Vandana Dixit Kaushik

University NAAC/IQAC Coordinator
Associate Professor
Department of Computer Science & Engineering
Harcourt Butler Technical University, Kanpur

Ph.D. in Computer Science from U.P. Technical University, Lucknow (currently Dr. APJ Abdul Kalam Technical University)
Topic of Thesis: **Certain Efficient 3D Image Processing Algorithms**
Areas of Interest: **Biometrics, Image Processing, Indexing**

Teaching

New Course Developed :

1. As a member of BOS, HBTI (currently HBTU) participated in the revision of course contents of various courses at undergraduate and postgraduate level from time to time (B.Tech./MCA).
2. Member of Board of Studies of Dr. APJ Abdul Kalam University, Lucknow. Responsible for modification of structure and syllabus of Final Year CSE/ IT and MCA students. Responsible for the introduction of CBCS system which will be implemented in the curriculum from 2016-17 academic session.
3. I am a member of Multicore Curriculum Development team at UG level under the convenorship of Prof. H.S. Jamadagni, Chairman, CEDT, IISc, Bengaluru along with Mrs. Nandani, IT coordinator, Vishveshwarya Technical University (VTU), Karnataka, Mr. Narayan Iyer, Intel and Mrs. Shubha, Intel. This entire curriculum development project is sponsored by Intel, Bengaluru. The first draft of this curriculum was rolled out on 18.7.09 in a one day workshop organized at MSRIT, Bengaluru. The curriculum is already implemented at VTU from 2009-10 session onwards.

Ph.D. Thesis Supervision (student / title / completed or in progress) :

1. Monika Verma, Efficient De-blurring and De-fogging algorithms for static/moving 2D Images, **COMPLETED**from Dr. APJ Abdul Kalam Technical University, Lucknow.
2. Vikas Yadav, Efficient algorithms to analyze Big Data for 2D/3D Medical Images,**COMPLETED** from Dr. APJ Abdul Kalam Technical University, Lucknow.
3. Vineeta Singh, **COMPLETED** from Harcourt Butler Technical University, Kanpur

Masters Thesis Supervision (student / title / completed or in progress) :

1. Ayushi Gupta, 3D Motion Reconstruction & Image Registration Using Two Static 2D Image Sequence, COMPLETED from Jyoti Vidyapeeth Women's University, Jaipur in July 2014.
2. More than 35 thesis at MCA Level have been supervised successfully in the area of Image Processing, Biometrics etc

Bachelors Thesis Supervision (student / title / completed or in progress / co-supervisors) :

More than 60 thesis at B.Tech. Level (CSE/ IT students) have been successfully supervised in the areas of Image Processing, Biometrics, Databases, Web Technology etc.

Knowledge Dissemination (book chapters / publications completed or in progress):

Book Chapter

1. Vandana Dixit K., Phalguni Gupta, "Complementary Part Detection and Reassembly of 3D Fragments", In the Handbook of 3-D Surface Geometry and Reconstruction: Developing Concepts and Applications, Umesh Pati (Eds.), pp. 314-337, IGI Global, USA, 2012.
2. Singh, V., & Kaushik, V. D. (2022). Concepts of Data Mining and Process Mining. *Process Mining Techniques for Pattern Recognition: Concepts, Theory, and Practice*, 1. (Published) (Scopus Indexed, CRC Press, Taylor & Francis Group)
3. Vineeta Singh and Vandana Dixit Kaushik, "Chapter Title: Data Mining in Education: Recent Development, Modern Trends and Future" in the Book Titled "Location-Based Service Technology - In the Experience Age" (Book Chapter) (Proposal accepted, Scopus Indexed, CRC Press, Taylor & Francis Group)
4. Vineeta Singh and Vandana Dixit Kaushik, "Chapter Title: Remote working: Evolution, Scope and Future in Pandemic Times" in the Book Titled "Digital Economy, Innovation and Cyber Security – Health Technology in the Pandemic Era" (Book Chapter) (Proposal accepted, Scopus Indexed, CRC Press, Taylor & Francis Group)

International Journal

1. Vandana D. Kaushik, P. Gupta and V. K. Pathak, "Geometric Modeling of 3D-Face Features and Its Applications", Journal of Computers, Academy Publishers, vol. 5, no. 9, pp. 1305-1314, 2010. Citation : 04
2. Vandana Dixit Kaushik, Amit K. Gupta, Umarani Jayaraman, Phalguni Gupta, "An Efficient Indexing Scheme for Face Database using Modified Geometric Hashing", Journal of Neurocomputing Special Issue on: "Advanced Technology and Methodology in Intelligent Computing", vol. 116, pp. 208-221, Elsevier, 23rd September,2013. Citation: 19
3. Ayushi Gupta, Noopur Rastogi, Vandana Dixit Kaushik, "3D Motion Reconstruction & Image Registration from 2 static 2D Image Sequence", International Journal of advanced Research in Computer Science and software Engineering, vol. 4(6), pp. 1025-1029, 2014
4. Vikash Yadav, Monika Verma and Vandana Dixit Kaushik, "An approach for Pixel Based Binarization of Gray Images", International Journal of Research in Engineering & Technology (IJRET), eISSN: 2319-1163/ pISSN: 2321-7308. Vol. 05, Special Issue 06, pp. 1-4, May, 2016
5. Vikash Yadav and Vandana Dixit Kaushik, "Indexing and Retrieval of Medical Images from Big Data", International Journal of Computer Science and Information Security (IJCSIS), ISSN: 1947- 5500, Vol. 15, Issue 1, pp. 327-334, January 2017, Pittsburgh, U.S.A., Indexed in ESCI - IP & Science - Thomson Reuters - Web of Science. Impact Factor: **0.553. Citation: 05**
6. Vikash Yadav and Vandana Dixit Kaushik, "Pattern Matching Image Retrieval Technique for Medical Image Database", Journal of Biomedical Engineering and Medical Imaging (JBEMI), ISSN: 2055-1266 (Online), Vol. 4 No. 1, pp. 21-29, February 2017, U.K., Indexed in DOAJ & Scopus.
7. M. Verma, VD Kaushik and V Pathak, "Fog Removal by Multiple Polynomial Regression Model through Curvelets", International Journal of Intelligent Engineering and Systems, DOI: 10.22266/ijies2017.1031.22, ISSN: 2185-3118,Vol.10, No.5,pp. 201-209, October, 2017

8. M. Verma, VD Kaushik and V Pathak, "Haze Removal of a Single Image by using the Brightness Prior", International Journal of Intelligent Engineering and Systems, DOI: 10.22266/ijies2017.1031.15 . Corpus ID: 5116731, Vol.10, No.5, pp. 134-142, Published31st October, 2017.

9. Vikash Yadav and Vandana Dixit Kaushik, "Detection of Melanoma Skin Disease by Extracting High Level Features for Skin Lesions" International Journal of Advanced Intelligence Paradigms (IJAIP), InderScience Publication, ISSN online: 1755-0394 ISSN print: 1755-0386, 27th September 2018, U.K., UGC approved journal & Indexed in ACM Digital Library & Scopus. DOI: 10.1504/IJAIP.2018.10012484.Impact Factor: **0.38.**

10. Vikash Yadav and Vandana Dixit Kaushik, "A Study on Automatic Early Detection of Skin Cancer" International Journal of Advanced Intelligence Paradigms (IJAIP), InderScience Publication, DOI: 10.1504/ IJAIP.2019.098592, ISSN online: 1755-0394 ISSN print: 1755-0386, U.K.,UGC approved journal & Indexed in ACM Digital Library & Scopus, Vol.12, No. ¾, pp. 392-399, Published online: 13th March, 2019, Impact Factor: **0.38**

11. M. Verma, V. Yadav, VD Kaushik and V. Pathak, " Multiple Polynomial Regression for Solving Atmospheric Scattering Model", International Journal of Advanced Intelligence Paradigms (IJAIP), InderScience Publication, ISSN online: 1755-0394 ISSN print: 1755-0386, UGC approved journal & Indexed in ACM Digital Library & Scopus, Vol.12, No. 3-4, pp. 400-410, Published online: April 1, 2019. Impact Factor: **0.38**

12. Vikash Yadav, Rati Shukla, Vandana Dixit Kaushik , "Identification of an Object in Image using Frame Differencing, Optical Flow and Support Vector Machine", International Journal of Innovative Technology and Exploring Engineering (IJITEE), Blue Eyes Intelligence Engineering & Sciences Publication, ISSN: 2278-3075, Vol. 8, Issue 8, pp. 2938-2942, June 2019 & Indexed in **Scopus**, Copernicus & Google Scholar.

13. Abhishek Agnihotri, Vikash Yadav and Vandana Dixit Kaushik, "Role of Data Mining and Machine Learning Techniques in Medical Imaging" International Journal of Advanced Intelligence Paradigms (IJAIP), InderScience Publication, ISSN online: 1755-0394 ISSN print: 1755-0386, U.K., UGC approved journal & Indexed in ACM Digital Library & Scopus, Vol.15, No. 03, pp. 340-351, Published online 10th March, 2020, Impact Factor: **0.38**

14. Vineeta Singh and Vandana Dixit Kaushik, "Renyi Entropy and Atom Search Sine Cosine Algorithm for Multi Focus Image Fusion. International Journal of Signal Image and Video Processibg (*SIViP)* 15, pp. 903–912 (2021). DOI: https://doi.org/10.1007/s11760-020-01814-0. Published online: 25thJan. 2021, **SCIE Indexed Journal**, Impact Factor 2020 = 2.157

15. Vineeta Singh and Vandana Dixit Kaushik, "HoEnTOA: Holoentropy and Taylor Assisted Optimization based Novel Image Quality Enhancement Algorithm for Multi-Focus Image Fusion", Journal of Scientific and Industrial Research (JSIR), Vol. 80 (10), pp. 875-886, ISSN online 0975-1084 ISSN print 0022-4456 DOI: http://nopr.niscair.res.in/handle/123456789/58230, **Published: October 2021, SCIE Indexed Journal,** IF 2020 = 1.056

16. Vineeta Singh and Vandana Dixit Kaushik, "WeAbDeepCNN: Weighted Average Model and ASSCA based Two Level Fusion Scheme For Multi-Focus Images" Journal of Scientific and Industrial Research (JSIR), Vol. 80 (10), pp. 905-914, DOI: http://nopr.niscair.res.in/handle/123456789/58227Published: October 2021,**SCIE Indexed Journal, IF 2020 = 1.056.**

17. Vineeta Singh and Vandana Dixit Kaushik, "DTCWTASODCNN: Dual Tree Complex Wavelet Transform based Weighted Fusion Model for Multi-modal Medical Images

Quality Improvement with Atom Search Optimization Technique & Deep CNN", Journal of Scientific and Industrial Research (JSIR)**, SCIE Indexed Journal,** (Under Review) (Communicated October 2021)

18. Vineeta Singh and Vandana Dixit Kaushik, "HaarAdaptiveTaylor-ASSCA-DCNN: Some Novel Fusion Model for Image Quality Enhancement" Journal of Scientific and Industrial Research **(SCIE Indexed Journal)** (Under Review) (Communicated March 2022)

19. Vineeta Singh and Vandana Dixit Kaushik,"An Optimized-Deep Classifier Scheme for Image Quality Improvement" Journal of Scientific and Industrial Research (JSIR)**(SCIE Indexed Journal)**(Under Review) (Communicated April 2022)

International Conferences

1. Vandana Dixit Kaushik, R. Gupta, A. Vasisth, K. Verma, A. Singh, V. Pathak, "Feature Extraction from any 3D Data for the Modeling of Input Artifact/Sculpture to Support Its Identification", Proceedings of 34th International Conference on Computer Applications and Quantitative Methods in Archaeology CAA 2006, pp. 502-508, April, 2006, Organized by: Archaeology Technologies Lab(ATL) and North Dakota State University (NDSU)/ Fargo, North Dakota/ USA (**Presented and Attended**)

2. Vandana Dixit Kaushik, A. K. Singh, J. Varshney, P Pandey, K. P. Rao, V. K. Pathak, "Cleavage Site Detection in Broken 3D Objects", Proceedings of International Conference on Advanced Computing and Communications (ADCOM 2007), Guwahati, India, December 2007, pages 339 – 344, (**Presented and Attended**)

3. Vandana Dixit K., Deepti Singh, Parul Raj, M. Swathi, & Phalguni Gupta, "kd-tree Based Fingerprint Identification System", Proceedings of 2nd IEEE International Conference on Anti-counterfeiting, Security, and Identification (2008 ASID), Guiyang, China, August, 2008, pages 5-10. (**Presented and Attended**)

4. Vandana Dixit K., S. Singh, H. Tiwari, S. K. Goyal, V. K. Pathak, & Phalguni Gupta, "Automatic 3D Facial Feature Extraction Algorithm", Proceedings of 2nd IFIP International Conference on New Technologies, Mobility and Security, Tangier, Morocco, November, 2008, pages 1-5. (**Presented by co-author**)

5. Vandana D. Kaushik, A. Budhwar, A. Dubey, R. Agrawal, Shraddha Gupta, V. K. Pathak and P. Gupta, "An Efficient 3D Face Recognition Algorithm", IEEE Third International Conference on New Technologies, Mobility and Security (NTMS 2009), Cairo, December 2009, pages 1-5. (**Presented by co-author**)

6. Vandana Dixit Kaushik, Amit K. Gupta, Umarani Jayaraman, Phalguni Gupta, Modified Geometric Hashing for Face Database Indexing, International Conference on Intelligent Computing (ICIC 2011) in Lecture Notes on Computer Science [LNCS- 6839], pp. 608-613, Springer, Zhengzhou, China, August 2011. (**Presented by co-author**)

7. Monika Verma, Vandana D Kaushik, C. V. Rao, "Curvelet based Image Fusion", 2012 2nd World Congress on Information and Communication Technologies (WICT 2012) Oct 30- Nov 2, 2012. (**Presented by co-author**)

8. Vandana Dixit Kaushik, Amit Bendale, Aditya Nigam, Phalguni Gupta, "An Efficient Algorithm for De-duplication of Demographic Data", International Conference on Intelligent Computing (ICIC 2012) in Lecture Notes on Computer Science [LNCS-7389], pp. 602-609, Springer, July 25-29, 2012, Huangshan, China. (**Presented and Attended**)

9. Arjun Reddy, Umarani Jayaraman, Dr. Vandana Dixit Kaushik and Phalguni Gupta, "An Efficient Fingerprint Scheme", 2nd International conference on Soft Computing for Problem Solving (SocPros-2012), December 28-30, Jaipur, India.

10. Rajesh R. Pillai, Vandana Dixit Kaushik and Phalguni Gupta, "An Efficient Natural Image De-blurring Algorithm", 9th International Conference on Intelligent Computing Theories, ICIC-2013, LNCS 7995, Springer, pp 582-586, July 28-31, 2013, Nanning, China (**Presented by co-author**)

11. Vandana Dixit Kaushik, Amit Bendale, Aditya Nigam and Phalguni Gupta, "Certain Reduction Rules Useful for De-Duplication Algorithm of Indian Demographic Data ", 4th International Conference on Advanced Computing & Communication Technologies, ACCT2014,Feb 8-9, 2014, Rohtak, India. (**Presented and Attended**)

12. Ankit Sharma, Vandana Dixit Kaushik, P. Gupta, "Illumination Invariant Face Recognition", 10[th]International Conference on Intelligent Computing Theories, ICIC-2014, LNCS 8588, Springer, pp 308-319, August 3-6, 2014, Tayuan, China (**Presented by co-author**)

13. Y. Prashanth Reddy, K. Tiwari, Vandana Dixit Kaushik, P.Gupta, "An Efficient Fingerprint Minutiae Detection Algorithm", 3rd International Symposium on Security in Computing and Communications, SSCC 2015, in Communications in Computer and Information Science series, Vol 536, Springer Series, pp. 186-194, August 10-13, 2015, Kochi, Kerala. (**Presented and Attended**)

14. Monika Verma, Vandana Dixit Kaushik, Vinay Pathak, "An Efficient Deblurring Algorithm on Foggy Images using Curvlet Transforms", 3rd International Symposium on Women in Computing and Informatics, WCI 2015, Copyright 2015 Association for Computing Machinery, ACM, pp. 500-505, August 10-13, 2015, Kochi, Kerala (**Presented by co-author, Attended**)

15. Vikash Yadav, Monika Verma, V.D. Kaushik, "Big Data Analytics for Health Systems", International Conference on Green Computing and Internet of Things ICGCIOT 2015, IEEE, pp. 253-258, October 08-10, 2015, Greater Noida, India.(**Presented by co-author**)

16. Monika Verma, Vikash Yadav, V.D. Kaushik, Vinay Kumar Pathak, "Addition of Yellow Frequency in the Spectrum for Improving vision due to Fog", International Conference on Applied and Theoretical Computing and Communication Technology ICATCCT 2015, IEEE, pp. 877-881, October 29-31, 2015, Karnataka, India. (**Presented by co-author**)

17. Vikash Yadav, Monika Verma, V.D. Kaushik, "A Hybrid Image Compression Technique for Medical Images", 7th IEEE International Conference on Computational Intelligence and Communication Networks CICN 2015, December 12-14, 2015, Jabalpur, India.(**Presented by co-author**)

18. Vikash Yadav, Monika Verma, V.D. Kaushik, "A Biometric approach to Secure Big Data", International Conference on Innovation and Challenges in Cyber Security ICICCS 2016, February 03-05, 2016, Greater Noida, India (**Presented by co-author**)

19. Vikash Yadav, Monika Verma, V.D. Kaushik, "Comparative analysis of Contrast Enhancement Techniques of different Images", 2nd IEEE International conference on computational Intelligence and Communication Technology CICT 2016, February 12-13, 2016, Ghaziabad, India. (**Presented by co-author**)

20. Vikash Yadav and Vandana Dixit Kaushik, "Various Color and Texture Based Feature Extraction Techniques for Image Recognition", International Conference on Innovative Entrepreneurship and Startup (ICIES-2017), ISBN: 978-93-86256-55-3, pp. 1-6, Organized by Department of Electronics Engineering at Kamla Nehru Institute of Technology, Sultanpur, India on March 03-04, 2017.(**Presented by co-author**)

21. Kamlesh Tiwari, Vandana Dixit Kaushik and Phalguni Gupta, "An Efficient Fingerprint Matching using Continuous Minutiae Template Learning", 2nd International Conference on Computer, Communications and Computational Sciences (IC4S-2017). Workshop: Computational Sciences, Advanced Databases and Computing (CSADC2017), 11-12, October, 2017, Phuket, Thailand(**Presented and Attended**)

22. Ameesha Mittal, Geetika Arora, Kamlesh Tiwari, Vandana Dixit Kaushik, Phalguni Gupta "User Engagement Prediction Using Tweets" (Paper ID:746), 2018 Fourteenth International Conference on Intelligent Computing (ICIC'18), held in Wuhan, China from 15 to 18 August 2018. (**Presented and Attended**)

23. Singh, V., & Kaushik, V. D. (2019, March). A Study on Multi-Focus Image Fusion in Wavelet Domain. In *International Conference on Advances in Engineering Science Management & Technology (ICAESMT)-2019, Uttaranchal University, Dehradun, India*. **Available at SSRN**: https://ssrn.com/abstract=3383596. (**Published Link**) (**Published: 4 Jun 2019**)

24. Sehgal, Rashmita and Kaushik, Vandana Dixit, A Study on Edge Preservation based Noise Suppression in CT images (March 14, 2019). International Conference on Advances in Engineering Science Management & Technology (ICAESMT) - 2019, Uttaranchal University, Dehradun,India,Available-at SSRN: https://ssrn.com/abstract=3395681 or http://dx.doi.org/10.2139/ssrn.3395681. (**Presented by co-author**)

25. Singh, V., & Kaushik, V. D. (2021). A Brief Study and Overview of Image Fusion Methods. In *Proceedings of International Conference on Computational Intelligence, Data Science and Cloud Computing: IEM-ICDC 2020* (Vol. 62, p. 355). Springer Nature. **Pages 355-367**, Chapter 28. ISBN: 978-981-33-4967-4. https://link.springer.com/chapter/10.1007/978-981-33-4968-1_28 (Chapter DOI) 10.1007/978-981-33-4968-1 (Proceedings Book DOI)(**Published: 5**th **April 2021**) (**Scopus Indexed**) (**Presented by co-author**)

26. Singh, V., & Kaushik, V. D. (2021, June). A comparative study and analysis for image fusion techniques. In *Recent Trends in Communication and Electronics: Proceedings of the International Conference on Recent Trends in Communication and Electronics (ICCE-2020), Ghaziabad, India, 28-29 November, 2020* (p. 256). CRC Press. https://www.taylorfrancis.com/chapters/edit/10.1201/9781003193838-47/comparative-study-analysis-image-fusion-techniques-vineeta-singh-vandana-dixit-kaushik (**Published Link**) (**Published: June 2021**) (**Scopus Index**ed)

27. Singh V., Kaushik V.D. (2022) Study and Performance Analysis of Image Fusion Techniques for Multi-focus Images. In: Gupta D., Khanna A., Kansal V., Fortino G., Hassanien A.E. (eds) Proceedings of Second Doctoral Symposium on Computational Intelligence (**DoSCI**). Advances in Intelligent Systems and Computing, vol 1374. **pp 247-259**, Springer, Singapore. https://doi.org/10.1007/978-981-16-3346-1_20 (DOI) (**Publisher:** Springer Singapore). (**Published: 20 Sep 2021**) (**Scopus Indexed**).

28. Singh, V., & Kaushik, V. D. (2022). A Study of Multi-Focus Image Fusion: State-Of-The-Art Techniques. In *Advances in Data and Information Sciences* (**ICDIS Agra, 2021 on MAY 14-15, 2021**) (**pp. 563-572**). Springer, Singapore. Series ISSN2367-3370. Online ISBN978-981-16-5689-7. Print ISBN978-981-16-5688-0. (**Published: 8 Feb 2022, Scopus Indexed, Publisher:** Springer Singapore) DOI: **10.1007/978-981-16-5689-7_49** https://link.springer.com/chapter/10.1007/978-981-16-5689-7_49 (**Published Link**)

29. Singh, V., & Kaushik, V. D. (**2021, June 26**). Role and Importance of Image Fusion Techniques in Advanced Research. In International Conference on Communication and Information Processing (ICCIP-2021) held at Nutan College of Engineering and Research, Vishnupuri, Talegaon Dabhade, Pune, India, **Available at SSRN:** https://ssrn.com/abstract=3916347. (**Published Link**) (**Published: September 2021**)

30. Vineeta Singh and Vandana Dixit Kaushik, "A study: State-of-the-Art Techniques: Medical Image Fusion" Second International Conference on New Age Systems and Automation Technologies (**ICNAAT 2021**) organized by Department of ECE and E&I, Bannari Amman Institute of Technology, Sathyamangalam, Tamil Nadu, India

on **9ᵗʰ -10ᵗʰ July, 2021** (Conference proceedings will be published in Springer - Lecture Notes in Electrical Engineering, **Scopus Indexed, In Press**)**(Accepted: June 2021) (In Press, Publication Due: 2022)**

31. Vineeta Singh and Vandana Dixit Kaushik, "A Typical Hybrid Optimization Based Image Quality Enhancement Technique" International Conference on Computational Intelligence, Data Science and Cloud Computing **(IEM ICDC 2021)** organized by Department of Information Technology, Institute of Engineering & Management, Kolkata, India on 22ⁿᵈ -24ᵗʰ December, 2021. (The conference proceedings will be published in Springer Book series 'Algorithms for Intelligent Systems'**, Scopus Indexed) (Accepted: November 2021) (In Press: Publication Due: 2022)**

32. Sehgal, Rashmita, and Vandana Dixit Kaushik. "CT image denoising using bilateral and wavelet based thresholding." *Recent Trends in Communication and Electronics*. CRC Press, 2021. 93-97.

33. Vineeta Singh and Vandana Dixit Kaushik, "A Methodical Report on Requirements of Image Fusion, Methodologies, Performance Measurements and Application Areas with Utilization in Smart Ubiquitous Environment", International Conference on Computational Intelligence in Analytics and Information System (CIAIS-2021) organized by Department of Computer Science & Technology, Manav Rachna University. **2ⁿᵈ-3ʳᵈ April 2021**, CRC Press, Taylor & Francis Group. (**Scopus Indexed Proceedings**)**(Publication Due: April 2023)**

National Conferences

1. Monika Verma, Vandana Dixit Kaushik and Chandra Shekhar Tiwari ," Defog using Multiple Polynomial Regression Model and BackPropogation"NCICCD 2018 Organized by Department of Computer Science & Engineering atHarcourt Butler Technical University ,Kanpur, November 29-30, 2018. ((**Presented by co-author**)

2. Monika Verma, Vikas Yadav, Vandana Dixit Kaushik, Haze Removal of a Single Image by Estimating Depth Using Quadratic Model. In Proceedings of National Conference on Recent Advances in Information & Communication Technologies (RAICT-2017) pp.50-53. ISBN: 978-93-86256-82-9, 25-26ᵗʰ March, 2017 ((**Presented by co-author**)

3. Monika Verma, Vandana Dixit Kaushik, "An Efficient Digital Watermarking Algorithm", Proceedings of National Conference on Internet Security and Cyber Laws (NCISCL-2014), pp. 48-51, April, 5-6, 2014. ((**Presented and Attended**)

4. Rajesh Pillai, Monika Verma and Vandana Dixit Kaushik, "Comparative Studies on Some De-Blurring algorithms", Emerging Trends in Engineering and Sciences, ETES 2014, Mc Graw Hill, Asansol Engineering College, Asansol, India, Jan 30-31, 2014 (**Presented by co-author**)

Research & Development

Ongoing Research (after completion of Ph.D.): Work has been undertaken in the following areas

1. De-duplication of Demographic Data

This work aimed at developing an efficient algorithm to de-duplicate based on demographic information which contains two name strings, viz. GivenName and Surname, of individuals. The algorithm consists of two stages- enrolment and de-duplication. In both stages, all name strings are reduced to generic name strings with the help of phonetic based reduction rules. Thus there may be several name strings having same generic name and also there may be many individuals having the same name. The generic name with all name

strings and their Ids forms a bin. At the enrolment stage, a database with demographic information is efficiently created which is an array of bins and each bin is a singly linked list. At the de-duplication stage, name strings are reduced and all neighbouring bins of the reduced name strings are used to determine the top k best matches. In order to see the performance of the proposed algorithm, we have considered a large demographic database of 4,85,136 individuals. It has been observed that the phonetic reduction rules could reduce both the name strings by more than 90%. Experimental results reveal that there is very high hit rate against a low penetration rate.

2.   Indexing of Databases (Face Database/ Fingerprint/Medical Images)

- Face Database
  This work used a modified geometric hashing technique to index the database of facial images. The technique made use of minimum amount of search space and memory to provide best matches with high accuracy against a query image. Features are extracted using Speeded-Up Robust Features (SURF) operator. To make these features invariant to translation, rotation and scaling, a pre-processing technique consisting of mean centering, principal components, rotation and normalization has been proposed. The proposed geometric hashing is used to hash these features to index each facial image in the database. It has achieved more than 99% hit rate for top 4 best matches.

- Fingerprint database
  In this work an efficient geometric-based indexing scheme for fingerprint database is used. Unlike other geometric-based indexing schemes, the proposed scheme reduces both memory and computational costs. It has been tested on IITK fingerprint database containing 2120 fingerprints of 530 subjects. Correct Recognition Rate is found to be 86.79% at top 10 best matches. Experiments prove the superiority of the proposed scheme against well-known geometric-based indexing schemes.

- Medical Images
  Medical records such as x-rays, ECG and MRI images fall in the category of unstructured Big Data that require significant storage space and effort to manage. In case of Medical Images this "Big data" refers to datasets whose size is beyond the ability of typical database software tools to capture, store, manage, and analyze. Our aim is to extract useful data from this big data with the help of data mining techniques which can discover interesting patterns as well as descriptive, understandable models from large scale medical image data. Efficient indexing techniques like k-d trees, geometric hashing etc. will be further used for minimizing the search time through the large databases.

3.   De-blurring and De-fogging Algorithms for 2D/ 3D Images
      Blurred image has always been a bottleneck for investigating agencies. Deblurring from a single image has been an ill-posed and challenging problem due to the large number of unknowns in the estimation process. The unknowns are the type of blur, the extent of blur and the noise, which degrade the image further. There does not exist any efficient algorithm that can deblur any given image. This thesis attempts to deblur blindly a given natural image with an assumption of uniform blur throughout the image. The algorithm uses the Variational Bayesian approach for optimizing the posterior probability and deriving the most probable Point Spread Function (PSF). Once the PSF is estimated, a modified Lucy Richardson algorithm is used to do the deconvolution operation and to get the deblurred image. The algorithm is found to be very effective for natural images and the results are quantified using the Cumulative Probability of Blur Detection (CPBD) values.

Sponsored Research (title / sponsors / funding / duration / co-PI/ research output in brief):

Was the co-supervisor of the Research Project entitled "Sculptures' Identification Through Geometric Modelling and Feature Extraction" sponsored by AICTE under Research Promotion Scheme (F. No. 8023/BOR/RID/RPS-19/2008) of amount 11.50 lakhs. This project has been completed.

The project was interdisciplinary as it was designed to benefit the archaeologists who finds it very difficult to ascertain the period to which any Sculpture belongs. The data was collected for two periods: Kushan period and Gupta period and we were able to asertain the period through extracting features (and further doing the Mathematical Modeling of those features) from face like eyebrows, nose, lips etc. It was concluded that the Sculptures of Kushan period had very different feature equations from Gupta period scupture equations.

Development of Research Facilities (labs / equipment / software / processes):

1.   As part of the project have procured 3D Laser Scanner Rolland LPX 600
2.   Intel Higher Education sponsored 2 Nos. of IXP 25 Network Processor Kits (no. of B.Tech. students did their project using these Network Processors)
3.   Intel also donated 10 Dell Optiplex PCs

Extension Activities

Courses Done: *More than 05*

Conferences Participated/Organized:
Participated: *More than 10*

Organized: As Co-convenor: more than *04*, Program Committee Member: *05*, Student Annual Conferences: *11*

Industry Interaction: *Interacting with Intel, IBM, Infineon, EMC2*
Interaction with other institutes: *More than 04*   [details in ANNEXURE A]

Administration & Other Services

Administrative Assignments:
1.   Has been a member of Time-table Committee of the institute responsible for rolling out the time table of B.Tech. M.Tech. and MCA students.
2.   Contributed in preparing the proposal for World Bank project for Computer Science Department during March-April, 2003 (specifically contributed in preparing the equipment lists, departmental profile, library books required, and specifications of Biometrics Lab etc.).
3.   Joined as Convener, Literary Sub-Council, Council of Students Activities, HBTI, Kanpur in 2004 uptill 2011 and was involved in organizing various literary events from time to time like Group Discussions, Quizzes (even inter collegiate), Kavi-Sammelans, Debates, elocutions etc. Institutes magazine was also published under the umbrella of Literary Sub-Council and I was involved in editing and compiling the whole magazine.
4.   Member of Board of Studies at HBTI and Dr. APJ Abdul Kalam Technical University, Lucknow. I have participated in the modifying the syllabus of B.Tech CSE/ IT/ MCA.

5. Joined as Joint Controller of Examination, HBTI in 2011 uptil August, 2017 and is responsible for management of Result management System, Processing of results of B.Tech./MCA/ M.Tech. is various branches, Printing of Tabulation Registers, Printing of Marksheets, Printing of Provisional Degrees of Final year students, Examination Schedule Preparation, Making the Result Analysis of each Academic Session.

6. Joined as Nodal Officer, Engineering, TEQIP-III in September, 2017 and continuing. Role is to prepare and upload Procurement Plan as well as conduct various Academic Activities like FDP's, Induction Programmes for first year students, R&D related activities etc.

7.   Joined as Associate Dean, School of Engineering in November, 2018

8. Joined as Warden of Girls Hostel-I in 2012 and again in October, 2018 and is responsible for Maintenance as well as Mess related of the Hostel

(Dr. Vandana Dixit Kaushik)

ANNEXURE A

(A) **Details of participation in Refresher courses / Teaching-learning-evaluation technology programs / Soft skills development programs / Faculty development programs etc.**

S.No.	Name of course	Name of organization	Period/duration		Sponsoring authority
			From	**To**	
1.	Faculty Training Program on .NET Technology with C#	Microsoft India	July 5th ,2004	July 9th ,2004	Microsoft @India Academic Developer Program
2.	Linux system and Network Administration	IIT Kanpur	December 11th,2004	December 25th,2004	HBTI Kanpur
3.	IBM WSAD	IBM	July 2005		TEQIP, HBTI
4.	IBM Rational Suite	IBM	December 21st, 2005	December 24st, 2005	TEQIP, HBTI
5.	QIP course on Mathematical Methods in Engineering and Science	IIT Kanpur	July 3rd 2006	July 15th 2006	Quality Improvement Program
6.	Program Optimization for Multi-core Architectures	CSE Department IIT,Kanpur	July 2nd ,2007	July 7th ,2007	Intel and IIT Kanpur
7.	IBM Faculty Enablement Program 2008 on Service oriented Architecture and Web 2.0	IBM at UPTU Campus Noida	May 5th, 2008	May 10th, 2008	IBM
8.	Faculty Development Program on Modeling, Simulation and Analysis of Engineering Systems	Department of Computer Science and Engineering, HBTI, Kanpur	October 25th 2013	October 30th 2013	TEQIP

(B) **Organizing Seminars / Conferences / Workshops / Refresher Courses / Training programs / Faculty Development Programs etc.**

S.No.	Name of the Program	Organizing Institution/ Department/Body	Period		Sponsoring authority	Name of the co-organizer (if any)
			From	**To**		
1.	International Workshop on Recent Advances in Biometric Systems	IIT Kanpur **Member: Organizing Committee**	April 15th, 2005	April 16th, 2005	Biometrics Lab, IIT Kanpur	-
2.	One day Workshop on Recent Trends in Biometrics	IIT Kanpur **Member: Organizing Committee**	December 2nd, 2005	December 2nd,2005	Biometrics Lab, IIT Kanpur	
3.	International Symposium on Frontiers of Research on Speech and Music(FRAM-2006)	ITC Sangeet Research Academy, Kolkata, / **Held at Lucknow Member: Local Organizing Committee**	January 9th , 2006	January 10th , 2006	Ministry of Information and Technology, Govt. of India and IIT Kanpur	CDAC,Kolkata Sir CV Raman Centre for Physics &Music, Jadavpur University ,Kolkata & GBTU
4.	International Workshop on Biometrics	IIT Kanpur, **Member: Organizing Committee**	December 1st, 2006	December 2nd , 2006	Biometrics Lab, IIT Kanpur	
5.	ACM Inter Collegiate Programming Contest-Asia Region-Kanpur	Indian Institute of Technology Kanpur **Member**:	December 9th , 2006	December 10th , 2006	IBM	ACM

	Site	**Organizing Committee**				
6.	ACM Inter Collegiate Programming Contest-Asia Region-Kanpur Site	Indian Institute of Technology Kanpur **Member**: **Organizing Committee**	October 27th, 2007	October 28th, 2007	IBM	HP
7.	ACM Inter Collegiate Programming Contest-Asia Region-Kanpur Site	Indian Institute of Technology Kanpur **Member**: **Organizing Committee**	November 15th, 2008	November 16th, 2008	IBM	ACM

(c) Professional Society Activities, events, conferences organized etc (Last 3 years).

S.No.	Name of the Seminar/Conference/Workshop	Name of Organizing Institute	Year	Place	Status of Participation i.e.paper presented /only attended / Organized
1.	ACM-ICPC Asia Region Gwalior Kanpur Site Contest	IIT-Kanpur, Kanpur	October 3-4, 2009	IITM Gwalior	Member, Organizing Committee
2.	ACM-Inter Collegiate Programming Contest ICPC, Asia Region Kanpur Site Contest	IIT-Kanpur, Kanpur	December, 11-12, 2010	IIT Kanpur, Kanpur	Member, Organizing Committee
3.	Fourth International Workshop on Biometrics & its Applications in Forensic Science IWBFS 2011	Biometrics Lab, IIT Kanpur, Kanpur & CSE Department, UIET, CSJM University, Kanpur	January, 13-15, 2011	UIET, CSJM University, Kanpur	Attended and Member, Organizing Committee
4.	ACM- ACM-Inter Collegiate Programming Contest ICPC, Asia Region Kanpur Site Contest	IIT-Kanpur, Kanpur	December, 7-8, 2011	IIT Kanpur, Kanpur	Member, Organizing Committee
5.	Special Session on Biometrics and its Applications in Forensics Science in Conjunction with 2011 International Conference on Intelligent Computing, 2011	NSF of China & technically co-sponsored by The IEEE Computational Intelligence Society & The International Neural Network Society.	August 11-14, 2011	Zhengzhou, China	Session Organizer
6.	Special Session on Biometric based Security for Information Technology in Conjunction with 2nd World Congress on Information Communication Technologies	IEEE sponsored	October 30 – November 2, 2012	Trivandrum	Member, Program Committee
7.	National Level Seminar on Issues and Challenges of Computer Science & Engineering as a Discipline	CSE Department HBTI, Kanpur under TEQIP-II	March 9, 2013	CSE Department, HBTI, Kanpur	Member Organizing Committee
8.	Faculty Development Program on Modeling, Simulation and Analysis of Engineering Systems	CSE Department HBTI, Kanpur under TEQIP-II	October 25-30, 2013	CSE Department, HBTI, Kanpur	Member Organizing Committee
9.	State Level Faculty Interaction Seminar	HBTI, Kanpur under Deptt. Of Technical Education, Govt. of Uttar Pradesh	June 8-9th, 2015	HBTI, Kanpur	Member Organizing Committee