DR. MANISH KUMAR BAJPAI

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING, IIITDM JABALPUR

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➢ **Summary:** A Technologist- Augmented Intelligence and Image Processing ~ PhD in 3-Dimensional Image reconstruction using algebraic reconstruction methods over GPU and good technical background in design and development of algorithms in the field of Augmented Intelligence, Medical Imaging, and Cognitive Imaging.

➢ **Educational Qualification:**

PhD: Parallel Algorithms & Image Reconstruction from IIT Kanpur, India, 2006-2013
B.Tech: Information Technology from Uttar Pradesh Technical University, Lucknow, India 2002- 06.

➢ **Experience:**

July 2013 – Till date: Assistant professor, CSE Discipline, IIITDM Jabalpur, India

Currently working as Assistant professor in CSE discipline at IIITDM Jabalpur. The current research interests are Augmented Intelligence, Brain Computer Interface, Image Reconstruction, Parallel Algorithms, Fractional calculus, and Mesh-Free Computations.

➢ **Research Interest:**

(a) Augmented Intelligence:

This work is applied to image reconstruction. The main aim in this work is to reduce the requirement of number of projections for image reconstruction. Machine learning and deep learning based approaches have been utilized in this case. We have developed a new deep neural network RecDNN for the image reconstruction purpose. It has been shown in this work that use of machine learning and deep learning approaches reduces the projection requirement and hence leading to less radiation dose to the patient, increment in the life of scanner and resulting in low cost computed tomography facility.

(b) Parallel Algorithm Design:

The work is related to design and develop fast tomographic algorithm for 2D as well as 3D reconstruction. I have used algebraic reconstruction method for the reconstruction and modify them to make suitable for implementation on personal computers and also on GPU. A single-View multiplicative algebraic reconstruction technique has been devised and implemented. This algorithm has been tested on numerical phantom as well as on real data. A multi-processor and multi-GPU based algorithm has been devised and implemented on cluster of GPUs. The results show speed-up of an order of magnitude without compromising with quality of reconstruction.

(c) Cognitive Imaging

Cognitive Imaging is a study of brain. We are working on brain computer interface to classify the objects using brain signals. The applications range from object classification, emotion classifications to disease classifications.

(d) Medical Imaging:

The work mainly focuses on cancer detection. We have developed TWO computer aided diagnostic system (CAD) for BREAST CANCER detection and BENIGN BRAIN TUMOR detection, respectively. These CAD systems have developed using mesh free approaches to reduce the computational complexity. CAD system developed for benign brain tumor detection uses fractional diffusive model for the same. The accuracy reported by these systems is comparable to State-of-The-Art CAD systems available in market.

(e) Fractional Calculus

Fractional calculus is generalization of integral calculus. Fractional calculus enables us to understand the nature in better way. We have used the concepts of fractional calculus to design different filters having different applications in image processing. These applications are ranging from image enhancement in satellite images to road and roof detection, object detection, boundary detection etc.

- **<u>Sponsored Research Projects:</u>**

  - "*Low-cost portable Bio Gas plant for energy self-reliance of rural areas*", Funded by Design and Innovation Centre, MHRD, **2 Lacs**, 2022-2023, **Ongoing, Role: Co-PI**

  - "*Design and Development of Centralized database of scholarship / Fellowship Awarded in S & T Sector*", Funded By DST, **24.12 Lacs**, 2020-2023, **Ongoing, Role: PI**

- "*Mathematical and Computational Modelling of Epidemic Forecast and Disease Transformation*", Funded by SPARC (MHRD), **48.99 Lacs**, 2019 – 2023, **Completed**, **Role: PI**

- "*Bio-Inspired Computer Vision*", Funded By USIEF, **05 Lacs**, 2019-2023, **Ongoing, Role: PI**

- "*Privacy Enhancing Revocable Biometric Identities (PERBI)*", Funded by BRNS (DAE), **28.78 Lacs**, 2017- 2020, **Completed**, **Role: Co-PI**

- "*I/O efficient algorithm for high resolution three dimensional image reconstruction*", Funded by IIITDM Jabalpur, **09.50 Lacs**, 2016- 2018, **Completed**, **Role: PI**

- **"***Parallel architecture based efficient algorithm for signature forgery detection*", Funded by NVIDIA Corporation India, **1.25 Lacs,** Jan 2018- Dec 2018 **Completed**, **Role: PI**

➢ **Sponsored Consultancy Projects:**

- "Activity Templating and Trend Estimation", Funded by Bharat Electronics Limited (BEL), **25.86 Lacs**, 2019 – 2023, **Ongoing**, **Role: PI**

➢ **Patents:**

- **Manish Bajpai**, Shiv Dayal Patel et al, *"LUGGAGE BAG"*, Indian Design patent, Application No.: 371869-001, 2022, **Awarded.**

- **Manish Bajpai**, Shiv Dayal Patel et al, *"A MULTI-UTILITY LUGGAGE BAG WITH ERGONOMIC SEATING"*, Indian patent, Application No.: 202221056330, 2022, **Published.**

- **Manish Bajpai**, Kusum Kumari Bharti et al, *"A NON-BIOMETRIC TOUCH-FREE RAILWAY ATTENDANCE SYSTEM AND A METHOD FOR OPERATION THEREOF",* Indian patent, Application No.: 202221035867 A, 2022, **Published.**

- **Manish Bajpai**, Kusum Kumari Bharti, Atul Gupta et al, *"SYSTEM FACILITATING HEALTH MONITORING AND METHOD THEREOF"*, Indian patent, Application No.: 202221034528 A, 2022, **Published.**

➢ **Continuing Education Programmes:**

- **Faculty Development Programme**, *"Malware analysis using machine learning",* Aug 29–Sep 12, 2022, IIITDM Jabalpur, Funded by *EL & ICT Academy Jabalpur*, **Role: Joint Principal Coordinator**
- **Faculty Development Programme**, *"Reinforcement Learning and Its Applications",* June 07-11, 2021, IIITDM Jabalpur, Funded by *AICTE under ATAL Scheme*, **Role: Co-Coordinator**

- **Faculty Development Programme**, *"Soft Computing and Its Applications",* August 29 – Sep 02, 2020, IIITDM Jabalpur, Funded by *AICTE under ATAL Scheme*, **Role: Co-Coordinator**
- **6 Week Short Course***, "Artificial Intelligence and Its Applications",* April- May 2020, IIITDM Jabalpur, Funded by *Bharat Electronics Limited Ghaziabad*, **Role: Coordinator**
- **Faculty Development Programme**, *"Network Security",* May 20–24, 2019, IIITDM Jabalpur, Funded by *E & ICT Academy Jabalpur*, **Role: Coordinator**
- **Faculty Development Programme**, *"Big Data Analytics",* May 21–25, 2018, IIITDM Jabalpur, Funded by *E & ICT Academy Jabalpur*, **Role: Coordinator**
- **Faculty Development Programme**, *"Data Structure and Algorithms Using C",* Sep 19–26, 2015, IIITDM Jabalpur, Funded by *E & ICT Academy Jabalpur*, **Role: Co-Coordinator**

➢ Workshop and Conferences Organized:

- **Member,** International Advisory Committee, IEEE International Conference on Imaging Systems and Techniques (IST), USA, Aug 24-26, 2021.
- **Convener,** *"International Conference on Machine Vision and Augmented Intelligence (MAI)"*, IIITDM Jabalpur, March 05-07, 2022.
- **Convener,** *"International Conference on Machine Vision and Augmented Intelligence (MAI)"*, IIITDM Jabalpur, Feb 11-14, 2021.
- **Finance Chair,** *"13th Innovations in Software Engineering Conference (ISEC)"*, IIITDM Jabalpur, Feb 27-29, 2020.
- **Publicity Chair,** *"18th International Conference on Information Technology (ICIT)"*, IIIT Bhubaneswar, Dec 19-21, 2019.
- **Publicity Chair,** *"Third International Conference on Computer Vision and Image Processing (CVIP)"*, IIITDM Jabalpur, Sep 29-Oct 01, 2018.

➢ International Research Collaboration:

- Chiba University, Japan
- Ryazan State Radio Engineering University, Russia,
- Manhattan College, New York, USA
- Argonne National Laboratory, Chicago, USA
- Loyola University Chicago, Chicago, USA
- University of Leeds Becket, UK
- University of Manchester, UK

➢ Courses Taught:

UG level:

- **Neuromorphic Engineering,** IIITDM Jabalpur
- **Reinforcement Learning,** IIITDM Jabalpur
- **Parallel Algorithms,** IIITDM Jabalpur
- **Parallel Computing,** IIITDM Jabalpur
- **Professional lab (Parallel Programming)**
- **Parallel Programming Using MPI**
- **Fundamentals of Computing**, IIITDM Jabalpur

- **Design and Analysis of Algorithms,** IIITDM
- **Operating System,** IIITDM Jabalpur
- **Computer Organization and Architecture,** IIITDM Jabalpur

PG level:

- **Reinforcement Learning,** IIITDM Jabalpur
- **Neuromorphic Engineering,** IIITDM Jabalpur
- **Parallel Algorithms,** IIITDM Jabalpur
- **Fundamentals of Image Reconstruction**, IIITDM Jabalpur

Positions of Responsibility:

- Single Point of Contact (SPOC), CSE Discipline, IIITDM Jabalpur, July 2020 – Till Date
- Secretary, Inter Chapter Relations, IEEE Bombay Section, July 2020- July 2021
- Member, Editorial Board, IIITDM Jabalpur Institute Magazine, Sep 2020- till date
- Member, Department Under Graduate Committee (DUGC), Sep 2018- Sep 2020
- Member, IWD Works Tender Opening Committee, April 2018- Till date
- Faculty In-charge, "CSE UG & PG Labs" at IIITDM Jabalpur, Feb 2017 – Feb 2020
- Member, "Digital India Initiative" at IIITDM Jabalpur, Oct 2016- till date
- Member, "Safety Committee" at IIITDM Jabalpur, Sep 2016 – till date
- Member, " Horticulture Committee" at IIITDM Jabalpur, April 2016- July 2021
- Member, "Smart Campus Development Committee" at IIITDM Jabalpur, Feb 2016- till date
- Associate Warden, "Hall of Residence 4" at IIITDM Jabalpur, July 2016- April 2018
- Member, "Cultural Committee" at IIITDM Jabalpur, to organize Inter IIIT Cultural fest 2017
- Member, "Under Graduate Course Review Committee", at IIITDM Jabalpur, Feb 2016- July 2016
- Member, "Discipline post graduate committee (DPGC)", at IIITDM Jabalpur**,** August 2014-July 2016
- Faculty coordinator "Student Placement Cell" for CSE discipline at IIITDM Jabalpur, August 2013- July 2015
- Member, Local Purchase committee IIITDM Jabalpur

Membership of Professional Societies:

- Senior Member, IEEE
- Life Member, Indian Science Congress
- Member, SIAM
- Member, Association for Computing Machinery (ACM)
- Member, Indian Association for Research in Computer Science (IARCS)
- Life Member, Indian Nuclear Society (INS).
- Member, Indian Society of Non-Destructive Testing (ISNT).
- Member, Canadian Society for Non-Destructive Evaluation (CANDE)

➢ Professional Recognition and Awards:

- Member, Board of Study, Center for Advanced Study, Lucknow, 2021
- Member, Board of Study, VIT University, Bhopal, 2020
- Member, Doctoral Committee, VIT University, Bhopal, 2020
- Secretary, Inter Chapter Relations, IEEE Bombay Section, 2020
- Fulbright-Nehru Specialist Fellowship, USIEF, 2019
- NVIDIA GPU Research Grant, 2018
- Best paper award in IAENG Conference, USA, 2017
- Got PostDoc at prestigious HARVARD Medical School, HARVARD University, USA, 2013
- IIT Kanpur Research Award, 2013
- CSIR Travel Grant, 2011
- Letter of recognition from Counselling Service, IIT Kanpur, 2010
- MHRD fellowship, 2006

➢ Research Guidance (IIITDM Jabalpur):

Doctoral Research:

1. **Dr. Koushlendra Kumar Singh, PhD (2016)**
   Thesis Topic: Chebyshev polynomial based approximation of fractional order mask for different image processing applications.
   Current Affiliation: Assistant Professor, CSE Department, NIT Jamshedpur

2. **Dr. Kanchan Lata Kashyap, PhD (2018)**
   Thesis Topic: Breast cancer detection based on Mesh-Free approach using digital mammograms
   Current Affiliation: Assistant Professor, School of Computer Science, VIT University Bhopal

3. **Dr. Antriksh Goswami, PhD (2018)**
   Thesis Topic: Evolutionary stable reputation management system in P2P networks
   Current Affiliation: Assistant Professor, CSE Department, NIT Patna

4. **Dr. Saroj Kumar Chandra, PhD (2020)**
   Thesis Topic: Mesh Free super diffusive model for benign brain tumor detection and segmentation
   Current Affiliation: Assistant Professor, CSE Department, OPJU Raigarh

5. **Dr. Kailash Wamanrao Kalare, PhD (2021)**
   Thesis Topic: Deep learning framework for limited data image reconstruction
   Current Affiliation: Assistant Professor, CSE Department, MNNIT Prayagraj

6. **Dr. Avaneesh Singh, PhD (2022)**
   Thesis Topic: Efficient Compartmental Models to Study Dynamics of Disease Spread and Epidemic Forecast
   Current Affiliation: Post Doctoral fellow, CSE Department, IIT Kanpur

7. **Dr. Raghvendra Mishra, PhD (2022)**
   Thesis Topic: Efficient Multiagent Adaptive Genetic Algorithms For Limited View Tomography
   Current Affiliation: Assistant Professor, School of Computer Science, VIT University Bhopal

8. **Ms. Shubham Choudhary, PhD (Pursuing)**
   Thesis Topic: Augmented Intelligence

9. **Mr. Pankaj Dubey, PhD (Pursuing)**
   Thesis Topic: Augmented Intelligence

Post Graduate Research:

1. **Mr. Santosh Kumar Mishra, M. Tech (2017)**
   Thesis Topic: Edge Detection in color images using fractional calculus

2. **Mr. Amit Kumar Kar, M. Tech (2018)**
   Thesis Topic: GPU Based Offline Signature Verification

3. **Mr. Dharmendra Kumar Sharma, M. Tech (2018)**
   Thesis Topic: Image Enhancement using Fractional Partial Differential Equation

4. **Ms. Nandita Gupta, M. Tech (2020)**
   Thesis Topic: A novel method for detection of negative sentiments false tweets over social media platform.

5. **Mr. Ajay Kumar Banodhiya, M. Tech (2022)**
   Thesis Topic: Performance Evaluation of EEG Topograph for Neural Disorder Detection using Deep Learning

6. **Ms. Anupriya, M. Tech (2022)**
   Thesis Topic: EEG Based Emotion Detection using Machine Learning Techniques with Limited Data

7. **Mr. Vaibhav Rathod, M. Tech (2022)**
   Thesis Topic: Motor Imaginary disorder detection and classification

Under Graduate Research:

1. **Mukesh Kumar, B.Tech Final year, CSE and Jatin Lala, B.Tech, ECE, 2015**
   Project Title: Big-Data Clustering for Medical Purpose

2. **Prashant Kumar Jha and Rakesh Kumar Bairva, B.Tech, CSE, 2015**
   Project Title: In-House Development and Installation of Mail Server for IIITDM Jabalpur

3. **Gautam Kumar and Aditya Sujeria, B.Tech, CSE, 2015**
   Project Title: Development of Dynamic Traffic Control System

4. **Vikas Kumar, Hemant Meena and Dheeraj Yadav, B.Tech, CSE, 2015**
   Project Title: An efficient method for tree based identification of Guggul Tree in India using Remote sensing data

5. **Hemant and Anmol Kumar, B.Tech, CSE, 2015**
   Project Title: Roof and Road detection using Remote Sensing Data

6. Sarvajeet Suman and Satish Kumar Saini, B.Tech, CSE, 2015
Project Title: Design and development of an efficient algorithm for document clustering

7. Satish Kumar and Deependra Singh, B.Tech, CSE, 2015
Project Title: Design of efficient Data Structure for Big-data clustering applications

8. Rajpriya and Shalu Singh, B.Tech, CSE, 2015
Project Title: Design of efficient algorithm for Big-Data clustering

9. Sanjay Kumar Singh, B.Tech, CSE, 2016
Project Title: Efficient algebraic reconstruction technique for 3D image reconstruction

10. Priyanka and manjari Guatam, B.Tech, CSE, 2016
Project Title: Breast cancer detection in digital Mammograms using Mesh-Free methods

11. Shitanshu Yadav, B.Tech, CSE, 2018
Project Title: Design and development of a model for Epidemic forecast

12. Gargi Yadav and G Sushma, B.Tech, CSE, 2018
Project Title: Deep learning based image reconstruction

13. Hemant Guatam, B.Tech, CSE, 2018
Project Title: Design of approximation algorithm to solve ILL Posed and ILL Conditioned system of linear equation

14. Babli Yadav, Sanya Chandra, Ashwani Meeni, B.Tech, CSE, 2019
Project Title: Object classification using Cognitive Imaging

15. Yogesh Kumar, B.Tech, CSE, 2019
Project Title: Mathematical and Computational Modeling of Epidemic Forecast

16. Aman Kumar Singh, B.Tech, CSE, 2021
Project Title: Person Identification wearing a mask

17. Kritika Gupta, Vidushi Dwivedi, B.Tech, CSE, 2021
Project Title: Cognitive Radar for Classification of Resident Space Objects

18. Hemant Kumar Verma, Amrendra Singh, B.Tech, CSE, 2021
Project Title: Person Identification

19. Madan Pratap, Mayank Sachan, B.Tech, CSE, 2021
Project Title: Centralized system for scholarship/fellowship

- **List of Publications:**

(a) Refereed SCI Listed International Journal:
Published:

1. Koushlendra Singh, Suraj Kumar, Marios Antonakakis, Konstantina Moirogiorgou, Anirudh Deep, Kanchan Lata Kashyap, **Manish Bajpai**, Michalis Zervakis, "*Deep learning capabilities for the categorization of microcalcification*", International Journal of Environmental Research and Public Health, 19:2159, 2022 https://doi.org/10.3390/ijerph19042159 **(Impact Factor: 4.614).**

2. Raghvendra Mishra, **Manish Bajpai**, "*Hybrid multiagent based adaptive genetic algorithm for limited view tomography using oppositional learning*", Biomedical Signal Processing & Control, Elsevier, 75, 1-11, 2022 https://doi.org/10.1016/j.bspc.2022.103610 **(Impact Factor: 5.076).**

3. Kailash W Kalare, **Manish Bajpai**, "*Deep Neural Network for Beam Hardening Artifacts Removal in Image Reconstruction*", Applied Intelligence, Springer, 52, 6037-6056, 2022, https://doi.org/10.1007/s10489-021-02604-y, **(Impact Factor: 5.019)**.

4. Santosh Mishra, Koushlendra K Singh, Richa Dixit, **Manish Bajpai**, *"Design of Fractional Calculus based Differentiator for Edge detection in Color images"*, Multimedia Tools and Applications, Springer, 80: 29965–29983, 2021, https://doi.org/10.1007/s11042-021-11187-2 **(Impact Factor: 2.577).**

5. Raghvendra Mishra, **Manish Bajpai**, "*A Priority Based Genetic Algorithm for Limited View Tomography*", Applied Intelligence, Springer, 51, 6968–6982, 2021, https://doi.org/10.1007/s10489-021-02192-x , **(Impact Factor: 5.019)**.

6. Saroj Chandra, **Manish Bajpai,** *"Fractional Model with Social Distancing Parameter for Early Estimation of COVID-19 Spread"*, Arabian Journal for Science and Engineering, Springer, 47:209-218, 2022, https://doi.org/10.1007/s13369-021-05827-w , **(Impact Factor: 2.807)**.

7. Koushlendra K Singh, Suraj Kumar, Prachi Dixit, **Manish Bajpai**, *"Kalman Filter Based Short Term Prediction Model for SARS-COV-2 Spread"*, Applied Intelligence, Springer, 51: 2714–2726, 2021, , DOI: https://doi.org/10.1007/s10489-020-01948-1 **(Impact Factor: 5.019)**.

8. Avaneesh Singh, Saroj Chandra, **Manish Bajpai,** *"SEIHCRD Model for COVID-19 spread scenarios, disease predictions and estimates the basic reproduction number, case fatality rate, hospital, and ICU beds requirement"*, Computer Modeling in Engineering & Sciences, Tech Science Press, Vol. 125, No.3, pp.991-1031, 2020, https://doi:10.32604/cmes.2020.012503 **(Impact Factor: 2.027)**.

9. Avaneesh Singh, Saroj Chandra, **Manish Bajpai,** *"Study of Non-Pharmacological Interventions on COVID-19 Spread"*, Computer Modeling in Engineering & Sciences, Tech Science Press, Vol.125, No.3, pp.967-990, 2020, https://doi:10.32604/cmes.2020.011601 **(Impact Factor: 2.027)**.

10. Kailash W Kalare, **Manish Bajpai**, *"RecDNN: Deep Neural Network for Image Reconstruction from Limited View Projection Data",* Soft Computing, Springer, 24:17205–17220, 2020, https://doi.org/10.1007/s00500-020-05013-4 **(Impact Factor: 3.732)**.

11. Saroj Chandra, **Manish Bajpai,** "*Fractional Crank-Nicolson Finite Difference Method for Benign Brain Tumor Detection and Segmentation*", Biomedical Signal Processing & Control, Elsevier, 60: 1-8, 2020 https://doi.org/10.1016/j.bspc.2020.102002 **(Impact Factor: 5.076).**

12. Saroj Chandra, **Manish Bajpai, "***Efficient Three Dimensional Super-Diffusive Model for Benign Brain Tumor Segmentation",* The European Physical Journal Plus, Springer, 135: 419: 1- 8, 2020 https://doi.org/10.1140/epjp/s13360-020-00414-8 **(Impact Factor: 3.758).**

13. Saroj Chandra, **Manish Bajpai,** "*Fractional Mesh-Free Linear Diffusion Method For Image Enhancement and Segmentation for Automatic Tumor Classification*", Biomedical Signal Processing & Control, Elsevier, 58: 1- 9, 2020 https://doi.org/10.1016/j.bspc.2019.101841 **(Impact Factor: 5.076).**

14. Saroj Chandra, **Manish Bajpai**, "*Brain Tumor Detection and Segmentation using Mesh-Free Super-Diffusive Model*", Multimedia Tools and Applications, Springer, 79, 2653–2670, 2020 https://doi.org/10.1007/s11042-019-08374-7 **(Impact Factor: 2.577).**

15. Saroj Chandra, **Manish Bajpai, "***Mesh Free Alternate Directional Implicit Method Based Three Dimensional Super-Diffusive Model for Benign Brain Tumor Segmentation",* Computer and Mathematics with Applications, Elsevier, 77: 3212-3223, 2019 https://doi.org/10.1016/j.camwa.2019.02.009 **(Impact Factor: 3.218).**

16. Kanchanlata Kashyap, **Manish Bajpai**, Pritee Khanna, George Giakos, "*Mesh Free Approach for Enhancement of Mammograms*", IET Image Processing, IEEE, 12(3): 299-306, 2018, DOI: http://dx.doi.org/10.1049/iet-ipr.2017.0326 **(Impact Factor: 1.772).**

17. Kanchanlata Kashyap, **Manish Bajpai**, Pritee Khanna, George Giakos, "*Mesh Free based Variational Level Set Evolution for Breast Region Segmentation and Abnormality Detection using Mammograms*", International Journal for Numerical Methods in Biomedical Engineering, Wiley, 34(1): 1-20, 2018, DOI: http://dx.doi.org/10.1002/cnm.2907 **(Impact Factor: 2.648).**

18. Koushlendra K Singh, **Manish Bajpai**, R K Pandey, "*A Novel Approach for Enhancement of Geometric and Contrast Resolution Properties of Low Contrast Images*", IEEE Journal of Automatica Sinica, IEEE, 5(2): 628-638, 2018, DOI: http://dx.doi.org/10.1109/JAS.2017.7510670 **(Impact Factor: 7.847).**

19. Koushlendra K Singh, **Manish Bajpai**, R K Pandey, Prabhat Munshi, "*A novel non-invasive method for extraction of geometric and texture features of wood*", Research in Non-destructive Evaluation, Taylor & Francis, 28(3): 150-167, 2017 DOI: http://dx.doi.org/10.1080/09349847.2016.1148214 **(Impact Factor: 0.805).**

20. Kanchanlata Kashyap, **Manish Bajpai**, Pritee Khanna, "*An Efficient Algorithm for Mass Detection and Shape Analysis of Different Masses Present in Digital Mammograms*", Multimedia Tools and Applications, Springer, 77: 9249-9269, 2018, DOI: http://dx.doi.org/10.-1007/s11042017-4751-5, **(Impact Factor: 2.577).**

21. Kanchanlata Kashyap, **Manish Bajpai**, Pritee Khanna, "*Globally Supported Radial Basis Function based Collocation Method for Evolution of Level Set in Mass Segmentation using Mammograms*", Computers in Biology and Medicine, Elsevier, 87: 22-37, 2017, DOI: http://dx.doi.org/10.1016/j.compbiomed.2017.05.015 **(Impact Factor: 6.698).**

22. **Manish Bajpai**, P Gupta, P Munshi, "*Fast multi-processor multi GPU based algorithm of tomographic inversion for 3D reconstruction*", International Journal of High performance computing applications, SAGE, 29: 64-72, 2015, DOI: http://dx.doi.org/10.1177/1094342013518444 **(Impact Factor: 2.820).**

23. **Manish Bajpai**, P Munshi, P Gupta, C Schorr, M Maisl, "*High Resolution 3D Image Reconstruction using Algebraic Method for X-ray Cone-Beam Geometry over Circular and Helical Trajectories*", NDT & E International, Elsevier, 60: 62-69, 2013, DOI: http://dx.doi.org/10.1016/j.ndteint.2013.07.009 **(Impact Factor: 4.683).**

24. **Manish Bajpai**, P Gupta, P Munshi, V Titarenko, P J Withers, "*A GPU Based Parallel implementation of MART algorithm*", Research in Nondestructive Evaluation, Taylor & Francis, 24(4): 211-222, 2013, DOI: http://dx.doi.org/10.1080/09349847.2013.795635 **(Impact Factor: 0.805).**

(b) Books:

1. Koushlendra Kumar Singh, **Manish Bajpai**, Akbar S Akbari, "Machine Vision and Augmented Intelligence: Select Proceedings of MAI 2022", Springer, 2023, ISBN: 9789819901883. DOI: http://dx.doi.org/ 10.1007/978-981-99-0189-0

2. **Manish Bajpai**, Koushlendra Kumar Singh, George Giakos, "Machine Vision and Augmented Intelligence: Theory and Applications", Springer, 2021, ISBN: 978-981-16-5077-2, DOI: http://dx.doi.org/ 10.1007/978-981-16-5078-9

(c) Refereed International Conferences:

1. Avaneesh Singh, **Manish Bajpai**, *"A compartmental mathematical model of COVID19 intervention schenarios for Mumbai",* International Conference on Machine Vision and Augmented Intelligence (MAI), India, 2022, 1007: ISBN: 978-981-99-0188-3.

2. Avaneesh Singh, **Manish Bajpai**, Shyam lal Gupta, *"A Time-dependent mathematical model for COVID 19 transmission dynamics and analysis of critical and hospitalized cases with bed requirement",* International Conference on Machine Vision and Augmented Intelligence (MAI), India, 2022, 1007: ISBN: 978-981-99-0188-3..

3. Raghvendra Mishra, **Manish Bajpai**, "Self-guided Genetic Algorithm for Limited View Tomography", IEEE IST, USA, 2021, ISBN: 978-1-7281-7371-9.

4. Raghvendra Mishra, **Manish Bajpai**, *"Multiagent Based GA for Limited View Tomography",* International Conference on Machine Vision and Augmented Intelligence (MAI), India, 2021, 796: ISBN: 978-981-16-5078-9.

5. Avaneesh Singh, Saroj Kumar Chandra, **Manish Bajpai**, *"Mathematical Model with Social Distancing Parameter for Early Estimation of COVID-19 spread",* International Conference on Machine Vision and Augmented Intelligence (MAI), India, 2021, 796: ISBN: 978-981-16-5078-9.

6. Saroj Kumar Chandra, Abhisek Shrivastava, **Manish Bajpai**, *"Three Dimensional Fractional Operator for Benign Tumor Region Detection"*, International Conference on Machine Vision and Augmented Intelligence (MAI), India, 2021, 796: ISBN: 978-981-16-5078-9.

7. M Sreerisha, Gargi Yadav, Saroj Chandra, **Manish Bajpai**, "Image Reconstruction Using Deep Convolutional Neural Network", International Conference on Artificial Intelligence and Signal Processing (AISP), India, 2020, ISBN: 978-1-7281-4458-0.

8. Koushlendra Kumar Singh, **Manish Bajpai**, "Fractional Order Savitzky-Golay Differentiator based Approach for Mammogram Enhancement", IEEE IST, Abu Dhabi, UAE, 2019, ISBN: 978-1-7281-3868-8.

9. Amit Kumar Kar, Saroj Kumar Chandra, **Manish Bajpai**, "*Parallel GPU Based Offline Signature Verification Model"*, IEEE INDICON, India, 2019, ISBN: 978-1-7281-2327-1.

10. Kanchanlata Kashyap, **Manish Bajpai**, Pritee Khanna, "*Classification of Breast Tissues Density*", CVIP, India, 2019, 1148: ISBN: 978-981-15-4018-9.

11. Saroj Kumar Chandra, **Manish Bajpai**, "*Fractional Anisotropic Diffusion Model for Image Smoothing*", 8th International Conference on Modeling, Simulation and Applied Optimization (ICMSAO), Bahrain, 2019.

12. Saroj Kumar Chandra, **Manish Bajpai**, "*Finite Difference Method Based Super-Diffusive Model for Benign Brain Tumor Segmentation*", 8th International Conference on Modeling, Simulation and Applied Optimization (ICMSAO), Bahrain, 2019.

13. Saroj Kumar Chandra, **Manish Bajpai**, "*Two sided implicit Euler based super diffusive model for Benign tumor segmentation*", IEEE TENSYMP, India, 2019.

14. Dharmendra Kumar Sharma, Saroj Kumar Chandra, **Manish Bajpai, "***Image Enhancement Using Fractional Partial Differential Equation"*, International Conference on Advanced Computational and Communication Paradigm (ICACCP), India, 2019.

15. Saroj Kumar Chandra, **Manish Bajpai**, "*Effective algorithm for benign brain tumor detection using fractional calculus*", IEEE TENCON, South Korea, 2018.

16. Saroj Kumar Chandra, **Manish Bajpai**, "*Fractional Anisotropic Diffusion For Image Denoising*", IACC, India, 2018.

17. Kanchanlata Kashyap, **Manish Bajpai**, Pritee Khanna, "*Breast Tissues Density Classification in Mammograms based on Supervised Machine Learning Technique*", ACM COMPUTE, India, 2017.

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Declaration: *I hereby declare that all statements made in the curriculum are true, complete and correct to the best of my knowledge.*

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