE <i>Sandeep</i>	DATE 06-Jul-2018
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka, India		
4. FULL NAME OF FOURTH ASSIGNOR, IF ANY VARGHESE, Ashley	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka, India		
5. FULL NAME OF FIFTH ASSIGNOR, IF ANY DESHPANDE, Shaleesh Shankar	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka, India		
6. FULL NAME OF SIXTH ASSIGNOR, IF ANY Chandra, Maraswamy Gish	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka, India		
7. FULL NAME OF SEVENTH ASSIGNOR, IF ANY PURUSHOTHAMAN, Balaramakrishna	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka, India		

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In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing the Authorization to Permit Access to Application by Participating Offices.

IN TESTIMONY WHEREOF, I/We have hereunto set our hands.

1. FULL NAME OF SOLE OR FIRST ASSIGNOR GUBBI LAKSHMINARASIMHA, Jayavardhana Rama	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka , India		
2. FULL NAME OF SECOND ASSIGNOR, IF ANY SEEMAKURTHY, Karthik	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka , India		RESIDENCE India
3. FULL NAME OF THIRD ASSIGNOR, IF ANY NK, Sandeep	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka , India		RESIDENCE India
4. FULL NAME OF FOURTH ASSIGNOR, IF ANY VARGHESE, Ashley	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka , India		
5. FULL NAME OF FIFTH ASSIGNOR, IF ANY DESHPANDE, Shailesh Shankar	ASSIGNOR'S SIGNATURE 	DATE Jul 10, 2018
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka , India		RESIDENCE India
6. FULL NAME OF SIXTH ASSIGNOR, IF ANY Chandra, Mariaswamy Girish	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka , India		RESIDENCE India
7. FULL NAME OF SEVENTH ASSIGNOR, IF ANY PURUSHOTHAMAN, Balamuralidhar	ASSIGNOR'S SIGNATURE	DATE
MAILING ADDRESS Tata Consultancy Services Limited, Gopalan Global Axis, SEZ "H" Block, No. 152 (Sy No. 147,157 & 158), Hoody Village, Bangalore - 560066, Karnataka , India		

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