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# Rashi Agarwal

## Associate Professor

Department of Computer Science and Engineering  
Harcourt Butler Technical University, Kanpur -02  
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## RESEARCH AREAS

Computer Vision, Machine Learning, Tiny ML, Data Science

## EXPERIENCE

**Harcourt Butler Technical University**- *Associate Professor*

July '22- PRESENT

**University Institute of Engineering and Technology, CSJM University** - *Assistant Professor*

August 2006- July 2022

## EDUCATION

**Harcourt Butler Technical University** - *B.Tech. CSE*

1994-1998 (Topper of the batch)

**Harcourt Butler Technical University** - *Ph.D. Image Processing*

2002-2006

**ITC, Netherlands** - *PGDGIS*

2010

## AWARDS

2018 Award for Recognition for mentoring students by World Robotics Olympiad Team (WRO)

2016 Research Recognition by Cabinet Minister of Consumer Affairs

1998 First and highest package at ST Microelectronics, Noida, through Campus

1998 Gold Medal, Best B.Tech. project CSE batch of 1998 HBTI, Kanpur

1998 Gold Medal, Topper of B.Tech. CSE batch of 1998 HBTI, Kanpur

1994-1998 Recipient of Academic Performance Scholarship throughout B.Tech.

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## PATENTS

Patent number: 2020103527 (IP Australia)

Title of the invention: IPDN- Read Handwriting: Intelligent Process to Read Handwriting Using Deep Learning and Neural Networks

Name of the inventor(s): Nandkumar Phursule, Rajesh; Kumar Beniwal, Rajender; Agarwal, Rashi; Bist, Ankur Singh; Singh, Ashay;

Term of Patent: Eight years from 19 November 2020

## BOOKS

[Starting out with Python](#)

*T Gaddis, R Agarwal*

*Pearson*

[Computer Organisation and Design](#)

*R Agarwal*

*Acme Learning Private Limited 1, 1-473*

## RESEARCH PUBLICATIONS

1. [Estimation in Agile Software Development Using Artificial Intelligence](#)  
Srivastava, Prateek; Srivastava, Nidhi; Agarwal, Rashi; Singh, Pawan;  
Proceedings of Trends in Electronics and Health Informatics, Springer, Singapore, 2022,83-93
2. [Identifying highly vulnerable mosquito breeding sites using machine learning and drone based aerial survey](#)  
Shyam Sundhar V., Selvan V. N , S. Sanjeevi Prasad, Rashi Agarwal;  
International Journal of Health Sciences, Universidad Técnica de Manabí (UTM), Vol 6, No. S3, 2022,209-221
3. [Human Disease Prognosis and Diagnosis Using Machine Learning](#)  
Kumar, Sunil; Kumar, Harish; Agarwal, Rashi;  
Emerging Technologies for Computing, Communication and Smart Cities, Springer, Singapore, 2022 ,41-53
4. [Weed Identification using K-Means Clustering with Color Spaces Features in Multi-Spectral Images Taken by UAV](#)  
  
*Rashi Agarwal, S Hariharan, M Nagabhushana Rao, Abhishek Agarwal*  
*2021 IEEE International Geoscience and Remote Sensing Symposium IGARSS,*  
*2021,7047-7050*
5. [A Systematic Literature Review on Software Development Estimation Techniques](#)  
  
*Prateek Srivastava, Nidhi Srivastava, Rashi Agarwal, Pawan Singh*

6. [Deep Learning augmented with Contour Detection Designed for Diagnosis of COVID-19 in X-rays](#)  
*Rashi Agarwal, HariHaran S.*  
*Design Engineering(Toronto), 2021,9(1),10445-10461*
7. [Transfer Learning and Supervised Machine Learning Approach for Detection of Skin Cancer: Performance Analysis and Comparison](#)  
*Sunil Kumar Hemant Kumar, Amit Virmani, Shivneet Tripathi, Rashi Agrawal*  
*Drugs and Cell Therapies in Haematology, 2021, 10(1)*
8. [Decision Support System designed to detect yellow mosaic in Pigeon pea using Computer Vision](#)  
*Rashi Agarwal, Abhishek Agarwal*  
*Design Engineering(Toronto, 2021, 8(1), 832-844*
9. [Audio-Visual Emotion Recognition System Using Multi-Modal Features](#)  
*Handa, A., Agarwal, R., Kohli, N.*  
*International Journal of Cognitive Informatics and Natural Intelligence, 2021, 15(4), oa34*
10. [Facial expression recognition using local multidirectional score pattern descriptor and modified hidden Markov model](#)  
  
*Rahul, M., Kohli, N., Agarwal, R.*  
*International Journal of Advanced Intelligence Paradigms, 2021, 18(4), pp. 538–551*
11. [Incremental approach for multi-modal face expression recognition system using deep neural networks](#)  
*Handa, A., Agarwal, R., Kohli, N.*  
*International Journal of Computational Vision and Robotics, 2021, 11(1), pp. 1–20*
12. [A multimodel keyword spotting system based on lip movement and speech features](#)  
*A Handa, R Agarwal, N Kohli*  
*Multimedia Tools and Applications, 1-21*
13. [A Comprehensive Video Dataset for Multi-Modal Recognition Systems](#)  
*A Handa, R Agarwal, N Kohli*  
*Data Science Journal 18 (1)*
14. [Layered Recognition Scheme for Robust Human Facial Expression Recognition using modified Hidden Markov Model](#)  
*M Rahul, R Agrawal, N Kohli, K*  
*Journal of Multimedia Processing and Technologies 10 (1), 18-26*
15. [An efficient technique for facial expression recognition using multistage hidden Markov model](#)  
*M Rahul, P Mamoria, N Kohli, R Agrawal*  
*Soft Computing: Theories and Applications, 33-43*

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16. [Facial Expression Recognition Using Multistage Hidden Markov Model.](#)  
M Rahul, N Kohli, R Agarwal  
*Journal of Theoretical & Applied Information Technology* 95 (23)
  17. [Review of features and machine learning techniques for web searching](#)  
N Sharma, R Agarwal, N Kohli  
*2016 11th International Conference on Industrial and Information Systems*
  18. [A survey of face recognition techniques and comparative study of various bi-modal and multi-modal techniques](#)  
A Handa, R Agarwal, N Kohli  
*2016 11th International Conference on Industrial and Information Systems*
  19. [An efficient technique for facial expression recognition using multistage hidden Markov model](#)  
M Rahul, P Mamoria, N Kohli, R Agrawal  
*Soft Computing: Theories and Applications*, 33-43
  20. [Facial Expression Recognition using Moments Invariants and Modified Hidden Markov Model](#)  
M Rahul, N Kohli, R Agarwal  
*International Journal of Applied Engineering Research* 13 (8), 6081-6088
  21. [Facial Expression Recognition Using Multistage Hidden Markov Model.](#)  
M Rahul, N Kohli, R Agarwal  
*Journal of Theoretical & Applied Information Technology* 95 (23)
  22. [Review of features and machine learning techniques for web searching](#)  
N Sharma, R Agarwal, N Kohli  
*2016 11th International Conference on Industrial and Information Systems ...*
  23. [A Review and a Comparative Study of Various Plant Recognition and Classification Techniques using Leaf Images](#)  
A Handa, R Agarwal  
*International Journal of Computer Applications* 123 (2), 20-25
  24. [Modified Bit-Planes Sobel Operator: A New Approach to Edge Detection](#)  
R Agarwal  
*International Journal of Computer Applications* 117 (7), 9-15
  25. [Remote Sensing Methods For Land Cover Assessment Case Study of Jharia Coal Field](#)  
R Agarwal  
*International Journal of Applied Engineering Research* 10 (1), 345
  26. [Edge Detection in Images Using Modified Bit-Planes Sobel Operator](#)  
R Agarwal  
*Proceedings of the Third International Conference on Soft Computing for ...*
  27. [Edge Preserving BIT-Plane Adaptive Wiener Filter for Gaussian Noise Restoration](#)  
R Agarwal  
*International Journal of Computer Applications* 108 (12), 28-31

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28. [Bit plane average filtering to remove Gaussian noise from high-contrast images](#)  
R Agarwal  
*2012 International Conference on Computer Communication and Informatics, 1-5*
  29. [Bit planes histogram equalization for tone mapping of high contrast images](#)  
R Agarwal  
*2011 Eighth International Conference Computer Graphics, Imaging and ...*
  30. [Removal of Gaussian Noise from high contrast images using Bit Plane Average Filter](#)  
R Agarwal  
*IEEE proceedings of First International conference on Signal, Image and*
  31. [Estimation of Evapotranspiration and Its Correlation with Weather Parameters Using Remote Sensing](#)  
R Agarwal  
*International Journal of Applied 5 (2), 151-162*
  32. [Detection of coal mine fires in the Jharia coal field using NOAA/AVHRR data](#)  
R Agarwal, D Singh, DS Chauhan, KP Singh  
*Journal of Geophysics and Engineering, Volume 3, Issue 3, September 2006, Pages 212– 218,*
  33. [Remote Sensing Methods For Land Cover Assessment: Case Study Of Jharia Coal Field](#)  
Agarwal Rashi, Singh D., Chauhan D.S., Singh K.P.  
*Indonesian Journal of Remote Sensing 24 (2006) 25.*
  34. [Potential Of Noaa/Avhrr Data To Detect The Coal Mine Fires: A Case Study Of Jharia Region In India.](#)  
Agarwal Rashi, Singh D., Chauhan D.S., Singh K.P.  
*Photogrammetric Journal of Finland. 26.*
  35. [Burned Surface Detection Using Noaa/Avhrr Vegetation Indices For Jharia Coalfield](#)  
Agarwal Rashi, Singh D., Chauhan D.S., Singh K.P.  
*Proceedings 10th ASCE Aerospace Division International Conference on Engineering, Construction and Operations in Challenging Environments (Earth and Space 2006) held in League City/Houston, TX, U.S.A. during March 05-08, 2006. 27.*
  36. [Detection Of Coal Fire In Jharia Coal Field Using Noaa/Avhrr Data.](#)  
  
Agarwal Rashi, Singh D., Chauhan D.S., Singh K.P.  
*Proceedings Earth System Processes Related To Earthquakes, Tsunamis And Volcanic Eruptions ,42nd Conference by Indian Geophysical Union, Hyderabad, on 8th /9th December, 2005. 28.*
  37. [Identification Of Cloudy Pixels Using Noaa-Avhrr Data](#)  
Agarwal Rashi, Singh D., Chauhan D.S., Singh K.P.  
*IASTA Bulletin, International Conference on Aerosols, Clouds and Indian Monsoon IIT-K , Nov 15-17, 2004,pp 370-373. 29.*

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38. Burned Surface Detection Using Noaa/Avhrr Vegetation Indices For Jharia Coalfield  
Agarwal Rashi, Singh D., Chauhan D.S., Singh K.P.  
Conference at IT - BHU, proceedings Electro 2005, Emerging Trends in Electronics, Feb 3-5, 2005, pp 31-33. 30.
39. Burned Surface Detection Using Vegetation Indices  
Agarwal Rashi, Singh D., Chauhan D.S., Singh K.P.  
International Seminar on Coal Science and Technology -Emerging Global Dimensions  
organized by CFRI and CMRI, New Delhi

## MOOCS

Over 30 lakh views and 15k subscribers

Youtube Channel on Image processing using Matlab

R Agarwal (<https://www.youtube.com/c/rashiagrawal1>)

## CONTRIBUTION TO RELEVANT AREAS OF HIGHER EDUCATION

- Mentor of Change: ATAL INNOVATION MISSION , Niti Ayog
- Expert, HBTU, Kanpur: Appointment of Lecturers
- Expert IIPR (ICAR), Kanpur: Appointment of Young Professionals/ Research Associates. Expert AITH, Kanpur, Appointment of Lecturers
- Expert KIT, Kanpur: Appointment of Lecturers
- Expert CSJM University, Kanpur: Approval of Colleges
- Member CSJM University: Approval of courses
- Expert, BOS AKTU (formerly UPTU) for B.Tech ECE and CSE.
- Expert, RDC Bundelkhand University, Jhansi: Approval of research scholars synopsis
- Expert, RDC Jaypee University, Guna, : PhD Viva Voice 2020
- Convener/Member CSJM University: Approval of courses and various BOS( MCA/BCA/IT/CSE
- Expert, BOS AKTU (formerly UPTU) for B.Tech ECE and CSE.
- Expert, RDC Bundelkhand University, Jhansi: Approval of research scholars, research guides.

## RESEARCH PROJECTS/ CONSULTATION

Lohia Mechatronics

Corporate Training and Development of software for “Detection of faults in plastic films using 4k camera” as consultation for Rs. 50,000/-

U.P. Council of Agricultural Research

Study and Development of Application for detection of crop diseases using image processing.  
(12/6/2014 onwards for 3 years) Duration:3 years, Rs. 15.60226 Lacs

## RESEARCH SUPERVISOR/ GUIDE ASSIGNMENTS

03 PhD candidates (2 awarded,1 pursuing) from AKTU

JRF 01 from UPCAR project

B.Tech Project Guide 150 projects guided

## MEMBERSHIP/ FELLOWSHIP OF PROFESSIONAL BODIES

**Life Member** Institution of Electronics and Telecommunication Engineers

**Member** IEEE Society

## TRAININGS/ CERTIFICATES

Year	Course Name	University	Grade Achieved
2022	Verified Certificate Fundamentals of TinyML	HarvardX	92%
2022	Verified Certificate Applications of TinyML	HarvardX	94%
2022	Verified Certificate Deploying TinyML	HarvardX	92%
2021	Fundamental Neuroscience for Neuroimaging	Johns Hopkins University (Coursera)	97.61%
2021	Neural Networks and Deep Learning	DeepLearning.AI (Coursera)	97.80%
2020	Deep Learning with TensorFlow 2.0 Certification	Edureka (Online)	N.A.
2015	Data Science Certification Training	Edureka (Online)	N.A.
2014	Certificate in Image Processing	Duke University (online on Coursera)	80%
2013	Google Apps 100 Certification	NA	NA
2011	Certificate in Python Programming	University of Toronto,(Coursera)	90%

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