

**UNIVERSITY OF CALCUTTA**  
**INSTRUMENTATION ENGINEERING, DEPT. OF APPLIED PHYSICS**

**ACADEMIC PROFILE/ CV**

1	<b>Name</b>	<b>Dr. Madhuchhanda Mitra</b>		
2	<b>Present Position</b>	<b>Dean FET (Acting) Professor, Department of Applied Physics, University of Calcutta</b>		
3	<b>Academic Qualifications</b>	<b>Ph. D.(Tech), M. Tech. ( 1<sup>st</sup> Class 1<sup>st</sup>, Gold Medal), B. Tech. ( 1<sup>st</sup> Class), B. Sc. (Hons.) in Physics( 1<sup>st</sup> Class, 1<sup>st</sup> Div.), Gate Qualified</b>		
4	<b>Experience:</b>	<b>Research experience - 31 years Teaching experience- 26 years</b>		
	<b>Area of Research</b>	<b>Biomedical Signal Processing, Instrumentation, Material Science</b>		
6	<b>Publications</b>	<b>International Journal</b>	<b>National Journal</b>	<b>Conferences</b>
	<b>Upto 2009</b>	<b>26</b>	<b>8</b>	<b>59</b>
	<b>2010-2020</b>	<b>82</b>	<b>1</b>	<b>44</b>
	<b>Total</b>	<b>108</b>	<b>09</b>	<b>103</b>
7	<b>Citations</b>	<b>2613</b>		
8	<b>h-index</b>	<b>23</b>		
9	<b>i-10 index</b>	<b>52</b>		
10	<b>Books Published</b>	<b>08</b>		
11	<b>Evidence of Research</b>			
	<b>PhD guidance</b>	<b>Awarded- 10</b>	<b>Registered: 06</b>	
		<b>Submitted : 02</b>	<b>Yet to be registered : 04</b>	
12	<b>R &amp; D Projects</b>	<b>Completed: 03</b>		
13	<b>Administrative Experience</b>	<b>Served as Head of the Department ( 1.4.2012 -31.3.2014)</b>		
		<b>Served as Member of the Syndicate, Calcutta University (2012-2013)</b>		
		<b>Served as Member of the Senate, Calcutta University ( 2012-2014)</b>		
		<b>Acted as Member of the committee to formulate Transfer policy of the University Employees, CU</b>		
		<b>Acted as Member of Faculty Councils of PG studies in Engineering &amp; Technology of Calcutta University from 2003 to 2007</b>		

## List of papers

### International Journal :

### Published Papers :

**2020**

1. D. Sadhukhan, S Dhar, S. Pal, M. Mitra, “Automated Screening of Myocardial Infarction based on Statistical Analysis of Photoplethysmographic data”, IEEE Transactions on Instrumentation and Measurement, Print ISSN: 0018-9456, Online ISSN: 1557-9662, Digital Object Identifier: 10.1109/TIM.2019.2930438, Early access
2. A. Chakraborty, D. Sadhukhan, M. Mitra, “Accurate detection of Dicrotic notch from PPG signal for telemonitoring applications”, International Journal of Biomedical Engineering and Technology (IJBET), (Inderscience Publication) doi:10.1504/IJBET.2018.10022653  
In the press.
3. A. Chakraborty, D. Sadhukhan, S.Pal,M. Mitra, “Automated Myocardial Infarction identification based on interbeat variability analysis of the Photoplethysmographic data” Biomedical Signal Processing and Control, (Elsevier Science publication) , vol. 57 pp. 153-165, 2020
4. B. Halder, S. Mitra, M. Mitra, “Healthcare Automation System by Using Cloud-Based Telemonitoring Technique for Cardiovascular Disease Classification”, International Journal of Web-Based Learning and Teaching Technologies, vol. 15, issue 2, pp 46-63, April 2020
5. A. Chakraborty, D. Sadhukhan, S. Pal, M. Mitra, “PPG based automated estimation of blood pressure using patient specific Neural Network modeling”, Journal of Mechanics in Medicine and Biology, vol. 20 , n0 6 (2020) (25 pages).
6. S Das, S Pal, M Mitra, “Acoustic Feature Based Unsupervised Approach of Heart Sound Event Detection ”, Computers in Biology & Medicine, (Elsevier Science publication) , Accepted for publication.

**2019**

7. S Sarkar, P Bhattacharyya, M Mitra, S Pal, “A novel approach towards non-obstructive detection and classification of COPD using ECG derived respiration”, Australasian physical & engineering sciences in medicine, Springer International Publishing , 2019, pp. 1-14
8. D. Sadhukhan, S. Pal, M. Mitra, “ Adaptive Band Limit Estimation based PPG data compression for portable home monitors”, Measurement,134, 2019 , pp.153-165, (Elsevier Science publication)
9. S Das, S Pal, M Mitra, “Supervised model for Cochleagram feature based fundamental heart sound identification”, Biomedical Signal Processing and Control, 52, 2019 , pp.32-40, (Elsevier Science publication)

10. A. Chakraborty, D. Sadhukhan, M. Mitra , “An Automated Algorithm to Extract Time Plane Features From the PPG Signal and its Derivatives for Personal Health Monitoring Application”, IETE Journal of Research, 2019, pp-1-14 (Taylor & Francis publication)
11. B Halder, S Mitra, M Mitra ,”Classification of Complete Myocardial Infarction Using Rule-Based Rough Set Method and Rough Set Explorer System”, IETE Journal of Research, 2019, pp-1-11 (Taylor & Francis publication)
12. B Halder, S Mitra, M Mitra,”Development of Cardiac Disease Classifier Using Rough Set Decision System”, Emerging Technologies in Data Mining and Information Security (Book), 2019, pp.- 775-785, (Springer, Singapore publication)

## 2018

13. 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. 67, no10, pp. 2303-2313. 2018
14. S Dhar, SK Mukhopadhyay, S Pal, M Mitra, “An efficient data compression and encryption technique for PPG signal”, Measurement,116, 2018 , pp.533-542, (February, 2018) (Elsevier Science publication)
15. R. Paul, M. Mitra, S. Ghatak, B. Chatterjee, J. Pal, and S. Chakrabarti, “Accumulation Layers and Their Screening Lengths”, Materials Focus, Vol. 7, pp. 1–15, 2018
16. Chatterjee, M. Mitra, J. Pal, and M. Debbarma, “Cross-Fields, Opto-Electronic Materials, Intense Light Waves and the Screening Length”, Materials Focus, Vol. 7, pp. 1–7, 2018
17. B.Haldar, S.Mitra, M.Mitra, “Automatic feature extraction of ECG signal based on adaptive window dependent differential histogram approach and validation with CSE database”, Int. J. Computational Systems Engineering, Vol. 4, Nos. 2/3, 2018, pp. 146-155

## 2017

18. S Chakraborty, M Mitra, S Pal,”Biometric Analysis using Fused Feature Set from Side Face Texture and Electrocardiogram”, IET Science, Measurement & Technology , volume :11, issue :2, pp. 226-233, march 2017
19. M.Sahoo, S.Pal, M.Mitra, “Automatic segmentation of accumulated fluid inside the retinal layers from optical coherence tomography images”, Measurement,101, 2017 , pp.138-144 (April, 2017) (Elsevier Science publication)
20. K.P Ghatak B Chatterjee, N Debbarma, M Mitra, T Datta, “The Two Dimensional Magneto Thermo Power in Ultra Thin Films Under Intense Electric Field”, Journal of Nanoscience and Nanotechnology, volume :17, issue :5, pp. 3352-3364 (May 2017)
21. M Mitra, TN Sen, T Datta, R Bhattacharjee, LS Singh, KP Ghatak, “Heisenberg’s Uncertainty Principle, Intense Electric Field, Heavily Doped Optoelectronic Quantized Structures and the Electron Statistics”, Journal of Nanoscience and Nanotechnology , Volume; 17, Issue: 1, Pages: 256-269, 2017

22. S Das, S Pal, M Mitra, "Arduino based noise robust online heart-rate detection" , Journal of Medical Engineering & Technology , volume : 41, no. 3,, pp.170-178, 2017
23. U Maji, M Mitra, S Pal, "Characterization of cardiac arrhythmias by variational mode decomposition techniqu", Biocybernetics and Biomedical Engineering, 37 ( 2 017 ) , pp. 578-589

#### **2016**

24. S Das, S Pal, M Mitra, "Significance of Exhaled Breath Test in Clinical Diagnosis: A Special Focus on the Detection of Diabetes Mellitus", Journal of Medical and Biological Engineering 36 (5), 605-624, 2016
25. S Pal, U Maji, M Mitra, "Characterizing Atrial Fibrillation in Empirical Mode Decomposition Domain", Journal of Medical and Biological Engineering 36 (5), 693-703, 2016
26. B Chatterjee, S Chakrabarti, SK Sen, M Mitra, KP Ghatak," Influence of Parallel Electric and Magnetic Fields on the Carrier Contribution to the Elastic Constants in Kane Type Semiconductors", Quantum Matter 5 (1), 85-98,2016
27. U Maji, M Mitra, S Pal, "Imposed Target based Modification of Taguchi Method for Feature Optimisation with Application in Arrhythmia Beat Detection", Expert Systems with Applications, (Elsevier, ISSN: 0957-4174), vol. 56 pp. 268–281, 2016.
28. M. Mitra, M. Chakraborty, S. Debbarma, S. Chakraborty, S. K. Sen, B. Chatterjee, K. P. Ghatak, "On the Carrier Contribution to the Elastic Constants in Ultra-Thin Films of III–V and Optoelectronic Materials in the Presence of Intense Electric Field", Quantum Matter 5 (1), 58-70, 2016
29. SK Biswas, M Mitra, KP Ghatak, "Thermo Power, Large Magnetic Field, Quantized Structures and All That", Journal of Nanoengineering and Nanomanufacturing, 6(1), pp. 63-85,2016

#### **2015**

30. H. K. Chatterjee, M. Mitra and R. Gupta, "Real–time detection of electrocardiogram wave features using template matching and implementation in FPGA", Int. J. Biomedical Engineering and Technology, Vol. 17, No. 3, pp. 290-313 2015
31. M. Mitra, B. Chatterjee and K.P.Ghatak, "2d Einstein Relation In Quantum Wells Under Strong Electric Field" , Journal of computational and Theoretical nanoscience, Vol. 12, pp. 1527-1539, 2015
32. M Mitra, S Chakrabarti, M Chakraborty, S Debbarma, KP Ghatak,"2D Screening Length in Ultrathin Films Under Intense Electric Field", Journal of Computational and Theoretical Nanoscience 12 (8), 1898-1910, 2015
33. U Maji, S Pal, M Mitra, "Study of atrial activities for abnormality detection by phase rectified signal averaging technique", Journal of medical engineering & technology 39 (5), 291-302,2015

34. D Sadhukhan, S Pal, M Mitra, "Electrocardiogram data compression using adaptive bit encoding of the discrete Fourier transforms coefficients", IET Science, Measurement & Technology, 2015
35. SK Mukhopadhyay, S Mitra, M Mitra, "A combined application of lossless and lossy compression in ECG processing and transmission via GSM-based SMS", Journal of medical engineering & technology 39 (2), 105-122, 2015

## 2014

36. Swati Banerjee, M. Mitra, "Application of Cross Wavelet Transform for ECG pattern analysis and classification", IEEE Transactions on Instrumentation and Measurement Vol. . 63, NO. 2, February 2014 Page(s): 326 - 333 , ISSN : 0018-9456 , Digital Object Identifier : 10.1109/TIM.2013.2279001
37. R. Gupta and M.Mitra, "Wireless Electrocardiogram transmission in ISM band: an approach towards telecardiology", Journal of Medical Systems (Springer), Vol. . 38, Issue 10, Page(s): 1-14, 2014
38. S.Karmakar, S Chattopadhyay, M Mitra, S Sengupta , "Turn-to-turn fault diagnosis of an Induction motor by the analysis of Transient and Steady state Stator current", Innovative Systems Design and Engineering Vol. . 5, Issue 2, Page(s) 65-74, 2014.
39. SK Ahamed, A Sarkar, M Mitra, S Sengupta, "DSP implementation of a novel envelope analysis approach for the diagnosis of broken rotor bar in induction motor", International Journal of Modelling, Identification and Control 22 (3), 275-284, 2014
40. SK Ahamed, A Sarkar, M Mitra, S Sengupta, "Induction Machine Stator Inter-Turn Short Circuit Fault Detection using Discrete Wavelet Transform", Innovative Systems Design and Engineering Vol. . 5, Issue 1, Page(s)75-82, 2014
41. Deboleena Sadhukhan, Rohit Mitra, Avik Kundu, M. Mitra, "Development of a Low Cost ECG DataAcquisition Module", International Journal of Innovative Research in Science, Engineering and Technology, vol.3 ,sp. Issue 2, February 2014, pp. 1-9
42. S. K. Mukhopadhyay, S.Mitra and M.Mitra, "A Combined Application of Lossless and Lossy compression in ECG Processing and Transmission via GSM based SMS", Journal of Medical Engineering and Technology (Informa Healthcare), ISSN: 0309-1902 (print), 1464-522X (electronic), DOI: 10.3109/03091902.2014.990159, Early Online: 1–18

## 2013

43. H. K. Chatterjee, R. Gupta, and M. Mitra , " An approach to determine the amplitude features from ECG records", Int. J. Biomedical Engineering and Technology, Vol. 12, No. 2, 2013
44. S. K. Mukhopadhyay, **M.Mitra**, S.Mitra, "ECG Data Compression via ASCII Character Encoding and Feature Extraction Using Hilbert Transform based Approach", Consumer Electronic Times, (World Academic Publishing), Vol. 2 Issue 1, PP. 56-67, Jan. 2013
45. S. K. Mukhopadhyay, S.Mitra, M.Mitra, "ECG Signal Compression Using ASCII Character Encoding and Transmission via SMS", Biomedical Signal Processing and Control , 8 (2013) pp. 354– 363 (Elsevier Science Publication).
46. S. Banerjee, M. Mitra , " ECG beat classification based on Discrete wavelet transformation and nearest neighbour classifier", TMET Journal of Medical Engineering and Technology May

2013, Vol. 37, No. 4, pp. 264-272

47. S. K. Mukhopadhyay, S. Ghosh, S. Chakraborty M.Mitra and S.Mitra, "Lossless Electrocardiogram Compression Technique And Gsm Based Tele-Cardiology Application", International Journal On Smart Sensing And Intelligent Systems Vol. 6, No. 3, Pp. 888-909, June 2013
48. U Maji, M Mitra, S Pal, "Automatic Detection of Atrial Fibrillation Using Empirical Mode Decomposition and Statistical Approach", Procedia Technology Volume 10, pages 45-52, 2013

## 2012

49. S, Pal, **M. Mitra**, "Detection of Cardiac Arrhythmic Beats by Logical Classifier using Binary Coding", IET Science Measurement and Technology ,6 (6) , pp. 449-455, 2012
50. S. K. Mukhopadhyay, **M.Mitra**, S.Mitra, "ECG Feature Extraction Using Differentiation, Hilbert Transform, Variable Threshold and Slope Reversal Approach", Journal of Medical Engineering and Technology 36 (7) , pp. 358-365, 2012.
51. **M.Mitra**, J.N.Bera, R.Gupta, "Electrocardiogram compression technique for global system of mobile-based offline telecardiology application for rural clinics in India", IET Science, Measurement and Technology 6 (6) , pp. 412-419, 2012
52. S. K. Ahamed, A. Sarkar, **M. Mitra**, S. Sengupta "Detection of induction motor broken bar fault through envelope analysis using start-up Current" C3IT-2012 , ELSEVIER Procedia Technology 4, pp. 646-651, 2012
53. S. K. Mukhopadhyay, **M.Mitra**, S.Mitra, "QRS Complex Identification Using Hilbert Transform, Variable Threshold and Slope Reversal Approach", International Journal of Biomedical Engineering and Technology (IJBET), (Inderscience Publication), pp-301-315, Vol. 9, No. 4, 2012, DOI: 10.1504/IJBET.2012.049215.
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55. S. Chattopadhyay, S. Karmakar, **M. Mitra**, and S. Sengupta, "Assessment of crawling of an induction motor by stator current Concordia analysis", Electron. Lett, Volume 48, Issue 14, p.841-842 , 5 July 2012
56. S. Pal, **M. Mitra**, "Increasing the accuracy of ECG based biometric analysis by data modelling", Measurement, 45 (7), 2012 , pp.1927-1932 (August 2012) (Elsevier Science publication)
57. R. Gupta, J.N. Bera, **M. Mitra** ,"A Bi-Phase Enabled Serial Acquisition System for Remote Processing of Digitized ECG" Computers & Electrical Engineering, 38, PP. 68-74, (2012) (Elsevier Science publication)
58. Saurabh Pal, **Madhuchhanda Mitra**, "Empirical Mode Decomposition based ECG enhancement and QRS Detection", Computers in Biology and Medicine, vol.42, issue 1, pp.83-92, January 2012 (ELSEVIER science publication).

59. S. Banerjee, R. Gupta, **M. Mitra** , ” Delineation of ECG characteristic features using multiresolution wavelet analysis method”, Measurement, 45(3) , pp. 474–487, 2012 (Elsevier Science publication) .
60. S.K. Mukhopadhyay, S. Mitra, **M. Mitra**, “An ECG Signal Compression Technique Using ASCII Character Encoding” , Measurement, 45 (6), pp. 1651-1660 , 2012 (Elsevier Science publication) .
61. D. Sadhukhan and **M. Mitra**, “R-peak detection algorithm for ECG using double difference and RR interval processing” C3IT-2012 , ELSEVIER Procedia Technology 4, pp. 873-877 ,2012
62. S Chattopadhyay, S Karmakar, **M Mitra**, S Sengupta, “Symmetrical Components and Current Concordia based Assessment of Single Phasing of an Induction Motor by Feature Pattern Extraction Method and Radar Analysis”, International Journal of Electrical Power and Energy Systems 37 (1) , pp. 43–49, 2012 (Elsevier Science publication)
63. H. K. Chatterjee, R. Gupta, and **M. Mitra**, “Real time P and T wave detection from ECG using FPGA” C3IT-2012 , ELSEVIER Procedia Technology 4, pp. 840-844 ,2012
64. R.Gupta, H.K.Chatterjee, M.Mitra, “An online ECG QRS detection technique”, International Journal of Recent Trends in Engineering & Technology Vol. 7, No. 2, March 2012, pp. 1-5, [ISSN 2158-5563 (Online)].
65. S. K. Mukhopadhyay, M.Mitra, S.Mitra, “ECG Compression Technique Using ASCII Character Encoding and Transmission Using SMS System”, International Journal of Electrical, Electronics and Computer Engineering 1(2): 2012, Special Edition for Best Papers of Michael Faraday IET India Summit-2012, MFIIS-12, ISSN No. (Online) : 2277-2626, pp. 88-92
66. Swati Banerjee, M. Mitra, “Cross Wavelet Transform based analysis of Electrocardiogram Signals”, International Journal of Electrical, Electronics and Computer Engineering 1(2): 2012, Special Edition for Best Papers of Michael Faraday IET India Summit-2012, MFIIS-12, ISSN No. (Online) : 2277-2626, pp. 88-92
67. A Chattopadhyay, S Chattopadhyay, M. Mitra and S Sengupta “Wavelet Analysis for Assessment of Crawling of an Induction Motor in Clarke Plane”, International Journal of Electrical, Electronics and Computer Engineering 1(2): 2012, Special Edition for Best Papers of Michael Faraday IET India Summit-2012, MFIIS-12, ISSN No. (Online) : 2277-2626, pp 71-76
68. S Chattopadhyay, S Karmakar, M Mitra, S Sengupta “Radar Analysis of Stator Current Concordia for Diagnosis of Unbalance in Mass and Cracks in rotor bar of an Squirrel Cage Induction Motor.” International Journal on Modeling, Measurement and Control of General Physics and Electrical Applications, AMSE, Series -A, 2012.
69. S. K. Ahamed, A. Sarkar, M. Mitra, S. Sengupta “Identification of Mass-unbalance in Rotor of an Induction Motor through Envelope analysis of Motor starting current at no load”, Journal of Engineering Science and Technology Review 5(1) (2012) 83-89.
70. S.Das, R.Gupta and M. Mitra “Development of an Analog ECG Simulator using Standalone Embedded System”, International Journal of Electrical, Electronics and Computer Engineering 1(2): 2012, ISSN No. (Online) : 2277-2626, pp 83-87, 2012

71. H.K. Chatterjee, R. Gupta, M. Mitra, "A Statistical Approach For Determination Of Time Plane Features From Digitized ECG", *Computers in Biology and Medicine*, 41 (2011), pp. 278–284 (Elsevier Science publication).
72. S. K. Ahamed, A. Sarkar, M. Mitra, S. Sengupta "Diagnosis of Broken Rotor Bar Fault of Induction Motor through Envelope Analysis of Motor Startup Current using Hilbert and Wavelet Transform", *Innovative Systems Design and Engineering*, Vol. 2, no.4, 2011, pp 163-176.
73. S.K. Mukhopadhyay, S. Mitra, M. Mitra, " A Lossless ECG Data Compression Technique Using ASCII Character Encoding, *Computers & Electrical Engineering*, 486–497, Volume 37 , Issue 4, July 2011, Elsevier Science publication.
74. S.K. Ahamed, S. Karmakar , A.Sarkar, **M.Mitra**& S. Sengupta, " Diagnosis of Broken Rotor Bar Fault of Induction Motor through Envelope Analysis of Motor Startup Current using Hilbert and Wavelet Transform", *Innovative Systems Design and Engineering* , Vol 2, No 4, pp. 163-176, 2011
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76. S Chattopadhyay, S Karmakar, M Mitra, S Sengupta " Loss of phase fault detection of an induction motor" *International Journal on Modeling, Measurement and Control of General Physics and Electrical Applications*, AMSE, Series -A, 2011.

## 2010

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78. S.K. Ahamed, S. Karmakar , **M.Mitra**&S. Sengupta , "Diagnosis of Induction Motor Faults due to Broken Rotor bar and Rotor Mass Unbalance through Discrete Wavelet Transform of Starting Current at No-Load" *Journal of Electrical System*,Vol Volume 6, Issue 3, September 2010
79. R.Gupta, J.N.Bera, ,**M.Mitra**, " Remote ECG acquisition: Towards Distributed Healthcare.", Accepted in *International Journal of Recent Trends in Engineering* (Academy Publishers, Finland), Vol. 4, No. 1, pp. 24-28, November 2010 [ISSN 2158-5563].
80. S. Banerjee, M. Mitra, "ECG Signal Denoising and QRS Complex Detection by Wavelet Transform Based Thresholding.", *Sensors & Transducers Journal*, Vol. 119, Issue 8, pp. 207-214, , August 2010
81. S.Pal, M. Mitra, "Detection of Premature Ventricular Contraction Beats using ANN", *International Journal of Recent Trends in Engineering* [ISSN 1797-9617], Volume 3 No. 4, Pg. 1-3, May 2010.
82. S.Pal , M. Mitra , "Detection of ECG characteristic points using Multiresolution Wavelet Analysis based Selective Coefficient Method" , *Measurement* 43, pp 255–261 (2010) (Elsevier Science Publication)



## 2009

83. S. Mitra, **M.Mitra**& B.B. Chaudhuri, "Pattern Defined Heuristic Rules and Directional Histogram Based Online ECG Parameter Extraction", , Measurement 42, pp 150-156 , 2009 (Elsevier Science Publication).

## 2008

84. S. Mitra, **M.Mitra**& B.B. Chaudhuri "A Rough set Based Approach for ECG Classification", Transaction on Rough Sets IX, LNCS 5390, pp 157-186, 2008 (Springer Publication). (30 pages)
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86. S. Mitra, **M.Mitra**& B.B. Chaudhuri, "A rough set based approach for ECG classification", Lecture Notes in Computer Science 5390 LNCS , pp. 157-186, 2008
87. S. Chattopadhyay, M. Mitra, and S. Sengupta, "Area Based Approach in Power Quality Assessment", International Journal of Power Management Electronics, vol. 2008, Article ID 147359, 6 pages, 2008..
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## 2007

89. S. Chattopadhyay, M. Mitra, and S. Sengupta, "Harmonic Analysis in a Three-Phase System using Park Transformation Technique", Modelling, Measurement and Control A80 (3-4) , pp. 42-57, 2007
90. S. Mitra, M. Mitra, B. B. Chaudhuri, "Computation of QRS Vector of ECG Signal for Observation of It's Clinical Significance", Pattern Recognition and Machine Intelligence, Lecture Notes in Computer Science Volume 4815, pp 439-446, 2007.

## 2006

91. Sucharita Mitra, **M.Mitra**& B.B. Chaudhuri, "A Rough Set Based Inference Engine for ECG Classification" IEEE Transactions on Instrumentation and Measurement , Vol. 55, No. 6, pp. 218-2206, December 2006
92. S. Mitra, **M.Mitra**& B.B. Chaudhuri, "An Approach to a Rough set Based Disease Inference Engine for ECG Classification", Lecture Notes in Computer Science 4259 LNAI , pp. 398-407 2006
93. Surajit Chattopadhyay, **Madhuchhanda Mitra**, and Samarjit Sengupta, "Power quality analysis in park plane", Lectures on Modeling and Simulation, AMSE, Vol. 7, Issue – 1, No.-1-2-3, pp. 8-15, 2006.

## 2005

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#### 2004

95. Surajit Chattopadhyay, Madhuchhanda Mitra, and Samarjit Sengupta, "Intelligent Power Quality Monitoring in an Electric Power System", Best of 2004-volume on Modeling and Simulation, AMSE (France), pp. 18-22, 2004.
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#### 2003

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#### 1996

99. **M.Mitra**, B.Nag & T.K.Mitra, "A digital filter for cardiac disease identification." Medical Science Research (UK), Vol/Issue 24/6, p. 371-373, June 1996.
100. K.P.Ghatak, B Goswami, **M.Mitra** and B.Nag, "A simple theoretical analysis of the Einstein relation in non-linear optical compounds in the presence of crossed electric and quantizing magnetic fields, Molecular Crystals and Liquid Crystals Science and Technology Section B: Nonlinear Optics, vol.16, p. 30-45 (1996).
101. K.P.Ghatak, J.P.Banerjee, **M.Mitra** and B.Nag "On the Einstein relation for the diffusivity mobility ratio in n-channel inversion layers on non-linear optical materials in the presence of a parallel magnetic field : theory and suggestion of experimental determination." Molecular Crystals and Liquid Crystals Science and Technology Section B: Nonlinear Optics, vol.16, p. 25-40 (1996),
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#### 1995

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105. **M.Mitra**, T.K.Mitra and B.Nag, "Design of real time software filters for electrocardiographic signal.", Advances in Modelling & Analysis (France), B, vol.32, no.4, , pp 59-63, 1995

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107. **M.Mitra**, T.K.Mitra & B.Nag , "Design of real time software digital filters." AMSE periodicals in Advances in modelling & Analysis,B (France), vol.30 , no.3, 1994 , pp. 57-64

#### 1993

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25. S.Mitra, **M.Mitra**& B.B.Chaudhuri, “ A simple tele-cardiology system for ECG-data transmission and abnormality detection”, Proc.West Bengal state science & Technology Congress, 28-29 February 2004, pp.69
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28. **M.Mitra**, B.Nag, B.Goswami and D.K.Basu, “Application of Digital Filter for Heart Disease Identification .” Proceedings of Second West Bengal Science Congress, Calcutta, India 28th February-2nd March 1995.
29. B.Goswami, **M.Mitra**, D.K.Basu and D.Basu, “Simulation of the impedance part of the heart model by computer .” Proceedings of Second West Bengal Science Congress, Calcutta, India 28th February- 2nd March 1995.
30. **M.Mitra**, B.Nag, B.Goswami & T.K.Mitra, “A CADD based package and its application.”, Presented in State Science Congress (W.B.) on 28.2.94
31. **M.Mitra**, T.K.Mitra, S.K.Basu, D.K.Basu, B.Goswami & B.Nag. “A CADD based instrumentation package for pattern capture, database generation & processing. “, Proceedings of All India conference on Applied Instrumentation, organised by the Institute of Engineers,Roorkee local centre ,held on Feb.14-15 1992 , at Roorkee.
32. **M.Mitra**, B.Goswami & T.K.Mitra ,” Design of microprocessor based Recursive digital filter.” Presented in symposium on Electronics in Process control & Instrumentation at Calcutta 31st march & 1st april 1990, organised by the Institution of Electronics & Telecommunication Engineers, Calcutta Centre.
33. **M.Mitra**, A.K.Mukhopadhyay & D.Basu, “Microprocessor based on line frequency monitoring and system protection beyond permissible limit.” Proceedings of All India seminar on Recent Development in Electrical Standards and Standardisation, at Calcutta, Jan. 30-31 1988. Organised by Electrical Engg Div. West Bengal State Centre, The Institution of Engineers (India).

## List of Books

### International Book : 7

1. Nanomaterials, Volume 1: Electronic Properties, De Gruyter, ISBN 978-3-11-060922-6, e-ISBN (PDF) 978-3-11-061081-9, e-ISBN (EPUB) 978-3-11-060935-6, 364 p, 2019

2. Nanomaterials, Volume 2: Quantization and Entropy, De Gruyter, ISBN 9783110661194, DOI: 10.1515/9783110661194, 450 pages, 6<sup>th</sup> April 2020.

3. “Induction Motor Fault Diagnosis, Approach through Current Signature Analysis” Series: Power Systems , Springer, 104 p., Hardcover, ISBN 978-981-10-0623-4

4. “ECG Acquisition and Automated Remote Processing” Springer, 131 p., Hardcover, ISBN: 978-81-322-1556-1 (Print) 978-81-322-1557-8 (Online)

5. “Electric Power Quality “, Series: Power Systems , Springer, 300 p., Hardcover, ISBN: 978-94-007-0634-7

6. International Edition of “Programmable Logic Controllers And Industrial Automation: An Introduction ISBN: 81-87972-21-1 , Penram International, Mumbai, 2005

7 Time Plane, Feature Extraction of ECG wave and Abnormality Detection: With MATLAB program Paperback – January 11, 2012, Lambert Academic Publishings (LAP) , Gemany, ISBN-13: 978-3-847339779, ISBN-10: 384733977X, EAN: 9783847339779

**Book Chapter :**

Quantum Dots and Quantum Cellular Automata: Recent Trends and Applications From Nova Science Publishers, Inc (USA).

**Chapter 1.** On The Einstein’s Photoemission from Quantum Dots and Quantum Dot Super Lattices of Non Parabolic Semiconductors: Simplified Theory and Relative Comparison - M. Mitra et al

**Chapter 2.** Influence of Microwaves on the Photoemission from Quantum Dots and Quantum Dot Super Lattices of Opto-Electronic Materials - M. Mitra et al

**Chapter 3.** Seebeck Coefficient in Quantum Dots and Quantum Dot Super Lattices of Heavily Doped Semiconductors under Large Magnetic Field - M. Mitra et al

**National level book :1**

. “Programmable Logic Controllers And Industrial Automation: An Introduction ( For Graduate, Postgraduate levels of engineering, Researchers and Practicing Engineers ) ISBN: 81-87972-17-3 , Penram International, Mumbai, 2005

Research Projects Carried Out				
SI No.	Title of the project	Name of	Duration	Status

		the Funding agency		Completed/ongoing
1	Modernisation of process control and instrumentation laboratory	AICTE	1998-2000	Completed
2	Design and development of a multipurpose solar still	DST (West Bengal)	1996-1998	Completed
3	FIST Program 2009	DST	2010-2015	Completed

### Evidence of Research

#### Ph. D. awarded

Sl. No.	Title of Thesis	Name of candidate	Affiliation	Name(s) of Supervisor(s)	Year of Award
1	Biomedical signal extraction and processing for digital time database generation and abnormality detection	Sucharita Sarkar (Mitra)	Assistant Professor Department of Electronics, Netaji Nagar Day College	Dr. M. Mitra	2005
2	Electric Power Quality in Power System	Surajit Chattopadhyay	Associate Professor Electrical Engg. Dept. MCKV Institute of Engg	Prof. S. Sengupta Dr. M. Mitra	2010
3	An approach to Develop A method for Automated Remote Monitoring & Analysis of ECG using Smart Wireless telecardiology System	Rajarshi Gupta	Faculty of the Department	Dr. M.Mitra Dr. J.N.Bera	2012
4	Investigation on classification of electrocardiogram signals	Saurabh Pal	Faculty of the Department	Dr. M.Mitra	2013

	using time frequency model based feature extraction and pattern recognition by artificial intelligence technique for disease identification and biometric analysis				
5	Application of soft computing techniques for analysis and classification of biomedical signals.	Swati Banerjee	Research Scholar	Dr. M. Mitra	2014
6	An Approach to Develop a Remote Tele-cardiology System for Compression, Transmission and Analysis of ECG Signal	Saurav Mukhopadhyay	Research Scholar	Dr. M. Mitra	2015
7	Induction Motor Fault Detection through Soft Computing Techniques	Subrata Karmakar	Assistant Secretary UCSTA, University of Calcutta	Dr. M. Mitra Prof. S. Sengupta	2015
8	ECG Feature Extraction and Signal Processing using Standalone Embedded Systems	Harekrishna Chattopadhyay	Assistant Professor UEM	Dr. M. Mitra Mr. R.Gupta	2016
9	Power System Fault Analysis through Soft Computing Techniques	Syed Kamaluddin Ahmed	Associate Professor Govt. college of Engg. & Textile Technology	Dr. M. Mitra Prof. S. Sengupta	2017
10	Characterization and Classification of Cardiac Episodes using Data Adaptive Techniques	Uday Maji	Assistant Professor Haldia Inst. Of Tech., WBUT	Dr. S. Pal, Dr. M. Mitra	2018

#### Ph. D. registered

Sl. No.	Title of Thesis	Name of candidate	Affiliation	Name(s) of Supervisor(s)
1	Investigation on classification of some biomedical signals using feature extraction and pattern recognition criteria	Jaita Dutta	Assistant Professor & Head Guru Nanak Institute of Technology	Dr. M.Mitra
2	Compression and Analysis of Cardiac Signals (Thesis submitted)	Debolina Sadhukhan	Dst-Inspire Fellowship Dept. Of Applied Physics	Dr. M.Mitra, Dr.S.Pal

3	Studies on Multimodal Biometric Analysis for Personalized Authentication	Samik Chakraborty	Assistant Professor Heritage Inst. Of Tech., WBUT	Dr. S. Pal, Dr. M. Mitra
4	An Investigation on Volatile Organic Compound based gas analysis and its application	Souvik Das	Assistant Professor JIS Kalyani	Dr. M.Mitra, Dr.S.Pal
5	Application of soft computing techniques for compression, analysis and classification of cardiac signals (Thesis submitted)	Basudev Halder	Neotia Institute of Technology Management and Science	Dr. M.Mitra, Dr.S.Mitra
6	Assistive technologies for automated cardiac abnormalities detection	Sangita Das	CSIR project fellow	Dr. M.Mitra, Dr.S.Pal
7	Acquisition, processing and analysis of some biomedical signal	Abhishek Chakraborty	Research Scholar	Dr. M.Mitra
8	Bio-signal acquisition, compression, encryption and classification	Sandipan Dhar	TEQIP project fellow	Dr. M.Mitra, Dr.S.Pal
9	Study of Optical Coherence Tomography Images for analysis of Eye conditions	Moumita Sahoo	Assistant Professor Haldia Inst. Of Tech., WBUT	Dr. S. Pal, Dr. M. Mitra
10	Studies on Signal based alternative methodologies for characterization of obstructive lung diseases	Surita Sarkar	CSIR project fellow	Dr. S. Pal, Dr. M. Mitra