

Dr. KOUSHLENDRA KUMAR SINGH

Assistant Professor

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*My broad area of research includes **Computer Vision, Deep Learning, and Image Processing**. I work to make the current technology useful for human beings by analyzing their behavior. I have worked on detection and classification of Cancers tissues from Medical Images using Deep Learning. I have also developed a prediction model for spread of COVID-19 IN India; analyzing the different weather parameters on spread of COVID19. This model is also able for the short term prediction of other country. I have also worked to find the internal shapes of different materials through Image Processing Techniques. Currently, I am working in;*

- a) Develop the low cost automated telemedicine framework for breast cancer detection for rural areas. These play indispensable role in early stage breast cancer detection.*
- b) Analysis for Steel defects using different Analytical Methods*
- c) A design and development of conceptual model for Indian public distribution system using consortium block chain with on-chain and off-chain trusted data*

Education:

PhD Thesis Title: *Chebyshev polynomial based approximation of an efficient fractional order mask for different image processing applications*

Thesis Supervisors:

Dr. Manish Kumar Bajpai, Computer Science & Engineering, IIITDM, Jabalpur

Dr. Rajesh Kumar Pandey, Department of Mathematical Sciences, IIT (BHU), Varanasi

International Award:

1. **Erasmus+ International Program** awarded by European Union with **Professor Michalis Zervakis**, University of Crete, Greece for academic year 2020-23. (Total of 11.710 euros)

Sponsored Projects (Ongoing):

1. **Name of Project:** “Design and development of centralized database on scholarship/fellowships awarded in S & T Sector” (2019-2012)**Sponsoring Agency:** DST, **Amount:** 24.8 Laks.

2. **Name of Project:**Creation of Employment opportunities for local rural community living in vicinity areas of NIT Jamshedpur through development of smart E-Rickshaw based public transport system. **Sponsoring Agency- NID, Amount:** 10.17 Laks
3. **Name of Project:**Mammogram Classification using Deep Learning Algorithm, **Sponsoring Agency: NPIU, Amount:** 2.69 Laks

List of Publications:

1. **Koushlendra Kumar Singh**, Suraj Kumar, P Dixit, M K Bajpai, “Klaman filter based short term prediction model for COVID-19 Spread” Applied Intelligence, Nov 2020, <https://doi.org/10.1007/s10489-020-01948-1>
2. R.K.Pandey, S.Suman, **Koushlendra K.Singh**, O.P.Singh, “An Approximate Method for Abel Inversion using Chebyshev Polynomials” Applied Mathematics and Computation, Vol. 237, pp.120-132, 2014.
3. **Koushlendra Kumar Singh**, Manish Kumar Bajpai, Rajesh K Pandey, Prabhat Munshi “A novel non-invasive method for extraction the geometrical and texture features of wood” Research in Nondestructive Evaluation, Vol. 28 (3), pp-150-167DOI: 10.1080/09349847.2016.1148214.
4. **Koushlendra Kumar Singh**, Manish Kumar Bajpai, Rajesh K. Pandey, “A Novel Approach for Enhancement of Geometric and Contrast Resolution Properties of Low Contrast Images” Vol.5 (3) pp-1-11, IEEE Journal of Automatica sinica.
5. **Koushlendra Kumar Singh**, A. K. Srivastava, H Sneha, Diksha, B.K.Singh, “Pose Invariant Face Recognition using Principal Component Analysis” Soft Computing: Theories and Applications, 1029-1043, 2020.
6. **K K Singh**, M.K Bajpai, “Fractional Order Savitzky–Golay Differentiator based Approach for Mammogram Enhancement” IEEE Conference on Imagine System and Technology (IST2019) Abudhabi, UAE, December 8-10, 2019.
7. **Koushlendra Kumar Singh**, Arun Kumar Mishra, Ashav Kumar, Bindesh Kumar, “Hand Vein Biometric Recognition Based On Local Binary Pattern” ICCISIoT 2019, December, 2019, International Conference on Computational Intelligence, Security and Internet of Things, pp-398-406
8. Ayusi Rastogi, **Koushlendra Kumar Singh**, B K Singh, “Ear Localization and Validation Using Ear Candidate Set” IEEE conference RIEECE, KIIT Bhubaneswar, 27-28 July, 2018
9. **Koushlendra Kumar Singh**, Manish Kumar Bajpai, B.K.Singh, Prabhat Munshi, A non-invasive method to study the strength of rosewood for different wood applications” 8th World Congress on Industrial Tomography, 26-29, September 2016, Brazil.
10. **Koushlendra Kumar Singh**, Manish Kumar Bajpai, Rajesh K. Pandey “Reconstruction of Original Signal from contaminated signal using fractional order differentiator” 15th 2015 IEEE International Symposium on Signal Processing and Information Technology (ISSPIT 2015), Abu Dhabi, UAE, December 7-10, 2015.
11. **Koushlendra Kumar Singh**, Manish Kumar Bajpai, Rajesh K. Pandey “Fractional order

differentiator based technique for drop size measurement in multi phase flow” 7th International symposium on process tomography, Dresden Germany September 01- 03, 2015.

12. **Koushlendra Kumar Singh**, Manish Kumar Bajpai, Rajesh K. Pandey, “A Novel Approach for Edge Detection of Low Contrast Satellite Images” Photogrammetric Image Analysis (PIA15+ HRIGI15) 25-27, March 2015, Munich, Germany
13. **Koushlendra Kumar Singh**, Manish Kumar Bajpai, Rajesh K. Pandey, “Edge Detection in Low Contrast Images” XIII International Conferences on Image Processing 2015, Zurich, Switzerland, January, 13-14, 2015.
14. **Koushlendra Kumar Singh**, Manish Kumar Bajpai, Rajesh K. Pandey, “Fractional Order Differentiator using Chebyshev Polynomial ”XIII International Conference on Acoustics, Speech, Image and Signal Processing, Zurich, Switzerland, January, 13-14, 2015.
15. **Koushlendra K. Singh**, R. K. Pandey, Anil Kumar, “Numerical Inversion of Laplace Transform using Wavelets” Vol. 4, No-1 2013/88-93, Indian Journal of Industrial and Applied Mathematics (IJAM), 1945-919X.
16. **Koushlendra Kumar Singh**, Durgesh Kumar, Shubham Kumar, Manish Kumar Bajpai, “Parallel Architecture Based Fast Algorithm for Image Enhancement” IBSS 2015, Mumbai, September 10-12, 2015.
17. Suraj Suman, **Koushlendra Kumar Singh**, Rajesh Kumar Pandey, “Approximate Solution of Integral Equation using Bernstein” 3rd International Conference on Soft Computing for Problem Solving (SocProS 2013), IIT Roorkee, INDIA, December 26-28, 2013.
18. **Koushlendra Kumar Singh**, Rajesh Kumar Pandey, B.N.Mandel “An Analytical Method for Solving Integral Equation of Abel Type” Procedia Engineering, 38, 2726-2738, International Conferences on Modeling Optimization and computation 2012.
19. **Koushlendra Kumar Singh**, Suraj Suman, Rajesh Kumar Pandey, “Fractional Order Differentiator using Legendre Polynomial” IEEE Digital library, pp.246-250, 2014, 5th Confluence, 2014, Amithy University, Noida.
20. **Koushlendra Kumar Singh**, Rajesh Kumar Pandey Suraj Suman, “Contrast Enhancement using Lifting Wavelet Transform Method” Proceeding of ICCICCT2014, pp.447–451, July10-11,2014.
21. **Koushlendra Kumar Singh**, Rajesh Kumar Pandey, “Texture Classification of Medical Images Based on Ridgelet Transform” ICSIVP-2011, IIT Patna, pp-344-348, January /2012.
22. **Koushlendra Kumar Singh**, Suraj Suman, Rajesh Kumar Pandey, “Solution of Generalized Abel Equations using Legendre Wavelet” XVI International Academic

Research Activity:

1. Convener of Machine Vision Workshop 2020 (An International Workshop)
2. Convener of International Conference on Machine Vision and Augmented Intelligence (MAI 2021) 11-14 Feb 2021.
3. Reviewer of Multimedia Tools and Applications
4. Reviewer of International Journal of Photometry and Remote Sensing
5. Reviewer of ISPRS journal
6. Reviewer of IET Image Processing

7. Members of program committee of various international/national conferences
8. Organizing a special session on Fractional Derivatives and its Engineering Applications in TENCON 17 IEEE conferences.

Awards/ Honors:

1. Awardees of travel grant from the ISPRS Foundation to attend the PIA15 and HRIGI15 at Munich, Germany.
2. Awardees of international travel grant from the department of Science and Technology, Government of India to attend the international conference PIA15, Munich (Germany).
3. Awardees of international travel grant from the department of Science and Technology, Government of M.P.

Academic Excellence:

- University Topper of third year Computer Science and Engineering Department in 2007.
- Overall 2nd rank in University in Department of Computer Science and Engineering of batch 2004-2008.
- School Topper in Matriculation board Examination.