Dr. Sumit Budhiraja

Professor,
Electronics & Communication Engineering,
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Academic Qualification:

- Ph.D. from Panjab University, Chandigarh in 2022

- M.E. (Electronics) from Panjab University, Chandigarh in 2004

- B.E. (Electronics & Communication Engg.) from Maharishi Dayanand University, Rohtak in 2001.

Work Experience: 20 Years

Research Area: Signal Processing, Image Processing, Sparse Representation

Academic awards: Fellowship for PhD under *Visvesvaraya PhD Scheme for Electronics & IT* from Ministry of Electronics & IT, Govt. of India

Publications: International Journals: 34   International Conferences: 16

Research Guidance: **PhD**: 2 (Ongoing)   **M.E.:** 34 (Completed)

Selected Publications:

1. Sumit Budhiraja, Sunil Agrawal, Neeraj Sharma, "Infrared and Visible Image Fusion based on Sparse Representation and Weighted Least Square Optimization", IETE Journal of Research, pp. 1-13, March 2025

2. Sarita, Neeraj Sharma, Sunil Agrawal, Sumit Budhiraja, "Analysis and Performance Improvement of 60 GHz mm-wave based Hybrid RoF and RoFSO System under Atmospheric Turbulence using FFE+DFE Electronic Equalizer", Optical and Quantum Electronics, Volume 57, Article number 144, Feb 2025.

3. Ashima Koundal, Sumit Budhiraja and Sunil Agrawal, "Medical Image Segmentation using Enhanced Feature Weight Learning Based FCM Clustering" Biomedical and Pharmacology Journal, vol. 17, no. 4, pp. 2661-2672, 2024.

4. Shavet Bhagat, Sumit Budhiraja, Sunil Agrawal, "Pattern-based feature set for efficient segmentation of color images using modified FCM clustering" Signal, Image and Video Processing, July 2024

5. Sumit Budhiraja, Rajat Sharma, Sunil Agrawal, Balwinder S. Sohi, "Infrared and Visible Image Fusion using Modified Spatial Frequency-based Clustered Dictionary" Pattern Analysis and Applications, vol. 24, no. 2, 575–589, 2021.

6. Sumit Budhiraja, Iftisam Rummy, Sunil Agrawal, B S Sohi, "Infrared and Visible Image Fusion based on Sparse Representation and Spatial Frequency in DTCWT domain" International Journal of Image and Graphics, vol. 21, no. 2, Jan 2021, 2150017.

7. Sumit Budhiraja, Sunil Agrawal, B. S. Sohi, Neeraj Sharma, "Effect of Pre-processing on MST based Infrared and Visible Image Fusion", 3rd International Conference on Signal Processing and Communication (ICPSC 2021), 13 – 14 May 2021, Coimbatore, India

8. Sumit Budhiraja, Sunil Agrawal, B. S. Sohi, "Performance Analysis of Multi-scale Transforms for Saliency based Infrared and Visible Image Fusion", 2nd International Conference on Data Science and Applications (ICDSA 2021), 10-11 April, 2021, Kolkata, India

9. Neeraj Sharma, Sunil Agrawal, Vinod Kapoor, Sumit Budhiraja, "Effects of local oscillator on the performance of DP-QPSK WDM system with channel spacing of 37.5 GHz", Journal of Optical Communications (JOC), Dec 2020, pp. 000010151520200175.

10. Kamaldeep Kaur, Sumit Budhiraja, Neeraj Sharma, "Multimodal Medical Image Fusion based on Gray Wolf Optimization and Hilbert Transform", Biomedical & Pharmacology Journal, Vol. 12 Issue 4, pp. 2091-2098, Dec 2019.

11. Neeraj Sharma, Sunil Agrawal, Vinod Kapoor, Sumit Budhiraja, "Effects of laser linewidth on the performance of DP-QPSK DWDM system" Journal of Optical Communications (JOC), Nov 2019.

12. Amina Girdher, Bhawna Goyal, Ayush Dogra, Anaahat Dhindsa, Sumit Budhiraja, "Efficient Denoising by Feature Recovery from residual Noise in Spatial Domain", International Journal of Recent Technology and Engineering (IJRTE), vol. 8, no. 4, pp 947-957, Nov 2019.

13. Nancy Mehta, Sumit Budhiraja, "Multimodal Medical Image Fusion Using Guided Filter in NSCT Domain", Biomedical and Pharmacology Journal, vol. 11, no. 4, pp 1937-1946, Dec 2018.

14. Anchal, Sumit Budhiraja, Bhawna Goyal, Ayush Dogra, Sunil Agrawal, "An efficient image denoising scheme for higher noise levels using spatial domain filters", Biomedical and Pharmacology Journal, vol. 11, no. 2, pp 625-634, June 2018.

15. Meenakshi, Sumit Budhiraja, "Compressive Sensing based Image Reconstruction Using Generalized Adaptive OMP with Forward-Backward Movement", International Journal of Image, Graphics and Signal Processing (IJIGSP), vol. 8, no. 10, pp 19-28, Oct 2016.

16. Pritika, Sumit Budhiraja, "Multimodal Medical Image fusion based on Guided Filtered Multi-Scale Decomposition", International Journal of Biomedical Engineering and Technology, vol. 20, no. 4, 2016.

17. Meenakshi, Sumit Budhiraja "A Survey of Compressive Sensing Based Greedy Pursuit Reconstruction Algorithms", International Journal of Image, Graphics and Signal Processing (IJIGSP), vol. 7, no. 10, pp 1-10, Sep 2015.

18. Arvinder Kaur, Sumit Budhiraja, "On the Dissimilarity of Orthogonal Least Squares and Orthogonal Matching Pursuit Compressive Sensing Reconstruction" Springer book: Advanced Computing, Networking and Informatics- Vol. 1, Series: Smart Innovation, Systems and Technologies Volume 27, pp 41-46, 2014.

19. Sachmanik S. Cheema, Sumit Budhiraja, "An Improved Technique for Vision Based Path Tracking Robot", Advanced Materials Research Journal, Vol. 403 - 408, pp. 4986-4990, 2012.