



UNIVERSITY OF CALCUTTA

RESEARCH SCHOLAR ACADEMIC PROFILE/ CV

Full name: DEBOLEENA SADHUKHAN

Designation: Senior Research Fellow (DST INSPIRE), Department of Applied Physics.

Research topic: Compression and analysis of cardiac signals

Current Status: Submitted 5000 words



Contact information:

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Academic qualifications:

College/ university from which the degree was obtained	Abbreviation of the degree with subject	Class/ division
University of Calcutta	B.Sc. (Physics Hons.)	First class
University of Calcutta	B. Tech (Instrumentation engineering)	First class Rank: First
University of Calcutta	M. Tech. (Instrumentation & Control Engineering)	First class Rank: First (Gold medalist)

Positions held/ holding:

- **Senior Research Fellow (SRF-P)** under the INSPIRE (Innovation in Science Pursuit for Inspired Research) fellowship scheme offered by Ministry Of Science & Technology, Government Of India in the Department of Applied Physics, University of Calcutta. (1.03.2014-till date)
- **Senior Research Assistant** under TEQIP Phase II, in the Department of Applied Physics, University of Calcutta. (11.07.2013-28.2.2014).
- **Visiting Lecturer** in Department of Applied Physics, Calcutta University for delivering lectures to B.Tech students (2013-2014).
- **Part-time Faculty** in the 3-year Part-time Evening M. Tech course in Instrumentation & Control Engineering in Department of Applied Physics, Calcutta University (2014).
- **Assistant Professor** in the College of Engineering and Management, Kolaghat (A Govt. Aided Engineering College & assisted by World Bank under TEQIP-II) under the department of Electronics& Instrumentation Engineering (02.08.2012 – 10.07.2013).
- **Guest Lecturer** in the Department of Applied Physics, University of Calcutta for the stream of Instrumentation Engineering (2012-13).
- **Teaching assistantship** in the Department of Applied Physics, Calcutta University (2011-2012).
- **Trainer** for a training programme on Programmable Logic Controllers for final year B. Tech students on behalf of Techno India Group of colleges (June 28- July 14, 2012).

Research interests:

- Biomedical Signal & Image Processing
- Signal processing
- Machine learning

List of publications:

Journals:

1. D. Sadhukhan, S. Pal, M. Mitra, "Adaptive band limit estimation based PPG data compression for portable home monitors", under review.
2. D. Sadhukhan, S. Pal, M. Mitra, "Automated Identification of Myocardial Infarction Using Harmonic Phase Distribution Pattern of ECG Data", IEEE Transactions on Instrumentation and Measurement, vol. PP, no. 99, pp. 1-11. 2018 doi: 10.1109/TIM.2018.2816458
3. D. Sadhukhan, S. Pal, M. Mitra, "Electrocardiogram data compression using adaptive bit encoding of the discrete Fourier transforms coefficients," IET Science, Measurement & Technology, vol.9, no.7, pp. 866-874, 2015

Conference proceedings:

1. D. Sadhukhan, J. Dutta, S.Pal, M. Mitra, "Automated identification of Myocardial Infarction using a single Vectorcardiographic feature", in International Conference on Modelling and Simulation-2017 (MS-17), Kolkata, India, 4-5 Nov 2017.
2. D. Sadhukhan, S. Pal and M. Mitra, "Automated ECG analysis using Fourier harmonic phase," 2017 IEEE Region 10 Symposium (TENSYP), Cochin, 2017, pp. 1-5. doi: 10.1109/TENCONSpring.2017.8070022
3. D. Sadhukhan, S.Pal, M. Mitra, "ECG Delineation using Multiresolution DWT and Relative Magnitude and Slope Comparison", 2nd International Conference on Control, Instrumentation, Energy and Communication (CIEC) 2016, Kolkata, India, Jan. 28-30, 2016, pp. 173-177.

4. D. Sadhukhan, M. Mitra, "ECG Noise Reduction Using Linear and Non-linear Wavelet Filtering", Proc. of Int. Conf. on Computing, Communication & Manufacturing (ICCCM) 2014, Howrah, India, Dec 22-23, 2014, ISBN: 978-0-9940194-0-0.
5. D. Sadhukhan and M. Mitra, "ECG noise reduction using Fourier coefficient suppression," International Conference on Control, Instrumentation, Energy and Communication (CIEC) 2014, Kolkata, India, Jan. 31-Feb. 2, 2014, pp. 142-146. doi: 10.1109/CIEC.2014.6959066.
6. D. Sadhukhan, Rohit Mitra, Avik Kundu, M. Mitra, "Development of a Low Cost ECG Data Acquisition Module", National Conference on Emerging Technology and Applied Sciences 2014 (NCETAS 2014), West Bengal, India, 2014, published in the International Journal of Innovative Research in Science, Engineering and Technology (IJIRSET), ISSN (Online): 2319 - 8753, Volume-3, Special Issue 2, February 2014, pp. 403-411.
7. D. Sadhukhan and M. Mitra, "Detection of ECG characteristic features using slope thresholding and relative magnitude comparison," Third International Conference on Emerging Applications of Information Technology (EAIT), 2012, Kolkata, India, 2012, pp. 122-126. doi: 10.1109/EAIT.2012.6407876
8. D. Sadhukhan, M. Mitra, "ECG Denoising Using Linear and Non-linear DWT based techniques", 2nd National Conference on Instrumentation & Control (NATCONIC) 2013, Kolkata, India, 2013.
9. D. Sadhukhan, M. Mitra, "Detection of Myocardial Infarction by Fourier Coefficient Analysis of ECG", Proceedings of 2nd International Conference on Innovative Techno Management Solution for Social Sector, IEMCON 2012, Kolkata, India, January 17-18, 2012. IEMIJMT, ISSN: 2296-6611, Vol. 2, No. 1 (2012), pp. 119-129.
10. D. Sadhukhan, M. Mitra, 'R-Peak Detection Algorithm for ECG Using Double Difference and RR- Interval Processing', 2nd International Conference on Computer Science, Communication and Control Engineering, Academy of Technology, Kolkata, India, February 25-26, 2012, Procedia Technology, Volume-4, 2012, Pages 873-877, ISSN- 2212-0173, <http://dx.doi.org/10.1016/j.protcy.2012.05.1>

Educational achievements and Fellowships:

- **1st class FIRST (gold medalist) in M. Tech** in Instrumentation Engineering (2012) from the University of Calcutta.
- **1st class FIRST in B.Tech** in Instrumentation Engineering (2010) from the University of Calcutta.
- **Winner of S.P Bhattacharya merit award** (2010), **Kanoria research scholar award** (2010) & **Kamalkrishna Raha bookprice award** (2010) for academic performance in the stream of Instrumentation Engineering from University of Calcutta.
- Awarded **the DST-INSPIRE Fellowship** (Innovation in Science Pursuit for Inspired Research) offered by the Ministry of Science & Technology, Government Of India (2013).
- Awarded the **Senior Research Assistantship under TEQIP Phase II**, University of Calcutta, for pursuing research in the Department of Applied Physics, University of Calcutta.
- **GATE scholarship** for pursuing M.Tech in Instrumentation & Control Engineering (2010-2012)