

Munish Kumar, Ph.D.

(UGC-NET, GATE Qualified)

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Date of Birth: 03rd June, 1984



Featured in Stanford University's 2022, 2023 World Ranking of the **Top 2% Scientists**

Aim:

To grow in the field of computer education, research and development through learning, enhancing self-development and contributing both as a human being and as a professional. To, develop a world-class center of excellence for teaching/learning and research.

Specialization: Handwriting Recognition; Image Processing; Machine Learning; Pattern Recognition

Research Summary:

Google Scholar: Total citations = 6219, H-Index = 41, i10 Index=100

SCI-JCR Accumulative Impact Factor (TIF): 427.028 (Highest Impact Factor: 17.564)

Experience Summary:

Total: 14+ Years

Research: 12+ Years

Teaching Experience

Organization	Designation	Duration	
		From	To
Maharaja Ranjit Singh Punjab Technical University, Bathinda	Associate Professor, Computational Sciences	09.08.2023	Working till date
Maharaja Ranjit Singh Punjab Technical University, Bathinda	Assistant Professor, Computational Sciences	12.08.2016	08.08.2023
P.U. Rural Centre, Kauni, Muktsar	Assistant Professor, Computer Science	06.09.2013	11.08.2016
P.U. Constituent College, Sikhwala, Muktsar	Assistant Professor, Computer Science	03.08.2011	30.04.2013
GGs College for Women, Sec 26, Chandigarh	Assistant Professor, Computer Sci. and Appl.	07.08.2010	02.08.2011
Punjabi University Neighbourhood Campus, Jaito, Faridkot	Assistant Professor, Computer Science	03.10.2008	06.08.2010

Educational Qualification:

Degree	Specialization	University/Board	Passing Year
Ph. D	Computer Science	Thapar University Patiala, Punjab	2015
M. E.	Computer Science & Engineering	Thapar University Patiala, Punjab	2008

M.Sc.	Computer Science	Bharath Institute of Higher Education and Research, Chennai	2006
B.Sc.	Information Technology	I.K.G. Punjab Technical University, Jalandhar	2005
DOEACC A LEVEL	Computer Science	DOEACC Society, New Delhi	2004
Poly. Diploma	Computer Science & Engineering	Punjab State Technical Education & Industrial Training, Chandigarh	2003
10 th	General Subjects	Punjab School Education Board, Mohali	2000

Title of Ph. D. Thesis:

“Offline Handwritten Gurmukhi Script Recognition” under the supervision of Dr. R. K. Sharma, Ex-Professor, CSED, Thapar University, Patiala (Now Vice-Chancellor, Jaypee University, Wagnaghat, Himachal Pradesh, India) and co-supervision of Dr. Manish Jindal (Professor, Panjab University Regional Centre, Sri Muktsar Sahib, India).

Title of M. E. Thesis:

“Web Page Ranking Solution Through Snorm (P) Algorithm Implementation” under the supervision of Dr. Ravinder Kumar, Associate Professor, CSED, Thapar University, Patiala, Punjab, India.

Research Guidance:

I am supervising research scholars in the domain of Handwriting Recognition, Machine Learning and Pattern Recognition.

- (a) Ph.D. Students Guided 07 (Completed) + 05 (Pursuing)
- (b) M. Tech Students Guided 08 (Completed)

Research Projects:

- (a) Principal Investigator 02 (filed)
- (b) Co-principal Investigator 01 (Granted)

Books:

- i. UGC-NET/JRF/SET Computer Science & Applications (PAPER-II), D.P.S. Publishing House, New Delhi, 2021. ISBN No. 9789390157204.
- ii. Machine Learning in Image Analysis and Pattern Recognition, MDPI, 2021, ISSN No. 2306-5729.
- iii. Data Science Using Python, D.P.S. Publishing House, New Delhi, 2022. In Press

Benchmark Dataset Published:

- i. Offline Handwritten Gurmukhi Benchmark Data Set
<https://sites.google.com/view/gurmukhi-benchmark>
- ii. Postal Automation: Benchmark Gurmukhi Data Set
<https://sites.google.com/view/gurmukhi-benchmark/home/word-level-gurmukhi-dataset?authuser=0>
- iii. Handwritten Urdu Characters Data Set
<https://www.kaggle.com/surindersinghkhurana/handwritten-urdu-characters-dataset>

Patents Granted/Filed:

- i. "Agricultural fertilizer spreading apparatus and method thereof" Application No. TEMP/E-1/26636/2019-DEL
- ii. "Real time object recognition method" Application No. 2020103520 (Australian Government, IP Australia) Granted
- iii. "A method to word recognition for the postal automation and a system thereof" Application No. 2021100089 (Australian Government, IP Australia) Granted
- iv. "A method for gender classification based on offline handwriting and a system thereof" Application No. 2021101078 (Australian Government, IP Australia) Granted

International Collaborators:

I have a passion for research-oriented activities and collaboration with a few renowned international and national faculty members. Details are as follows:

- i. Prof. (Dr.) Ishwar Sethi
School of Engineering and Computer Science,
Oakland University, Rochester, MI 48309, USA
E-mail: isethi@oakland.edu
- ii. Prof. (Dr.) Xiao-Zhi Gao
Professor,
School of Computing,
University of Eastern Finland, Kuopio, Finland
E-mail: xiao.z.gao@gmail.com

Administrative Experience:

I look forward to having the opportunity to fully contribute to the life of the department. I have a special interest in the area of admissions, examination work, hostel wardenship, etc. I had some experience in these roles at my present institution. Details are as follows:

Annexure-A

Research Publications:

My research interests include Character Recognition, Handwriting Recognition, Computer Vision, Machine Learning and Pattern Recognition. In these research areas, I have published more than 140 research articles including 100+ articles in SCI-indexed journals. Details are as follows:

Annexure-B

Conference/Seminar/Short Term Courses/Faculty Development Program Attended:

I have attended the various international and national conferences in my research area. I have also participated in various STC/FDP for the development of my academic and research profile. Details are as follows:

Annexure-C

Conference/Seminar/Short Term Courses Organized:

Short Term Course on "Artificial Neural Network and Fuzzy Logic", at GZS Campus College of Engineering & Technology, Bathinda from 24th-28th April, 2017.

Additional Roles:

I am Associate Editor for 2 SCI Indexed journals in my research domain and working as Active Reviewers for various journals in Springer, Elsevier, ACM, and IEEE. Details are as follows:

References:

<ul style="list-style-type: none">• Dr. R. K. Sharma Vice-Chancellor, Jaypee University Wajnahat, HP, India Former Professor, Department of Computer Science & Engineering, Thapar Institute of Engineering & Technology, Patiala 140 001, Punjab, INDIA E-mail: <i>rksharma@thapar.edu</i> Phone: +91-98722-02705	<ul style="list-style-type: none">• Dr. Krishan Kumar Saluja Professor and Head, Department of Information Technology, UIET, Panjab University, Sec-25, Chandigarh 160 014, UT, INDIA E-mail: <i>k.salujaiuet@gmail.com</i> Phone: +91-82880-12014
<ul style="list-style-type: none">• Dr. Manish Kumar Jindal Professor Department of Computer Science and Applications, Panjab University Regional Centre, Sri Muktsar Sahib, Punjab, INDIA E-mail: <i>manishphd@rediffmail.com</i> Phone: +91-97793-51188	

Date: 13.04.2024

(Dr. Munish Kumar)

Annexure-A

Administrative Experience

- i. Associate Dean, IT Enabled Services, Maharaja Ranjit Singh Punjab Technical University, Bathinda
- ii. Ph.D. Coordinator, Department of Computational Sciences, Maharaja Ranjit Singh Punjab Technical University, Bathinda
- iii. Member, Faculty of Sciences, Maharaja Ranjit Singh Punjab Technical University, Bathinda
- iv. Member, Administrative, Academic and Technical Committees of Department of Computational Sciences, Maharaja Ranjit Singh Punjab Technical University, Bathinda
- v. Member, Department Research Board, Department of Computational Sciences, Maharaja Ranjit Singh Punjab Technical University, Bathinda
- vi. Member of Admission Committee 2017-18, Maharaja Ranjit Singh Punjab Technical University, Bathinda
- vii. Member of Admission Committee 2018-19, 2019-20, 2020-21 at Maharaja Ranjit Singh Punjab Technical University, Bathinda
- viii. Member of Maharaja Ranjit Singh Punjab Technical University, Bathinda Youth Festival Committee 2017
- ix. Placement Coordinator, Department of Computer Applications, Maharaja Ranjit Singh Punjab Technical University, Bathinda
- x. Day Scholar Warden, Maharaja Ranjit Singh Punjab Technical University, Bathinda
- xi. Member, Inspection Committees for granting courses affiliation to various colleges of Maharaja Ranjit Singh Punjab Technical University Bathinda
- xii. In-charge at Punjabi University Neighbourhood Campus, Jaito (Faridkot) from Oct, 2008 to Aug, 2010.
- xiii. Member, Board of Studies for Post-Graduate/Under-Graduate Computer Courses [MCA, BCA, M.Sc. (IT), BA/BSc (IT, Computer Science, Computer Applications), at Maharaja Ranjit Singh Punjab Technical University, Bathinda

Annexure-B

Selected Publications in SCI/SCI-E Journals

(a) Published papers

- [1] **Munish Kumar**, R. K. Sharma and M. K. Jindal, "A Novel Feature Extraction Technique for Offline Handwritten Gurmukhi Character Recognition", *IETE Journal of Research*, Vol. 59(6), pp. 687-692, 2013. **(SCI Indexed)**
<https://www.tandfonline.com/doi/abs/10.4103/0377-2063.126961>
- [2] **Munish Kumar**, R. K. Sharma and M. K. Jindal, "Efficient Feature Extraction Techniques for Offline Handwritten Gurmukhi Character Recognition", *National Academy Science Letters*, Vol. 37(4), pp. 381-391, 2014. **(SCI Indexed)**
<https://link.springer.com/article/10.1007/s40009-014-0253-4>
- [3] **Munish Kumar**, R. K. Sharma and M. K. Jindal, "A Novel Hierarchical Technique for Offline Handwritten Gurmukhi Character Recognition", *National Academy Science Letters*, Vol. 37(6), pp. 567-572, 2014. **(SCI Indexed)**
<https://link.springer.com/article/10.1007/s40009-014-0280-1>
- [4] **Munish Kumar**, R. K. Sharma and M. K. Jindal, "A Framework for Grading Writers using Offline Gurmukhi Characters", *Proceedings of the National Academy of Sciences-Physical Science- A*, Vol. 86(3), pp. 405-415, 2016. **(SCI Indexed)**
<https://link.springer.com/article/10.1007/s40010-016-0277-x>
- [5] **Munish Kumar**, R. K. Sharma and M. K. Jindal, "Offline Handwritten Gurmukhi Character Recognition: Analytical Study of different Transformations", *Proceedings of the National Academy of Sciences- Physical Science- A*, Vol. 87(1), pp. 137-143, 2017. **(SCI Indexed)** <https://link.springer.com/article/10.1007/s40010-016-0284-y>
- [6] **Munish Kumar**, M. K. Jindal and R. K. Sharma, "A Novel Technique for Line Segmentation in Offline Handwritten Gurmukhi Script Documents", *National Academy Science Letters*, Vol. 40(4), pp. 273-277, 2017. **(SCI Indexed)**
<https://link.springer.com/article/10.1007/s40009-017-0558-1>
- [7] **Munish Kumar**, and S. R. Jindal, "Devanagari Handwritten Grading System Based on Curvature Features", *Computer Modeling in Engineering & Sciences*, Vol. 113 (2), pp. 201- 209, 2017. **(SCI Indexed)**
<https://www.techscience.com/CMES/v113n2/27349>
- [8] **Munish Kumar**, M. K. Jindal and R. K. Sharma, "A Novel Handwriting Grading System Using Gurmukhi Characters", *International Arab Journal of Information Technology*, Vol. 15 (6), pp. 945-950, 2018. **(SCI Indexed)**
http://iajit.org/index.php?option=com_content&task=view&id=1635&Itemid=25
- [9] **Munish Kumar**, M. K. Jindal, R. K. Sharma and S. R. Jindal, "Offline Handwritten Numeral Recognition using Combination of Different Feature Extraction Techniques", *National Academy Science Letters*, Vol. 41(1), pp. 29-33, 2018. **(SCI Indexed)** <https://link.springer.com/article/10.1007/s40009-017-0606-x>
- [10] Malika Arora, **Munish Kumar** and N. K. Garg, "Facial Emotion Recognition Based on PCA and Gradient Features", *National Academy Science Letters*, Vol. 41 (6), pp.

- 365-368, 2018. **(SCI Indexed)**
<https://link.springer.com/article/10.1007/s40009-018-0694-2>
- [11] **Munish Kumar**, P. Chhabra and N. K. Garg, "An Efficient Content Based Image Retrieval System Using BayesNet and K-NN", *Multimedia Tools and Applications*, Vol. 77 (16), pp. 21557-21570, 2018. **(SCI Indexed)**
<https://link.springer.com/article/10.1007/s11042-017-5587-8>
- [12] Diksha Garg, N. K. Garg and **Munish Kumar**, "Underwater Image Enhancement using Blending of CLAHE and Percentile Methodologies", *Multimedia Tools and Applications*, Vol. 77 (20), pp. 26545-26561, 2018. **(SCI Indexed)**
<https://link.springer.com/article/10.1007/s11042-018-5878-8>
- [13] H. Kaur and **Munish Kumar**, "A Comprehensive Survey on Word Recognition for non-Indic and Indic Scripts", *Pattern Analysis and Applications*, Vol. 21(4), pp. 897-929, 2018. **(SCI Indexed)** <https://link.springer.com/article/10.1007/s10044-018-0731-2>
- [14] **Munish Kumar**, M. K. Jindal, R. K. Sharma and S. R. Jindal, "A Novel Framework for Writer Identification Based on Pre-Segmented Gurmukhi Characters", *SADHANA*, Vol. 43(12), pp. 197, 2018. **(SCI Indexed)**
<https://link.springer.com/article/10.1007/s12046-018-0966-z>
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<https://link.springer.com/article/10.1007/s00521-018-3677-9>
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<https://link.springer.com/article/10.1007/s10462-017-9607-x>
- [17] A. Kumar, A. Kaur and **Munish Kumar**, "Face Detection Techniques: A Review", *Artificial Intelligence Review*, Vol. 52(2), pp. 927-948, 2019. **(SCI Indexed)**
<https://link.springer.com/article/10.1007/s10462-018-9650-2>
- [18] **Munish Kumar** and S. R. Jindal, "Fusion of RGB and HSV Colour Space for Foggy Image Quality Enhancement", *Multimedia Tools and Applications*, Vol. 78(8), pp. 9791- 9799, 2019. **(SCI Indexed)**
<https://link.springer.com/article/10.1007/s11042-018-6599-8>
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<https://link.springer.com/article/10.1007/s11063-018-9913-6>
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- <https://link.springer.com/article/10.1007/s11831-018-9278-z>
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<https://link.springer.com/article/10.1007/s11042-019-7620-6>
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<https://link.springer.com/article/10.1007/s11831-019-09344-w>
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- [29] R. P. Kaur, M. K. Jindal and **Munish Kumar**, "Recognition of Newspaper Printed in Gurmukhi Script", *Journal of Central South University*, Vol. 26(9), pp. 2495-2503, 2019 **(SCI Indexed)**
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<https://link.springer.com/article/10.1007/s10462-019-09775-8>
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<https://link.springer.com/article/10.1007/s00500-019-04297-5>
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<https://link.springer.com/article/10.1007/s11042-019-08232-6>
- [34] **Munish Kumar**, Surbhi Gupta, Xiao-Zhi Gao, Amitoj Singh, “Plant Species Recognition Using Morphological Features and Adaptive Boosting Methodology”, *IEEE Access*, Vol. 7, pp. 163912–163918, 2019. **(SCI Indexed)**
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<https://link.springer.com/article/10.1007/s00500-019-04525-y>
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- [40] M. Bansal, **Munish Kumar**, and M. Kumar, “2D Object Recognition Techniques: State-of-the-Art Work”, *Archives of Computational Methods in Engineering*, Vol. 28, pp. 1147–1161, 2021 **(SCI Indexed)**
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<https://link.springer.com/article/10.1007/s10462-020-09827-4>
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<https://link.springer.com/article/10.1007/s00500-020-05018-z>
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<https://link.springer.com/article/10.1007/s11831-020-09452-y>
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<https://link.springer.com/article/10.1007/s00371-020-01927-0>
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<https://link.springer.com/article/10.1007/s11042-020-09726-4>
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- [55] H. Singh, R. K. Sharma, V. P. Singh and **Munish Kumar** “Recognition of Online Handwritten Gurmukhi Characters Using Recurrent Neural Network”, *Soft Computing*, Vol. 25, pp. 6329-6338, 2021 (SCI Indexed).
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Annexure-C

Conference/Seminar/Short Term Courses/Faculty Development Program Attended

- i. Microsoft Sponsored Faculty Development Program on “Microsoft Office” from 18th-19th Sep, 2017.
- ii. NITTTR Sponsored Short Term Course on “Data Mining and Business Intelligence”, from 04th-08th Sep, 2017.
- iii. NITTTR Sponsored Short Term Course on “SciLab Programming”, from 21st-25th Aug, 2017.
- iv. NITTTR Sponsored Short Term Course on “Wireless Networks”, from 22nd-26th May, 2017.
- v. NITTTR Sponsored Short Term Course on “Artificial Neural Network and Fuzzy Logic”, from 24th-28th April, 2017.
- vi. Google Sponsored Faculty Development Program on “Android Applications Development” from 09th-13th Jan, 2017.
- vii. NITTTR Sponsored Short Term Course on “Open-Source Technologies Through ICT”, from 29th Aug-02nd Sep, 2016
- viii. National Workshop on Multilingual Technologies 2013 at Punjabi University, Patiala from 11th-17th Nov, 2013
- ix. QIP on “Society and Web”, at IIT Guwahati (1 week)
- x. Faculty Development Program at MSIT, New Delhi on 22nd May, 2010
- xi. Role of IT in Technical Education at MIMIT, Malout (2 weeks)
- xii. Seminar on RAFIP-2010 at Punjabi University, Patiala on 30th March, 2010
- xiii. National Conference on RAFIT-2009 at Punjabi University, Patiala on 9th-10th April, 2009.

Annexure-D

Additional Roles

- i. Associate Editor, Soft Computing Journal (SCI Indexed)
- ii. Associate Editor, ACM Transactions on TALLIP Journal (SCI Indexed)
- iii. Reviewer of Proceedings of the National Academy of Sciences- Physical Science- A (SCI Indexed Journal)
- iv. Reviewer of IETE Journal of Research Journal (SCI Indexed Journal)
- v. Reviewer of Information Processing and Management Journal (SCI Indexed Journal)
- vi. Reviewer of Artificial Intelligence Review Journal (SCI Indexed Journal)
- vii. Reviewer of IEEE Access Journal (SCI Indexed Journal)
- viii. Reviewer of Expert Systems with Applications Journal (SCI Indexed Journal)
- ix. Reviewer of Optik Journal (SCI Indexed Journal)
- x. Member of International Association of Computer Science and Information technology (IACSIT), Singapore.
- xi. Member of International Association of Engineers (IAENG), Hong-Kong.