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Usha Rani

Teaching Experience

Serving as **Associate Professor** in **Computer Science Department** at **University College Ghanaur, Patiala, Punjab since 29 April, 2021.**

Served as **Assistant Professor** in **Computer Science Department** at **University College Ghanaur, Patiala, Punjab from 11 Jan, 2019-28 April, 2021.**

Served as **Assistant Professor** in **Computer Science Department** at **Punjabi University Guru Kashi College, Talwandi Sabo, Bathinda, Punjab from February 8, 2006 to 10 Jan, 2019.**

Served as **Lecturer** in **Computer Engineering Department** at **SUSCET- Tangori, Mohali** from **July 27, 2005** to **7 Feb, 2006.**

Served as **Lecturer** in **Computer Engineering Department** at **SPCET-Lalru** from **August 12, 2004** to **14 May, 2005.**

Served as **Faculty in Physics for CET crash course** at **City college, Choti Barandari Patiala** from **February 6, 2004** to **July 31st, 2004.**

Served as **Lecturer** in **MRSIIT, Punjabi University, Patiala** from **March 25, 2003** to **February 5, 2004.**

Served as **Lecturer** in **Electrical Department at GTBKIET, Chappianwali, Malout, Bathinda** from **February 1, 1999 to March, 31st 2002.**

Professional Qualification

Ph.D. in Computer Science from **Punjabi University, Patiala.**

M.Phil (Computer Science) from Periyar University, Salem, Tamil Naidu Session **(2007-08)** with **62.3%** marks.

Master of Technology in **Computer Science and Engineering** from Punjabi University, **Patiala (Punjab).** Session **(2001-2003)** with **71.4%**

Bachelor of Engineering in **Electrical Engineering** from **Guru Nanak Engineering College, Ludhiana, Punjab.** Session **(1993-1997)** with **68% marks**.

Educational Qualification	**10+2 (Non-Medical) from Government College for Girls, Sector-11 Chandigarh** Session **(1991-1993) (P.S.E.B)** with **71.6 marks**.
	Matric from **Government Girls High School, Bassi Pathanan, Fatehgarh Sahib (Pb.)** Session **(1990-1991) (P.S.E.B)** with **80%** marks.
Additional Courses	**Six months course of certificate** in **Application Development** from **STG, Chandigarh (1998).**
	Four-week course in **Java, Web Page Designing and Networking** from **GTBKIET, Chhapianwali, Malout (July, 1st to July 31st, 2000).**
	Two months course in **VB.net** from **Chandigarh Computer Centre, Patiala (May 17, 2005 to JULY 20, 2005).**
Industrial Exposure	**One-month Apprentice Training** in **Power Grid, Ablowal, Patiala. (June 1995).**
	One-month Training in Guru Gobind Singh Super Thermal Plant, Ropar (June 1996).
Thesis Title	**Development of Binarization Technique for Degraded Document Images (Ph.D.)** **Wireless LAN Security (M.Phil.).**
	Adhoc Networks Routing Algorithms (M.Tech.).
Book Published as Joint author	Information Technology. (267 pages) Zohra Publications, Patiala. July 2013. ISBN- 978-93-82376-28-6.
Short Term Courses and Workshops	**Short term course in 'Mobile Computing' 10th October 2005 to 14th October, 2005 from NITTTR, Chandigarh.**
	UGC Sponsored Orientation Programme conducted by Academic Staff College, Kurukshetra University, Kurukshetra on 11 Nov, 2009 to 8 December 2009.
	Patent Awareness Workshop at YCoE, Talwandi Sabo on 11th Dec, 2009.
	Advanced Network Security Management Workshop organized by Cyberoam at Punjabi University, Patiala on 29th July, 2010.
	D-Link Technical Worhkshop at Punjabi University, Patiala on 3rd Dec, 2010.
	UGC Sponsored Worhshop on Capacity Building of Women Managers in Higher Education at Punjabi University, Patiala from January 17, 2011 to January 21, 2011,
	UGC Sponsored Refresher Course in Information Technology conducted by Academic Staff College, Kurukshetra University, Kurukshetra on 14 June, 2011 to 4 July, 2011.

One Week Teachers Workshop "Learn the Learner" at PU Guru Kashi College, Damdama Sahib from July 9, 2012 to July 14, 2012.

Orientation Program on Human values & Professional Ethics at IET Bhaddal from 28-12-2011 to 4-1-2012 (8 days).

One Week National Workshop on Digital Image processing using Matlab organized by Department of Computer Science, Punjabi University , Patiala from November 29, 2012 to December 5, 2012.

IEEE sponsored International Summer School on Machine Learning Algorithms and Data Analytics at Thapar University,Patiala from June 3 to June 13, 2014.

Workshop on Innovations in Science at YCoE, Talwandi Sabo from November 12, 2014 to November 14, 2014).

Two Days Workshop on Research Methodology at Thapar University from March 20, 2015 to March 21, 2015.

National Workshop on Computer Science and Technology at PUGKC, Damdama Sahib on October 21st, 2015.

UGC Sponsored Refresher Course in Teachers Educators conducted by HRDC, Punjabi University, Patiala on 1st December 2015 to 21st December, 2015.

UGC Sponsored One-week workshop on MOOCs conducted by HRDC, Punjabi University, Patiala in January, 2019.

One-week Short Term Course in Python conducted by NITTTR, Chandigarh at Central University of Punjab (22-26 July, 2019)

Area of Interest	Computer Networks, Digital Image Processing.

Personal Profile	Date of Birth	August 29,1976
	Father's name	Late Sh. Surinder Kumar Gupta
	Mother's name	Smt. Nirmala Devi

Publications

International Journals

1. Published paper on "Machine Printed Punjabi Character Recognition using Morphological Operators on Binary Images" at International Journal of Engineering Research and Technology, ISSN: 2278-0181, vol.1, issue-3, May 2012.
2. Published Paper on "Extraction of Vehicle No. Plates using Edge Detection & Morphological Operations" in International Journal of Advances in Computer & IT, ISSN: 2277-9140, July 2012.
3. Published Paper on "Ellipse Detection using Canny Edge Detection Algorithm" in International Journal of Computer Applications, ISSN: 2278-7720, vol-1, issue-2, September 2012.
4. Published Paper on "Green Computing: A Reveiw" in International Journal of Advanced Research in Computer Science, ISSN: 09765697, vol-7, issue-6, November 2016.
5. Published Paper on "Image Segmentation using Mathematical Morphology: A Study" in International Journal of Advanced Research in Computer Science, ISSN: 09765697, vol-7, issue-6, November 2016.
6. Published Paper on "Performance Analysis of Degraded Document Image Binarization Techniques" in International Journal for Research in Engineering Applications and Management, ISSN: 2454-9150, vol-04, Issue-10, January 2019.
7. Published Paper on "Decision Based Impulse Denoising Techniques for Gray Scale Images: An Experimental Analysis" in International Journal for Research in Engineering Applications and Management, ISSN: 2454-9150, vol-04, Issue-11, Feburary 2019.
8. Published paper "A new binarization technique for degraded document images" in International Journal of Information Technology, ISSN 2511-2104 DOI 10.1007/s41870-019-00361-3
9. Kaur, A., Rani, U., & Josan, G. (2020). Modified Sauvola Binarization for Degraded Document Images in International Scientific Journal Engineering Applications of Artificial Intelligence. DOI: 10.1016/j.engappai.2020.103672 impact factor: 7.802 (Scopus Indexed).

Book Chapters
1. Rani, U., Kaur, A., & Josan, G. (2020). Comparative Analysis of Salt and Pepper Noise Removal Techniques for Binary Images. Book Chapter in Advanced Computing and Intelligent Engineering, Pp. 83-90, ISBN: 978-981-15-1081-6, (ASIC series of Springer) DOI: 10.1007/978-981-15-1081-6

2. Rani, U., Kaur, A., & Josan, G. (2020). A New Contrast Based Degraded Document Image Binarization in "Cognitive Computing in Human Cognition Perspective and Appliactions" (Springer Publication). ISBN: 978-3-030-48118-6 Pp. 83-90, DOI:10.1007/978-3-030-48118-6.

List of International National Conferences and Seminars

1. Presented Paper on "Intrusion Detection in Mobile Adhoc Networks" at International Conference CNFE'05, organized by APIITSD Panipat on April 9-10, 2005.

2. Presented Paper on "Degraded Document Image Binarization" at 4th International Conference on Advancements in Engineering and Technology at Bhai Gurdas Institute of Engineering and Technology, Sangrur (Punjab), India on March 18-19, 2017.

3. Presented Paper on "Security in Graphical Authentication" at 4th International Conference on Advancements in Engineering and Technology at Bhai Gurdas Institute of Engineering and Technology, Sangrur (Punjab), India on March 18-19, 2017.

4. Published and Presented a Paper on "Degraded Document Binarization" at 5th International Conference on Advancements in Engineering ad Technology at Bhai Gurdas Institute of Engineering and Technology, Sangrur (Punjab), India on March 24-25, 2017. 5

5. Published and Presented a Paper on "Comparative Analysis of Salt and Pepper Removal Techniques for Binary Images" at 3rd International Conference on Advanced omputing and Intelligent Engineering (ICACIE 2018) at Siksha 'O' Anusandhan Deemed to be University, Bhubneshwar, India on December 22-24, 2018. Presented and accepted for publication in Springer ASIC series

6. Presented a Paper on "A New Contrast Based Degraded Document Image Binarization" at ICIM'19 at Baba Farid College of Engineering and Technology, Bathinda on March 15-16, 2019. Presented and accepted for publication in Springer series

7. Presented a paper on "Effect of Source/Sink on Velocity and Temperature of MHD flow past an Infinite Vertical Plate" at International Multi-disciplinary Seminar/Webnar on India's March towards Development through UN's Sustainable Development Goals 2030 at DAV College, Hoshiarpur (Pb) on 20th April, 2019.

List of National Conferences

1. Presented Paper "Computer and Information Ethics" at National Seminar on Facets of Justice Delivery System at Punjab School of Law, Punjabi University, Patiala on March 17-18, 2010.

2. Presented Paper "Cyber Pornography: Its Impact and Prevention" at National Seminar on Facets of Justice Delivery System at Punjab School of Law, Punjabi University, Patiala on March 17-18, 2010.

3. Presented Paper "Cryptography and Network Security: A Study" at National Seminar on Weaker Sections and Law at Punjab School of Law, Punjabi University, Patiala on March 29-30, 2011.

4. Presented Paper "Cyber Crime and security: An Analysis" at National Seminar on Weaker Sections and Law at Punjab School of Law, Punjabi University, Patiala on March 29-30, 2011.

5. Presented Paper "Cyber Pornography: Its Impact and Prevention" at National Seminar on Facets of Justice Delivery System at Punjab School of Law, Punjabi University, Patiala on March 17-18, 2010.

6. Published paper on "Review on Wireless Security and WEP" at National Seminar Emerging trends in Computer Science & IT organized by Department Of IT, IET, Bhaddal on November 1-2, 2011.

7. Presented paper on "Review on Edge Detection using Canny Edge Detection Algorithm" at National Conference on Information Technology, Society and Restructuring (NCITSLR-2012) at Panjab University Regional Centre, Muktsar on March 12-13, 2012.

8. Presented Paper on "Applications of Morphological Operations in Image Processing" at National Conference on Information Technology, Society and Restructuring (NCITSLR-2012) at Panjab University Regional Centre, Muktsar on March 12-13, 2012.
9. Published paper on "Circle and Ellipse Detection using Canny Edge Detection Algorithm" at National Seminar on Technical Advancement in Communication Engineering at IET, Bhaddal on September 12, 2014.
10. Presented paper on "Role of ICT in Higher Education" at National Seminar on Higher Education for Development & Role of Teachers" at General Shivdev Singh Diwan Gurbachan Singh Khalsa College, Patiala on July 16, 2017.
11. Presented Paper on "Comparative Analysis of Salt and Pepper Noise Removal Techniques for Gray Scale Images" on National Conference on Advances in Wireless Communication and Mathematics" at Punjabi University Guru Kashi College, Talwandi Sabo on December 2, 2018.

Awards
1. Best Educator RACE-2019 Bangkok Award by International Association of Research and Development Organization (IARDO) at KU Home, Kasetsart University, Chatuchak, Bangkok, Thailand on 10th Feb, 2019.
2. Young Researcher Award (Female) in Computer Science and Engineering during ITSR Foundation Award-2019 at Jaipur (Rajasthan) on March 31, 2019)
3. Green ThinkersZ-Bright Educators Award 2018 at 3rd International Convention on Interdisciplinary Research for Sustainable Development held at Confederation of Indian Industry (CII) Chandigarh (UT), India on 5th April, 2019.

(Usha Rani)