Dr. KOUSHLENDRA KUMAR SINGH

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Objective: I would like to work in challenging projects with scope to contribute technically and managerially and improve my scientific and leadership skills.

Educational Qualification:

Ph.D : IIITDM Jabalpur, India, Dec 2011- July. 2016,

M.Tech: IIITDM Jabalpur, India, 2011

B.Tech: Computer Science and Engineering, Bhagalpur College of Engineering, Bhagalpur, Bihar

10+2: Bihar Intermediate Education Council, Patna with first division

10th : Bihar School Examination Board, Patna with first division

Teaching Experiences:

Assistant Professor in CSE department, NIT Jamshedpur, 16 May 2018 to till date

Adhoc Faculty CSE department NIT Jamshedpur- 11 Jan 2016 till to 15 May 2018.

Research Experiences:

Dec 2011 to Dec 2015: Graduate Research Scholar, IIITDM Jabalpur, India

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

The work carried out in my PhD research is related to design and development of an image processing approach for finding out the geometric as well as texture feature of wood non-invasively. The present work encompasses a micro level reconstruction of Palash and Rose-wood

by using micro *X* rays CT scanner. It also encompasses a new edge detection algorithm using newly designed Chebyshev fractional order filter.

I have also developed an algorithm for drop size measurement of multi phase flow. The proposed algorithm has been based on the newly designed fractional order based filter.

List of Publications:

(a) Refereed Listed International Journal:

1. 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.

2. **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-150-167 DOI: 10.1080/09349847.2016.1148214.

3. **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 (2) pp-628-638, IEEE Journal of Automatica sinica .

Under Review International Journals:

1. **Koushlendra Kumar Singh**, Manish Kumar Bajpai, Rajesh K. Pandey, "'Effective Algorithm for Detection of Urban Objects Using Aerial Imagery" IET Image Processing.

2. Akash S, Sneha Hariharan, Diksha, **Koushlendra K Singh**, "Pose Invarient Face Recognition using Principal Component Analysis" Machine Vision and Applications.

3. **Koushlendra K Singh,** Kornala Arun, Ujjanta Bhowmik, Sai Anand, "An Experimental Study of the Impact of Fractional Order Differentiator on Contaminated Signal" Journal of King Saud University - Science.

4. **Koushlendra Kumar Singh,** Manish Kumar Pandey, Rajesh K Pandey, "Design of a Fractional Order Mask and its Application in Boundary Interface Detection in Multiphase Flow" ISA Transaction .

5. K. Kashyap, **Koushlndra K Singh**, M K Bajpai, P Khanna, "Texture Preserving Fractional Order Mask based Enhancement of Digital Mammograms" IEEE Journal of Biomedical and Health Informatics.

(b) National Journal:

1. 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 (IJIAM), 1945-919X.

(c) Refereed International Conferences:

1. **Koushlendra Kumar Singh,** Akarsh Dang, V Kumari, B.K. Singh, M K Bajpai, " Fractional order differentiator based edge detection in remote sensing images" TENCON 2017 - 2017 IEEE Region 10 Conference Year: 2017, PP: 2885 - 2889

2. 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.

3. **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.

4. **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.

5. **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

6. **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.

7. **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.

8. **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.

9. 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.

10. **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.

11. **Koushlendra Kumar Singh,** Rajesh Kumar Pandey Suraj Suman, *"Contrast Enhancement using Lifting Wavelet Transform Method"* Proceeding of ICCICCT2014, pp.447 – 451, July 10-11, 2014.

12. **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.

13. **Koushlendra Kumar Singh**, Rajesh Kumar Pandey, "*Texture Classification of Medical Images Based on Ridgelet Transform"* ICSIVP-2011, IIT Patna, 344-348, January /2012.

14. **Koushlendra Kumar Singh**, Suraj Suman, Rajesh Kumar Pandey, *"Solution of Generalized Abel Equations using Legendre Wavelet"* XVI International Academic of physical sciences, CONIAPS2013, Jabalpur, March 2014.

Research Guidance

PG (M.Tech) Guidance

1. **Devbrat Kumar (Jointly with Dr. B. K. Singh):** Classification and Identification of Canker Disease using Texture Features of Leaves
2. **Anupam Kumari,** Automation and Visualization for Big Data Analytics
3. **Shubham Jamuda,** Analysis of Conformance Testing for Wireless Modem in SIM-STK & E-SIM

Undergraduate Research:

2016

1. **Ayushi Jain, Akersh Dang, Vandana Kumari , B.Tech, Final Year, CSE**
   Project Title: An algorithm based on fractional order differentiator for different edge detection applications
2. **Deopriya Bose, Ankita Singh, Dishant Singh, B.Tech, Final Year, CSE**

Project Title: Fractional Order Savitzky–Golay Differentiator based Approach for Mammogram Enhancement

2017

3. **Akash Krishna Srivastava, H Sneha, Diksha, B.Tech, Final Year, CSE**
   Project Title: Pose-invariant face recognition using Principal component analysis

4. **Ayushi Rastogi, Chandan Mahto, Apoorva M., B.Tech, Final Year, CSE**
   Project Title: Ear Localization and Validation using Ear Candidate Set

5. **Vikram Kumar, Kamal Kishore Nayak, Shubham Kumar (Jointly with Dr. B.K.Singh)**
   Project Title: Secure Medical Images by Watermarking using DCT-DCT-SVD

6. **Yash Khandelwal, Himanshu Bansal, Ayush Sharma (Jointly with Dr. B.K.Singh)**
   Project Title: Robust Image Watermarking Using Arnold Transform and DWT

7. **Parikshit Chadha, Shubhendu Shishir, Aman Kumar Singh**
   Project Title: A Portal for Communication using WEBRTC

2018

8. **Ujjayanta Bhaumik , V. Anand Sai, Kornala Arun**
   Project title: An experimental study of the impact of fractional order differentiator on contaminated signal

9. **Arun Kumar Mishra Ashav Kumar Bindesh Kumar**
   Project title: Hand Vein Biometric Recognition Based on Local Binary Pattern

10. **Muskan, Sandhya Singh, Shalini Singh**
    Project title: Improvement of Image Enhancement Stage of Fingerprint Minutiae Extraction

11. **Mukku Vineeth, Chintalapati Abhinay, Thirumala Sai Pranith Reddy**
    Project title: Dorsal Hand Vein Recognition Based on EP –Tree

12. **Praneet Drolia, Monika Agarwal**
    Project title: Breast Segmentation and Abnormality Detection Based on Mesh Free Method

2019

13. **Angad Dubey, Ashutosh Anshu, Saurabh Kumar**
    Project title: Plant Leaf Disease Recognition using Digital Image Processing & Convolutional Neural Networks
14. **Aishwarya Pillai, Prachi Nautiyal, Prachi Gupta, Preeti Anand**
    Project title: Palmprint Recognition using Principal Component Analysis
15. **Suraj Shukla, Abhishek Baraik , Aamir Hussain**
    Project title: Classification of Land Cover and Land Use using Deep Learning

Research Activity:

1. Reviewer of Multimedia Tools and Applications
2. Reviewer of International Journal of Photommetry and Remote Sensing
3. Reviewer of ISPRS journal
4. Reviewer of IET Image Processing
5. Members of program committee of various international/national conferences
6. 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.

Administrative Experiences:

1. Assistant Warden, Hall-D, From March 2016 to Aug 2017.
2. Coordinator, Computer Center, NIT Jamshedpur, Nov.2017 to till date
3. Professor In Charge (Website), NIT Jamshedpur, July 29, 2019 to till date