# 2015 Fifth National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics (NCVPRIPG 2015)

Patna, India 16 – 19 December 2015



IEEE Catalog Number: ISBN: CFP1551R-POD 978-1-4673-8565-7

## **Copyright © 2015 by the Institute of Electrical and Electronics Engineers, Inc All Rights Reserved**

*Copyright and Reprint Permissions*: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

### \*\*\*This publication is a representation of what appears in the IEEE Digital Libraries. Some format issues inherent in the e-media version may also appear in this print version.

IEEE Catalog Number:	CFP1551R-POD
ISBN (Print-On-Demand):	978-1-4673-8565-7
ISBN (Online):	978-1-4673-8564-0

#### Additional Copies of This Publication Are Available From:

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA Phone: (845) 758-0400 Fax: (845) 758-2633 E-mail: curran@proceedings.com Web: www.proceedings.com



### **Table of Contents**

- 1. Three Dimensional Reconstruction of Cylindrical Pellet using Stereo Vision...1 Arvind Sharma, Shraddha Chaudhary, Sumantra Dutta Roy, Prakash Chand
- 2. Real Time Sailency Detection in Videos using Motion Field Entropy....5 Krishna Reddy Konda, Harish Bharadwaj, K Ramakrishnan
- 3. Pose and Illumination Invariant Face Recognition using Binocular Stereo 3D Reconstruction....9 Aditya Nigam, Gitesh Chhalotre, Phalguni Gupta
- 4. Sparse Representation based Background Subtraction in Videos....13 Amrit Kumar, Balasubramanian S
- 5. Generic Action Recognition from Egocentric Videos....17 Suriya Singh, Chetan Arora, C V Jawahar
- 6. HSGA: A Novel Acceleration Descriptor for Human Action Recognition....21 *Anitha Edison, Jiji C.V.*
- 7. A Novel Approach for Image Dehazing Combining Visible-NIR Images....25 Ashish Vanmali, Samrudha Kelkar, Vikram Gadre
- 8. Depth Estimation from Single Image using Defocus and Texture Cues....29 Vivek Srikakulapu, Himanshu Kumar, Sumana Gupta, K S Venkatesh
- 9. Stamp and Logo Detection from Document Images by Finding Outliers....33 Soumyadeep Dey, Jayanta Mukhopadhyay, Shamik Sural
- 10. Blind Hyperspectral Denoising....37 Hemant Aggarwal, Angshul Majumdar
- 11. Offline Handwritten Signature Verification using Zernike Moments....41 Harman Kaur, Anmol Sharma
- 12. Singer based Classification of Song Dataset using Vocal Signature Inherent in Signal....45 *Rajib Sarkar, Sanjoy Saha*
- A Low Complexity Block Matching Algorithm for Fast Motion Estimation in High Efficiency Video Coding....49 Ravi Chandra Varma K C, Venkata Phani Kumar M, Sudipta Mahapatra
- 14. Rank Level Fusion in Multibiometric Systems....53 Renu Sharma, Sukhendu Das, Padmaja Joshi
- 15. Kernelization of Locality Preserving Discriminant Projection....57 Gitam Shikkenawis, Suman Mitra
- 16. Psoriatic Plaque Segmentation in Skin Images....61 Anabik Pal, Utpal Garain, Raghunath Chatterjee, Swapan Senapati

- Complexity Assisted Consistent Quality Rate Control for High Resolution H.264 Video Conferencing....65 Subhomoy Bhattacharyya, Indrajit Chakrabarti, Mahesh Kolekar
- 18. Histogram of Radon Projections: A New Descriptor for Object Detection....69 Soorya Kumar, Jiji C.V.
- 19. PDShift : Patch Detector Shift based Tracker....73 Mathew Francis, Rajesh Ratnakaram, Prithwijit Guha
- Real-Time Implementation of Modified Adaptive Histogram Equalization for High Dynamic Range Infrared Images in FPGA....77 Uday Kumar Urimi, Mastan Rao Kongara, Chinnappa Patil
- Real-Time Hands-Free Immersive Image Navigation System using Microsoft Kinect 2.0 and Leap Motion Controller....81 Sreejith Markkassery, Siddharth Rakesh, Samik Gupta, Samprit Biswas, Partha Das
- 22. A Novel Floor Segmentation Algorithm for Mobile Robot Navigation....85 Soumabha Bhowmick, Abhishek Pant, Jayanta Mukhopadhyay, Alok Kanti Deb
- 23. Human Face Anthropometric Measurement using Consumer Depth Camera....89 Gargi Alavani, Venkatesh Kamat
- 24. Automated Conversion of 2D to 3D Image using Manifold Learning....93 Nidhi Chahal, Meghna Pippal, Santanu Chaudhury
- 25. A Novel Stereo Matching Approach for Pedestrian Re-Identification....97 Soma Biswas
- 26. An Optimal Underwater Image Enhancement based on Fuzzy Gray World Algorithm and Bacterial Foraging Algorithm....101 Rajni Sethi, Indu Sreedevi, Dr. Om Prakash Verma, Veni Jain
- 27. Feature Extraction and Identification of Indian Currency Notes....105 Snigdha Kamal, Simarpreet Chawla, Dr. Nidhi Goel, Balasubramanian Raman
- 28. Effect of Writer Information on Bangla Handwritten Character Recognition....109 Chayan Halder, Obaidullah Sk, Kaushik Roy
- An IDE-Agnostic System to Capture Reading Behaviour of C++ Programs using Eye-Gaze Tracker....113 Sayani Mondal, Partha Das
- Place of Articulation from Direct Imaging for Validation of Its Estimation from Speech Analysis for Use in Speech Training....117 *K S Nataraj, Prem Pandey*
- 31. Lip Contour Detection for Estimation of Mouth Opening Area....121 Shreyansh Jain, Prem Pandey, Rajbabu Velmurugan

- 32. Single Shot High Dynamic Range Imaging using Histogram Separation and Exposure Fusion....125 *Anoop K. Johnson, Jiji C.V.*
- An Enhanced Decision based Unsymmetric Trimmed Median Filter for Removal of High Density Salt and Pepper Noise....129 Shruti Singh, Anil Tiwari
- 34. Multiple Object Tracking by Improved Klt Tracker over SURF Features....133 Vinodh Buddubariki, Sunitha Gowd Tulluri, Snehasis Mukherjee
- 35. An Image Encryption Algorithm based on XOR Operation With Approximation Component in Wavelet Transform....137 *Piyush Singh, Ravi Singh, Kabindra Rai*
- 36. Handwritten Text Recognition in Odia Script using Hidden Markov Model....141 Suman Suman Bhoi, Debi Dogra, Partha P Roy
- 37. Single Image Dehazing with Varying Atmospheric Light Intensity....144 Sanchayan Santra, Bhabatosh Chanda
- 38. Flash/No-Flash Image Fusion using Dictionary Learning....148 Ekta Samani, Vikas Gupta, Shanmuganathan Raman
- 39. Extracting Text from Degraded Document Image....152 Radhika Patel, Suman Mitra
- 40. Greedy Partitioning based Tree Structured Multiclass SVM for Odia OCR....156 Sandeep Sahu, Arun Pujari, Vikas Kumar, Venkateswara Rao Kagita, Vineet Padmanabhan
- 2-D Dual Tree Complex Wavelet Transform based Fingerprint Ridge Structure Quality Enhancement....160 Jayshree Kundargi, Ramesh Karandikar
- 42. OHCS: A Database for Handwritten Atomic Odia Character Recognition....165 Ramesh Mohapatra, Tusar Kanti Mishra, Sandeep Panda, Banshidhar Majhi
- 43. Cross-Modal Attribute based Facial Image Retrieval....169 Dasharath Mali, Soma Biswas
- 44. Context based Image Retrieval Framework for Smartphones....173 Shirish Singh, Praveen Kumar
- 45. Recommendation of Complementary Garments using Ontology....177 Deepti Goel, Santanu Chaudhury, Hiranmay Ghosh
- 46. Learning Metrics for Diversity in Instance Retrieval....181 Vidyadhar Rao, Ajitesh Gupta, Visesh Chari, C V Jawahar
- Synthetic Handwritten Odia Numeral Database: From Shallow Hundreds to Comprehensive Thousands....185 Kalyan Dash, Niladri Puhan, Ganapati Panda

- 48. MP-FEG: Media Player Controlled by Facial Expressions and Gestures....189 Swapna Agarwal, Saiyed Umer
- 49. Multimodal Image Registration of Lung Images....193 Bijju Veduruparthi, Jayanta Mukherjee, Partha Das, Sanjoy Chatterjee, Soumendranath Ray, Partha Sen
- 50. Study of Variation of Pelvis Positioning for Patients Suffering from Rectal Cancer using Daily Kilo-Voltage Cone Beam CT Images....197 Sayan Mandal, Bijju Veduruparthi, Jayanta Mukherjee, Partha Das, Indranil Mallick
- Combining Diagrammatic Reasoning with Qualitative Spatial and Temporal Reasoning for Motion Event Detection....201 *Chayanika Nath, Shyamanta Hazarika*
- 52. SIFT based View Invariant Watermarking for DIBR 3D Image....205 Shuvendu Rana, Vishavdeep Mattu, Arijit Sur
- 53. Robust Control of Applications by Hand-Gestures....209 Aakash Anuj, Tanwi Mallick, Partha Das, Arun Majumdar
- 54. Gaussian Mixture Model for Summarization of Surveillance Videos....213 Sujatha C, Uma Mudenagudi
- 55. Segmenting Printed Text and Handwritten Annotation by Spectral Partitioning....217 Shilpa Pandey, Gaurav Harit
- 56. A Fractional Order Total Variation Model for the Estimation of Optical Flow....221 Pushpendra Kumar, Sanjeev Kumar, Balasubramanian Raman
- 57. Content based Image Retrieval using Enhanced SURF....225 Naveen Gopal, Reshmi Bhooshan
- 58. An Improved Multi-Layer Codebook Model To Eliminate Ghost Region....229 Tapas Badal, Neeta Nain, Mushtaq Ahmed, Vishakha Sharma
- 59. Deep Transfer Learning with Ontology for Image Classification....233 Umang Gupta, Santanu Chaudhury
- 60. A Framework for Dynamic Hand Gesture Recognition using Key Frames Extraction....237 Bhumika Patha, Anand Jalal, Subhash Agrawal, Charul Bhatnagar
- 61. Mean-Shift based Segmentation of Cell Nuclei in Cervical Pap-Smear Images....241 Paridhi Agarwal, Anil Sao, Arnav Bhavsar
- 62. Detection and Identification of Logic Gates from Document Images using Mathematical Morphology....245 Ramanath Datta, Paramita De, Sekhar Mandal, Bhabatosh Chanda
- 63. Robust Video Watermarking Resilient to Temporal Scalability....249 Nilkanta Sahu, Vivek Tiwari, Arijit Sur

- 64. Iris Liveness Detection using Texture Segmentation....253 Mohit Kumar, Niladri Puhan
- 65. Gradient Sensitive Kernel for Image Denoising using Gaussian Process Regression....257 Arka Ujjal Dey, Gaurav Harit
- 66. Global Vessel Symmetry for Optic Disc Detection in Retinal Images....261 Rashmi Panda, Niladri Puhan, Ganapati Panda
- 67. Sparse Representation based Classifier To Assess Video Quality....265 Manoj Sharma, Santanu Chaudhury, Brejesh Lall
- Weighted Fast Dynamic Time Warping based Multi-View Human Activity Recognition using A RGB-D Sensor....269 Ishan Agarwal, Alok Kushwaha, Rajeev Srivastava
- 69. Adaptive Crypto-Steganosystem for Videos based on Information Content and Visual Perception....273 Prerana Mukherjee, Siddharth Srivastava, Brejesh Lall, Saisha Asolkar, Meera Pai
- 70. Integrated Algorithm for Different Tracking Challenges....277 Jay Shah, Sai Subrahmanyam G R K, Deepak Mishra
- 71. Quadcopter-based Stagnant Water Identification....281 Meghshyam Prasad, Abhishek Chakraborty, Raviteja Chalasani, Sharat Chandran
- 72. Large-Scale Virtual Texturing on a Distributed Rendering System....285 *Revanth N R, P J Narayanan*
- 73. Saliency Guided Adaptive Image Abstraction....289 Rajendra Nagar, Shanmuganathan Raman
- 74. A Hierarchical Class-Grouping Approach, and a Study of Classification Strategies for Leaf Classification....293 Ravinder Prajapati, Arnav Bhavsar, Anil Sao
- 75. A Spectral Filtering based Deep Learning for Detection of Logo and Stamp....297 Amit Nandedkar, Jayanta Mukherjee, Shamik Sural
- 76. Semantic Description of a Video using Representative Frames....301 Ishan Jindal, Shanmuganathan Raman
- 77. Multiple View 3-D Reconstruction in Water....305 Santanu Chaudhury, Tarun Agarwal, Pranjal Maheshwari
- 78. Diagnosis of Pomegranate Plant Diseases using Neural Network....309 *Mrunmayee Dhakate, Ingole A. B.*
- 79. Efficient Face Frontalization in Unconstrained Images....313 Mallikarjun B R, Visesh Chari, C V Jawahar

- 80. Information Set based Approach for Salient Object Detection....317 Aditi Kapoor, K Biswas, Madasu Hanmandlu
- 81. Recognizing Newborns using Binocular Region....321 Chandani Parmar, L Vishwamitra
- 82. Use of Leaf Colour for Drought Stress Analysis in Rice....325 Swati Bhugra, Santanu Chaudhury, Brejesh Lall
- 83. Active Learning based Image Annotation....329 Priyam Bakliwal, C V Jawahar
- 84. Framework for 3D Object Hole Filling....333 Shankar Setty, Syed Altaf Ganihar, Uma Mudenagudi
- 85. Biometric Recognition System for Challenging Faces....337 Saiyed Umer, Bibhas Dhara, Bhabatosh Chanda
- 86. Tri-Modal Biometric Fusion for Human Authentication by Tracking Differential Code Pattern....341 Aditya Nigam, Phalguni Gupta
- 87. A Robust Watermarking Scheme against Re-Compression Attack for H.265/HEVC....345 Sibaji Gaj, Arijit Sur, Prabin Bora
- 88. RST Invariant Multi View 3d Image Watermarking using DWT and SVD....349 Sibaji Gaj, Shuvendu Rana, Anirban Lekharu, Arijit Sur, Prabin Bora
- 89. Validation of Stimulus for EEG Signal based Cognitive Load Analysis....353 Aniruddha Sinha, Debatri Chatterjee, Sanjoy Saha, Anupam Basu
- 90. Classification of Brain MR Images using Discrete Wavelet Transform and Random Forests....357 Deepak Ranjan Nayak, Ratnakar Dash, Banshidhar Majhi
- 91. Entropy Thresholding based Microaneurysm Detection in Fundus Images....361 Vineeta Das, Niladri Puhan, Rashmi Panda
- 92. Automated Detection and Classification of Mass from Breast Ultrasound Images....365 Radhika Menon, Poulami Raha, Shweta Kothari, Sumit Chakraborty, Indrajit Chakrabarti, Rezaul Karim
- 93. Optic Disk and Macula Detection from Retinal Images using Generalized Motion Pattern....369 Gaurav Mittal, Jayanti Sivaswamy