

**Prof. (Mrs.) M.R. Rane**

**Name of Teaching Staff:** Dr. (Mrs.) Mrunal Rupesh Rane

**Designation:** Assistant Professor

**Department:** Biomedical Engineering

**Date of Joining the Institution:** 26.7.2002

**Qualifications with Class / Grade:**

1. Ph.D. (Technology), January 2018, IIT Bombay
2. M.Tech. (Biomedical Engineering), July 2009, IIT Bombay, CPI: 9.81
3. B.E. (Biomedical Engg.), June 1997, (First Class with Honours), University of Mumbai.

**Total Experience in Years:**

Teaching: **22 Years**

1. Member, **Board of Studies (Biomedical Engineering)**, University of Mumbai (2019-2022).
2. Assistant Professor in D.J.Sanghvi College of Engineering from April 2006 till date.
3. Senior Scale Lecturer in D.J.Sanghvi College of Engineering from October 2004 till March 2006.
4. Lecturer in D.J.Sanghvi College of Engineering from July 2002 till October 2004.
5. Lecturer in Thadomal Shahani Engineering College from January 2000 to July 2002.
6. Lecturer in MGM's College of Engineering and Technology from August 1998 to December 2000.

**Papers Published:**

International:

1. Rane, M., & Manchanda, R. (2017). Effects of location and extent of spine clustering on synaptic integration in striatal medium spiny neurons—a computational study. *Medical & biological engineering & computing*, 1-15. <https://doi.org/10.1007/s11517-017-1760-5>.
2. Rane M, Manchanda R (2017) Effect of Spine Density on Excitability in Accumbal Medium Spiny Neurons-A Computational Approach. *J Addict Res Ther* 8:337. DOI:10.4172/2155-6105.1000337.



3. Ankita Harmalkar, Shrutika Pradhan Vedashree, Rawalgaonkar Mrunal Rane, Mayur Sadawana and Rohit Srivastava, (2015). "Creatinine and Albumin Electronic Reader", IICA Proceedings on International Conference on Computer Technology, ICCT 2015(2):23-27, (0975-8887).
4. Subramanian, Kavya & Thaker, Jigna & Savla, Parita & Rane, Mrunal. (2015), "Smart solar ECG", Proceedings of the International Conference on Electrical, Electronics, Signals, Communication and Optimization (EESCO)", 1-5, ISBN: 978-1-4799-7676-8, DOI: 10.1109/EESCO.2015.7253662.
5. Rane, M., & Manchanda, R. (2015). Computational Investigation of Effects of Spines and AMPA Receptor Desensitization in Temporal Integration in Striatal Medium Spiny Neurons. International Journal Of Public Mental Health And Neurosciences, ISSN No.2394-4668
6. Dedhia, P., Doshi, H., & Rane, M. (2012). Low Powered Solar ECG with ZigBee Based Bio-Telemetry. Journal of Technology Innovations in Renewable Energy, 1(1), 23-29. DOI: <http://dx.doi.org/10.6000/1929-6002.2012.01.01.3>.

#### National:

1. Abhijit Sapre, Anirudh Unni, Mrunal Rane, (2011), "Computational Investigation of Role of Inactivating KIR in Synaptic Integration in Striatal Medium Spiny Neurons", Technofocus (ISSN 2229-662X), Volume 1, Issue 2, March 2011.

#### Papers Presented in Conferences:

##### International:

1. Presented a paper, "Processing Based Methodology for Determination of Sperm Count and Vitality in Semen Sample", at International Conference on Inventive Computation Technologies (ICICT), IEEE, and (February 2020). DOI: <https://ieeexplore.ieee.org/abstract/document/9112416/>
2. Parikh S, Vora S., Rane M., (2017), "ADHD Assist System" National Conference and Technology Exhibition "Indian Medical Devices and Plastics Disposables/Implants Industry 2017", Ahmedabad (17th & 18<sup>th</sup> March, 2017).
3. Rane, M., & Manchanda, R. (2014). Computational Investigation of Effects of Spines and AMPA Receptor Desensitization in Temporal Integration in Striatal Medium Spiny Neurons. International Conference Of Public Mental Health And Neurosciences,
4. M. Rane, A. Shah, S. Sheth and R. Manchanda, (2012). "Computational investigation of effects of UP state on EPSP in striatal Medium Spiny Neurons," International Conference on Biomedical Engineering (ICoBE), Penang.

5. Rane M., Manchanda R., (2010) "Computational Investigation of Effects of AMPA Receptor Desensitization on Synaptic Integration in Striatal Medium Spiny Neurons", Proceedings of International Conference BEAT 2010. (Biomedical Engineering and Assistive Technologies - BEATS 2010 at NIT, Jalandhar).
6. Parab, V., & Manchanda, R. (2009). "Computational investigation of role of active conductances in information processing in striatal medium spiny neurons". In World Congress on Medical Physics and Biomedical Engineering, September 7-12, 2009, Munich, Germany (pp. 891-894). Springer, Berlin, Heidelberg. DOI: 10.1007/978-3-642-03882-2\_238.
7. Parab, V., & Manchanda, R. (2009). "Computational Investigation of Role of Active Conductances in Information Processing in Striatal Medium Spiny Neurons" at the International Symposium on Emerging Areas in Bioscience and Bioengineering, organized by SBB, IIT Bombay.
8. Parab, V., & Manchanda, R. (2008). "Computational Investigation of Role of Inward Rectifying Potassium Currents in Temporal Summation of EPSPs in Striatal Medium Spiny Neurons", International conference IAN'08, Cochin.

#### **STTP/Workshops/Conferences:**

1. AICTE-ISTE approved one week STTP on "Adaptive Signal Processing: The Road to Machine Learning", organized by Department of Electronics and Telecommunication Engineering, D.J.Sanghvi College of Engineering, from 7<sup>th</sup> January to 11<sup>th</sup> January 2020.
2. AICTE sponsored two weeks FDP on "Machine Learning and Data Analytics", organized by Department of Electronics and Telecommunication Engineering, Vishwakarma Institute of Technology, Pune, from 9<sup>th</sup> December to 20<sup>th</sup> December 2019.
3. AICTE-ISTE approved one week STTP on "Insights of Machine Learning and Deep Learning" organized by D.J.Sanghvi College of Engineering and Computer, in July 2018.
4. Workshop on "Computational Brain Research" at IIT Madras, from 3<sup>rd</sup> January to 7<sup>th</sup> January 2017.
5. Summer School, "Computational Approaches to Memory and Plasticity, CAMP 2015, at NCBS Bangalore from 13<sup>th</sup> June to 27<sup>th</sup> July 2015.
6. Workshop, "Hippocampus: From Synapses to Behaviour", at IISER Pune, from 1<sup>st</sup> Dec to 3<sup>rd</sup> Dec 13.
7. A One-Week Hands on Faculty Development Program on Analog Systems Design & MSP 430 Development tools under the auspices of TEQIP, jointly organized by Texas Instruments University Program and Cranes Software, from 26<sup>th</sup> -30<sup>th</sup> November 2012, at College of Engineering, Pune.
8. Seminar "MATLAB & Simulink for Engineering Education" organized by MathWorks India on 7<sup>th</sup> September 2012.
9. ISTE approved STTP on "Upcoming Trends in Biomedical Engineering" organized by Watumull Institute of Electronics Engineering and Computer Technology, in July 2011.

10. Workshop on Principles, Operation and Preventive Maintenance of Ventilators”, conducted by Western Regional Instrumentation Centre (WRIC),Mumbai and Maquet Medical India Pvt. Ltd., in March 2011
11. International conference “Biomedical Engineering and Assistive Technologies BEATS 2010” at NIT, in December 2010.
12. Asia Pacific Competition “Present Around The World”, organized by AET, at Pune in July 2010.
13. Two weeks SDP on “Practical Approach to Biomedical Instrumentation” sponsored by AICTE at M. S. Ramaiah Institute of Technology, Bangalore, in January 2010.
14. An International conference, “World Congress 2009-Medical Physics and Biomedical Engineering” at Munich, Germany, in September 2009.
15. STTP on “Software Tools in Electronics and Telecommunication Engineering” organized by RGIT in December 2008.
16. Students-Neuroscientists Interactive Meet-2008, organized by Cochin University of science and Technology, Cochin in December 2008.
17. One-day seminar on “Nanotechnology” organised by Biomedical Engg Dept at D.J.Sanghvi College of Engineering in January 2007.
18. National Conference, BIOCON 2005 on “Emerging Trends in Biomedical Engineering”, organised by Bharati Vidyapeeth Deemed University College of Engineering, Pune in August 2005.
19. Four weeks STTP on “Image Processing and Multimedia Systems” organised by VJTI in May 2004.
20. National Workshop on “Electrical Impedance Technique for medical applications” organised by BARC in September 2004.
21. Two weeks Summer School on “Biomedical Instrumentation and Health Care” organized by D.J.Sanghvi College of Engineering in June 2003.
22. Seminar on “Recent advances in Medical Imaging” organized by Thadomal Shahani Engineering College in 2002.
23. International Conference “BioVision 2001” organized by BMESI, Bangalore chapter, in December 2001.
24. Conference on Application of Information Technology in Biomedical Engineering organised by BMESI, at D.J.Sanghvi College of Engineering in 2001.
25. Orientation Programme for Engineering College Teachers organized by Thadomal Shahani Engineering College.

### **Projects at Bachelors level: 20**

#### **Awards:**

1. Sushruta Innovation award: Special Prize (2018)  
Project title: Point of care testing device highly specific for prostate cancer

2. Sushruta Innovation award: 3<sup>rd</sup> Prize (2018)  
Project title: Automated semen analysis
3. Avishkar, Research Convention: Silver Medal  
Project title: Immune Hematology System
4. Sushruta Innovation award: 4<sup>th</sup> Prize (2017)  
Project title: Radial pulse analysis
5. Sushruta Innovation Award: 1<sup>st</sup> Prize (2017)  
Project title: ADHD assist system
6. Symposium: 3rd Prize (2017)  
Project title: Radial pulse analysis
7. Trinity: Project competition at KEM Hospital: 1<sup>st</sup> Prize (2016)  
Project title: Immune Hematology System
8. Public Mental Health and Neurosciences, "ICPMN 2014", Bangalore.  
2<sup>nd</sup> Prize for the presented paper.
9. Business plan competition, DJ PULSE: 3<sup>rd</sup> Prize (2014)  
Project title: Saline Level Detector
10. EDI-NEN Innovative Ideas competition, EDI Campus Ahmadabad: 1<sup>st</sup> Prize (2014)  
Project title: Saline Level Detector
11. Launchpad, International Business Plan competition, IIM-Calcutta: 2<sup>nd</sup> Prize (2014)  
Project title: Saline Level Detector
12. Best Teachers Award (2011)

**Grants fetched:**

1. Mumbai University (2019 - 2020)  
Project title: Pre-transfusion testing device for checking blood compatibility  
Sponsorship amount: Rs. 40000/-
2. Vighneshwar Enterprises (2015-2016)  
Project title: Immunohematology system  
Sponsorship amount: Rs. 28000/-
3. BIRAC SRISTI (2015 - 2016)  
Project title: Immunohematology system  
Sponsorship amount: Rs. 50000/-
4. Mumbai University (2016 - 2017)  
Project title: Radial pulse analysis  
Sponsorship amount: Rs. 27000/-