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Dr. Jayanta Mukhopadhyay (Mukherjee) received his B.Tech., M.Tech., and Ph.D. degrees in Electronics and Electrical Communication Engineering from the Indian Institute of Technology (IIT), Kharagpur in 1985, 1987, and 1990, respectively. He joined the faculty of the Department of Electronics and Electrical Communication Engineering at IIT, Kharagpur in 1990 and later moved to the Department of Computer Science and Engineering where he is presently a Professor. He served as the Head of the Computer and Informatics Center at IIT, Kharagpur from September 2004 to July 2007. He also served as the Head of the Department of Computer Science and Engineering and the School of Information and Technology from April, 2010 to March, 2013.

He was a Humboldt Research Fellow at the Technical University of Munich in Germany for one year in 2002. He has also held short term visiting positions at the University of California, Santa Barbara, University of Southern California, and the National University of Singapore. His research interests are in image processing, pattern recognition, computer graphics, multimedia systems and medical informatics. He has supervised 15 doctoral students, and published more than 200 research papers in journals and conference proceedings in these areas. He has authored a book on "Image and Video Processing in the compressed domain", and coauthored a book on "Digital Geometry in Image Processing".

Dr. Mukhopadhyay is a Senior Member of the IEEE. He also holds life membership of various professional societies in his areas of expertise such as Indian Association of Medical Informatics (IAMI), Telemedicine Society of India (TSI), Indian Unit of Pattern Recognition and Artificial Intelligence (IUPRAI, India). He has served as a member of technical program committees of several national and international conferences, and served as Program Co-Chairs of Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP) in 2000, and 2008. He also served as Program Chairs of International Workshop on Recent Advances in Medical Informatics in 2013 and 2014. He is serving as a member of the editorial boards of Journal of Visual Communication and Image Representation published by Elsevier, and International Journal of Biomedical Imaging of Hindwai Publications.

He received the Young Scientist Award from the Indian National Science Academy in 1992, and is a fellow of the Indian National Academy of Engineering (INAE).

## List of selected publications

1. **Mukherjee, Jayanta**, Das, P.P and Chatterji, B.N. (1989): Thinning of 3-D Images Using Safe Point Thinning Algorithm (SPTA), *Pattern Recognition Letters*, 10, pp.167-173.
2. **Mukherjee, Jayanta**, Das, P.P. and Chatterji, B.N. (1990): Segmentation of Three-Dimensional Surfaces, *Pattern Recognition Letters*, 11(3), 215-223.
3. **Mukherjee, Jayanta**, Das, P.P and Chatterji, B.N. (1990): From Range to Frame: extraction of 3-D information from 2-1/2 D data, *Pattern Recognition Letters*, 11(7), 493-498.
4. **Mukherjee, Jayanta**, Das, P.P. and Chatterji, B.N. (1990): An algorithm for the extraction of the wire frame structure of a three- dimensional object, *Pattern Recognition*, 23(9), 999-1010.
5. **Mukherjee, Jayanta**, Das, P.P and Chatterji, B.N. (1990): On connectivity issues of ESPTA, *Pattern Recognition Letters*, 11(9), 643-648.
6. Das, P.P and **Mukherjee, Jayanta**, Metricity of Super Knight Distances in 2-D digital geometry (1990) *Pattern Recognition Letters*, 11(9), 601-604.
7. Das, P.P., **Mukherjee, Jayanta** and Chatterji, B.N. (1992) The t-Cost Distance in Digital Geometry, *Information Sciences*, 59, 1-20.
8. **Mukherjee, Jayanta**, Das, P.P. and Chatterji, B.N. (1992): Segmentation of Range Images, *Pattern Recognition*, 25(10), 1141-1156.
9. Vinod, V.V. , Chaudhury, S., Ghose, S. and **Mukherjee, Jayanta** (1992): A connectionist approach for peak detection in Hough Space, in *Pattern Recognition*, 25(10), 1253-1264.
10. Biswas, Prabir Kr., **Mukherjee, Jayanta**, and Chatterji, B.N. (1993): Component Labelling in Pyramid Architecture , *Pattern Recognition*, PR(6), No.7, p1099-1115.
11. Vinod, V.V. , Chaudhury, S., Ghose, S. and **Mukherjee, Jayanta** (1994): A connectionist approach for clustering with applications in image analysis, *IEEE trans. on System Man and Cybernetics* , vol.24, no.3, pp 365-383, 1994.
12. Kumar, A., **Mukherjee, Jayanta**, Das, P.P. and Chatterji, B.N. (1996): Medial circle and sphere representations for 2D and 3D binary objects, *International Journal of Pattern Recognition and Artificial Intelligence* , vol.10, pp. 365-387.
13. **Mukherjee, Jayanta**, Kumar A., Das, P.P. and Chatterji, B.N. (1999): Discrete shading algorithms for Three-Dimensional objects from Medial Axis Transform, *Pattern Recognition Letters*, 20, 1533-1544.
14. **Mukherjee, Jayanta**, Kumar A., Das, P.P. and Chatterji, B.N. (2000): Fast Computation of cross-sections of Three-Dimensional objects from Medial Axis Transform, *Pattern Recognition Letters*, 21, 605-613.
15. **Mukherjee, Jayanta**, Kumar A., Das, P.P. and Chatterji, B.N. (2000): On approximating Euclidean metrics by digital distances in 2D and 3D, *Pattern Recognition Letters*, 21, 573-582.
16. **Mukherjee, Jayanta**, Kumar, P. and Ghose, S.K. (2000): A new graph-theoretic approach for studying the convergence of fractal image compression, *IEEE trans. on Image Processing*, vol. 9 (3), 366-377.

17. **Mukherjee, Jayanta**, Parthasarathi, R. and Goyal, S. (2001), Markov random field processing for color demosaicing, *Pattern Recognition Letters*, 22, 339-351.
18. **Mukherjee, Jayanta** (2002), MRF Clustering for Segmentation of Color Images, *Pattern Recognition Letters*, vol. 23, 8, June, pp. 917-929.
19. **Mukherjee, Jayanta**, Kumar A., Das, P.P. and Chatterji, B.N. (2002): Use of Medial Axis Transforms for computing normals at boundary points, *Pattern Recognition Letters*, vol. 23, 14, pp. 1649-1656.
20. **Mukherjee, Jayanta** and Mitra, S.K. (2002), Image resizing in the compressed domain using sub-band DCT, *IEEE Transactions on Circuits and systems for Video Technology*, vol. 12, No. 7, July, pp. 620-627
21. Koh, Chin Chye, **Mukherjee, Jayanta** and Mitra, S.K. (2003), "New efficient methods of image compression in digital cameras with color filter array", *IEEE Trans. on Consumer Electronics*, Nov., vol. 49, no. 4, pp. 1448-1456.
22. Ghosh, S. K., **Mukherjee, Jayanta** and Das, P.P. (2004), "Fractal Image Compression - A Randomized Approach", *Pattern Recognition Letter*, vol. 25, July, 1013-1024.
23. **Mukherjee, Jayanta** and Mitra, S.K. (2005) , Arbitrary Resizing of Images in the DCT space, *IEE Proc. Vision, Image & Signal Processing*, vol. 152, no.2, pp. 155-164 .
24. **Mukherjee, J.**, Lang, M.K. and Mitra, S.K. (2005), Demosaicing of images obtained from single-chip imaging sensors in YUV color space, *Pattern Recognition Letter*, vol. 26, pp. 985-997 .
25. Acharya, B., Majumdar, A.K., and **Mukherjee, Jayanta** (2006), Video models for dynamic objects, *Information Sciences*, 176, pp. 2567-2602.
26. Patil V., Kumar R. and **Mukherjee Jayanta** (2006), A Fast Arbitrary Factor Video Re-sizing Algorithm, *IEEE trans. on Circuits Systems and Video Technology*, vol. 16, Sept., pp. 1164 - 1171.
27. Saha, A. , Mallick K., **Mukherjee, J.**, and Sural, S. (2007), Skip Prediction for fast rate distortion optimization in H.264, *IEEE trans. on Consumer Electronics*, vol. 53, no. 3, pp. 1153-1160.
28. Kundu, S. **Mukherjee, J.**, Majumdar, A.K., Majumdar, B. and Ray, S.S. (2007), Algorithms and Heuristics for Efficient Medical Information Display in PDA, *Computers in Biology and Medicine*, 37, Sept., pp. 1272-1282.
29. Roy, A. , Sural S., **Mukherjee J.** and Majumdar A.K. (2008), State based Modeling and Object Extraction from Echocardiogram Video, *IEEE trans. on IT in Biomedicine*, no. 3, vol. 12, pp. 366-376 .
30. Pallavi V. , **Mukherjee J.**, Sural S. and Majumdar A.K. (2008) , Graph Based Multi-Player Detection and Tracking in Broadcast Soccer Videos, *IEEE trans. on Multimedia*, vol 10, no. 5, Aug., 794-805.
31. **Mukherjee J.** and Mitra, S.K. (2008), Color Images by Scaling the DCT coefficients, *IEEE trans. on Image Processing*, vol 17, no. 10, Oct., 1783-1794.
32. Pallavi V. , **Mukherjee J.**, Sural S. and Majumdar A.K. (2008) , Ball Detection from Broadcast Soccer Videos using Static and Dynamic Features, *Journal of Visual Communication and Image Representation*, Elsevier, 19, 426-436. .
33. Saha, A. , **Mukherjee, J.**, and Sural, S. (2008), New Pixel Decimation Patterns for Block Matching in Motion Estimation, *Signal Processing: Image Communication*, Elsevier, 23, 725-738.

34. Viswanath, K., **Mukherjee, J.**, Biswas, P.K. and Pal, R.N. (2010), Wavelet to DCT transcoding in transform domain, *Signal Image and Video Processing*, Springer, DOI 10.1007/s11760-009-0105-8, no. 4, 129-144.
35. Pal, R., Mukherjee, A., Mitra, P., and **Mukherjee, J.** (2010), Modelling Visual Saliency Using Degree Centrality, *IET Computer Vision*, Vol. 4, No. 3, 218-229.
36. Viswanath, K., **Mukherjee, J.** and Biswas, P.K. (2010), Wavelet Transcoding in the Block DCT Space, *IET Image Processing*, vol. 4, issue 3, pp. 143-157 .
37. **Mukherjee, J.** (2011), On approximating Euclidean metrics by weighted t-cost distances in arbitrary dimension, *Pattern Recognition Letters*, 32, 824-831.
38. **Mukherjee, J.** (2011), Local Rank Transform: Properties and Applications, *Pattern Recognition Letters*, 32, 1001-1008.
39. Viswanath, K., **Mukherjee, J.** and Biswas, P.K. (2011), Image Filtering in the Block DCT Domain Using Symmetric Convolution, *Journal of Visual Comm. and Image Representation*, 22, 141-152.
40. Roy, A., Sural, S., **Mukherjee, J.**, Rigoll, G. (2011), Gait Silhouette Reconstruction from Occluded Scenes, Hugo Proena, Eliza Yingzi Du, Jacob Scharcanski (Eds.); *Springer Signal Image and Video Processing, Special Issue On Unconstrained Biometrics: Advances and Trends*, volume 5, number 4, pages: 415-430
41. Saha, A., Sural, S. and **Mukherjee, J.** (2011), A Neighborhood Elimination Approach for Block Matching in Motion Estimation, *Signal Processing: Image Communication*, Elsevier, volume 26, issue 8-9, pp. 438 - 454.
42. Bhattacharyya, S., Biswas, A., **Mukherjee, J.**, Majumdar, A.K., Majumdar, B. Mukherjee, S., and Singh, A.K. (2011), Feature Selection for Automatic Burst Detection in Neonatal Electroencephalogram, *IEEE Journal on Emerging and Selected Topics in Circuits and Systems*, Vol. 1, No. 4, Dec., 2011, page:469-479.
43. Sur, A., Vignesh, R., and **Mukherjee, J.** (2012), Secure Steganography using Randomized Cropping. *LNCS Transactions on Data Hiding and Multimedia Security VII*, Springer, LNCS 7110, pp. 8295.
44. Viswanath, K., **Mukherjee, J.** and Biswas, P.K. (2012), Block DCT to Wavelet Transcoding In Transform Domain, *Signal Image and Video Processing*, Springer, 6(2), 179-195.
45. Roy, A., Sural, S., **Mukherjee, J.** (2012), Gait Recognition using Pose Kinematics and Pose Energy Image, *Signal Processing*, Elsevier, 92 (3), page: 780-792.
46. Dogra, D.P., Nandam, K., Majumdar, A.K., Sural, S., **Mukherjee, J.**, Mukherjee, S. and Singh, A. (2012), Toward Automating Hammersmith Pulled-To-Sit Examination of Infants using Feature Point based Video Object Tracking, *IEEE Transactions on Neural Systems & Rehabilitation Engineering*, Vol. 20, No. 1, Jan., pp. 38-47.
47. Roy, A., Sural, S., **Mukherjee, J.** (2012), A Hierarchical Method Combining Gait and Phase of Motion with Spatiotemporal Model for Person Reidentification, *Pattern Recognition Letters*, 33 (14), 1891-1901.
48. Dogra, D.P., Majumdar, A.K., Sural, S., **Mukherjee, J.**, Mukherjee, S. and Singh, A. (2012), Analysis of Adductors Angle Measurement in Hammersmith Infant Neurological Examinations using Mean Shift Segmentation and Feature Point based Object Tracking Authors, *Computers in Biology and Medicine*, Elsevier, 42 (9), 925-934.

49. **Mukherjee J.** (2013), Hyperspheres of Weighted distances in arbitrary dimension, *Pattern Recognition Letters*, 34 (2), 117-123.
50. Sur, A., Shyam, D., Goel, P. and **Mukherjee, J.** (2014), An Image Steganographic Algorithm Based on Spatial Desynchronization, *Multimedia Tools and Applications*, Springer, 71(3): 1105-1127.
51. **Mukherjee J.** (2013), Linear combination of norms in improving approximation of Euclidean norm , *Pattern Recognition Letters*, 34(12): 1348-1355.
52. Pratihari, S., Bhowmick, P., Sural, S., and **Mukhopadhyay, J.** (2013), Skew correction of document images by rank analysis in Farey sequence, *International Journal of Pattern Recognition and Artificial Intelligence*, 27 (7), 1353004 (1-35 pages) .
53. Munot, M.V., **Mukherjee, J.**, and Joshi, M., A Novel Approach for Efficient Extrication of Overlapping Chromosomes in Automated Karyotyping (2013), *Medical & Biological Engineering & Computing*, Springer, 51(12): 1325-1338.
54. Bhattacharyya, S., Biswas, A., **Mukherjee, J.**, Majumdar, A.K., Majumdar, B., Mukherjee, S., Singh, A.K. (2013), Detection of Artifacts from High Energy Bursts in Neonatal EEG, *Computers in Biology and Medicine*, Elsevier, 43(11): 1804-1814.
55. Sur, A., Vignesh, R., and **Mukherjee, J.** (2014), Pixel rearrangement based statistical restoration scheme reducing embedding noise, *Multimedia Tools and Applications*, Springer, 68(3): 805-825.
56. Chattopadhyay, P., Roy, A., Sural, S. and **Mukhopadhyay, J.** (2014), Pose Depth Volume Extraction from RGB-D Streams for Frontal Gait Recognition, *Journal of Visual Communication and Image Representation* 25(1): 53-63.
57. **Mukherjee J.** (2014), Linear combination of weighted t-cost and chamfering weighted distances, *Pattern Recognition Letters*, 40, pp. 72-79.
58. Dogra, D.P., Badri, V., Majumdar, A.K., Sural, S., **Mukherjee, J.**, Mukherjee, S., and Singh, A. (2014), Video analysis of Hammersmith lateral tilting examination using Kalman filter guided multi-path tracking, *Medical & Biological Engineering & Computing*, Springer, 52(9): 759-772.
59. Chattopadhyay, P., Sural, S. and **Mukhopadhyay, J.** (2014), Frontal Gait Recognition from Incomplete Sequences using RGB-D Camera, *IEEE Transactions on Information Forensics & Security*, 9(11): 1843-1856.
60. Chattopadhyay, P., Sural, S., **Mukherjee, J.** (2015), Information fusion from multiple cameras for gait-based re-identification and recognition. *IET Image Processing* 9(11): 969-976.
61. Chattopadhyay, P., Sural, S., **Mukherjee, J.** (2015), Frontal Gait Recognition from Occluded Scenes, *Pattern Recognition Letters*, 63: 9-15.