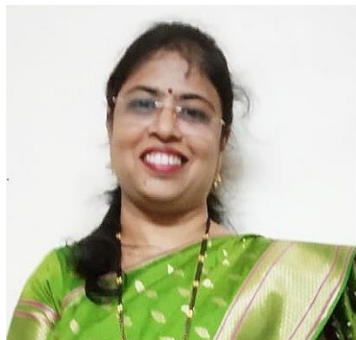


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| Name of Teaching Staff | : | Dr. Mrunal Rupesh Rane |  |
| Designation | : | Assistant Professor | |
| Department | : | Electronics Engineering | |
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| Google Scholar Link | : | https://scholar.google.com/citations?user=uG2YmngAAAAJ&hl=en | |
| Researchgate Link: | | https://www.researchgate.net/scientific-contributions/Mrunal-Rane-2026629206 | |
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| Publons Researcher ID | : | https://publons.com/researcher/AAD-4660-2022 | |
| Qualifications with Class / Grade | : | Ph.D (Technology) | |
| Total Experience in Years | : | 26 | |
| Papers Published in Journal: | : | <p>“Early Detection of Alzheimer's Disease using Machine Learning Algorithms” presented at International Conference on Recent Trends in Mathematics, Statistics, and Engineering (ICRMSE 2023) organized by School of Technology Management and Engineering SVKM's NMIMS (Deemed-to-be University), Indore, Madhya Pradesh, India. The paper is published in AIP Conference Proceedings (Vol. 3242, No. 1). AIP Publishing, as Research Article. DOI: https://doi.org/10.1063/5.0234297</p> <p>“Arterial Blood pH Monitoring Using a Fingertip Device to Predict Cardiovascular as well as Respiratory Diseases”, in <i>Advances in Medical Physics and Healthcare Engineering</i> (pp. 381-392). Springer, Singapore. DOI: 10.1007/978-981-33-6915-3_38.</p> <p>“Pretransfusion Blood Testing Device”, Dandekar, A., Save, S., Bhandarkar, S., Desai, M., Shah, J., Lapsia, P., ... & Rane, M. (2021). Pre-transfusion Blood Testing Device. In <i>Advances in Medical Physics and Healthcare Engineering</i> (pp. 247-253). Springer, Singapore. DOI: 10.1007/978-981-33-6915-3_26</p> <p>“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/</p> | |

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| | <p>“Effects of location and extent of spine clustering on synaptic integration in striatal medium spiny neurons—a computational study” in a journal “<i>Medical & biological engineering & computing</i>”, 1-15. https://doi.org/10.1007/s11517-017-1760-5.</p> <p>“Effect of Spine Density on Excitability in Accumbal Medium Spiny Neurons-A Computational Approach.” in a journal, “<i>J Addict Res Ther</i>”, 8:337. DOI:10.4172/2155-6105.1000337.</p> <p>“Creatinine and Albumin Electronic Reader” at International Journal of Computer application (0975-8887)</p> <p>“Computational Investigation of Effects of Spines and AMPA Receptor Desensitization in Temporal Integration in Striatal Medium Spiny Neurons”, International Journal Public Mental Health and Neurosciences, ISSN No.2394-4668</p> <p>“Low Powered Solar ECG with ZigBee Based Bio-Telemetry” at Journal of Technology Innovations in Renewable Energy, JTIRE Vol. 1, Number 1, September 2012. DOI: http://dx.doi.org/10.6000/1929-6002.2012.01.01.3.</p> <p>“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.</p> |
| Papers Presented in Conferences | <p>“ADHD Assist System” at National Conference and Technology Exhibition “Indian Medical Devices and Plastics Disposables/Implants Industry 2017”.</p> <p>“Smart Solar ECG” in the proceedings of the International Conference on Electrical, Electronics, Signals, Communication and Optimization (EESCO), ISBN:978-1-4799-7676-8</p> <p>“Computational Investigation of Effects of UP state on EPSP in Striatal Medium Spiny Neurons” at international conference on Biomedical Engineering, “ICoBE 2012”, at UniMAP, Malaysia, on 26th February 2012 – Paper was published in IEEE xplore.DOI: 10.1109/ICoBE.2012.6178980</p> <p>“Low Cost Solar ECG” at international conference on Biomedical Engineering, “ICoBE 2012”, at UniMAP, Malaysia, on 26th February 2012 – Paper was published in IEEE xplore. DOI: 10.1109/ICoBE.2012.6179050.</p> <p>“Computational Investigation of Role of AMPA Receptor Desensitization on Synaptic Integration in Striatal Medium Spiny Neurons” at international conference “Biomedical Engineering and Assistive Technologies - BEATS 2010” at NIT.</p> <p>“Computational Investigation of Role of Active Conductances in Information Processing in Striatal Medium Spiny Neurons” at World Congress 2009-Medical Physics and Biomedical Engineering at Munich, Germany, on 10th September 2009. DOI:10.1007/978-3-642-03882-2_238</p> <p>“Computational Investigation of Role of Inward Rectifying Potassium Currents in Temporal Summation of EPSPs in Striatal Medium Spiny Neurons” at the international conference IAN’08 at Cochin, India on 12th December 2008.</p> <p>“Computational Investigation of Role of Active Conductances in Information Processing in Striatal Medium Spiny Neurons” at the International Symposium on</p> |

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| | | Emerging Areas in Bioscience and Bioengineering, organized by SBB, IIT Bombay in February 2009. | |
| Area of Specialization | | <u>Biomedical Instrumentation, Product Development, Computational Neuroscience</u> | |
| Professional Memberships | : | Life Member of ISTE Life Member of IETE | Membership No.: LM41541 Membership No.: |
| Subjects Taught | | <ul style="list-style-type: none"> ● <u>UG Level:</u> <ol style="list-style-type: none"> 1. AI in Healthcare 2. Machine Learning 3. Digital Signal Processing 4. Digital Electronics 5. Electronic Product Design 6. Universal Human Values 7. Basic Electrical and Electronics Engineering 8. Transducers in Biomedical Instrumentation 9. Clinical Engineering Practice (old course) 10. Biomedical Instrumentation I & II 11. Human anatomy and Physiology 12. Electrical Networks Analysis and Synthesis 13. Biomechanics, Prosthesis and Orthosis 14. Biological Modeling and Simulations <u>PG Level:</u> | |
| Projects Guided | | <ol style="list-style-type: none"> 1. Comprehensive Multimodal Prediction of Alzheimer's Disease (2024) 2. Detection of Alzheimer's Disease using Texture Analysis(2024) 3. Biomimetic/Bio Mimic Hand (2023) 4. Urine Analyzer using Spectroscopy and ML (2023) 5. Early Detection of Alzheimer's Disease using ML (2023) 6. AI Model for Pneumonia Detection (2023) 7. Customer Segmentation (2022) 8. Automatic Pill Dispenser (2022) 9. Smart Gardening System (2021) 10. Health Chatbot (2021) 11. Prediction of Malignant or Benign Mammogram (2020) 12. Algorithmic Soil Analysis using Supervised Learning (2019) 13. Prototyping of Automated Soil Constituent Analyzer (2019) 14. Detection of Blood Glucose Levels based on Color Gradient using a smart-phone as the Glucometer (2019) 15. Pre-transfusion blood testing device (2019) 16. Point of Care Testing Device Highly Specific for Prostate Cancer (2018-2019) | |

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| | <p>17. Strip Based Method for Blood Compatibility Testing (2018)</p> <p>18. Radial Pulse Analysis (2018)</p> <p>19. Smart EEG (2017)</p> <p>20. Radial Pulse Analysis (2017, 2018)</p> <p>21. Immune Hematology System (2016, 2018)</p> <p>22. Creatinine and Albumin Reader (2015- in collaboration with IIT Bombay)</p> <p>23. Saline Level Detector (2014)</p> <p>24. Albumin and Creatinine Biosensor (2014- in collaboration with IIT Bombay)</p> <p>25. Creatinine Biosensor (2013- in collaboration with IIT Bombay)</p> <p>26. Low Cost Portable Solar Electrocardiograph (2012).</p> <p>27. Contrast Therapy Equipment (2012).</p> <p>28. Functional Electrical Stimulator with Gait Analyzer (2012).</p> <p>29. Effect of upstate on EPSP in striatal MS Neuron (2011).</p> <p>30. Regulation of Synaptic efficacies by coincidence of post synaptic AP's & EPSP's (2011).</p> <p>31. Functional Electrical Stimulator (2011).</p> <p>32. Computational Investigation of Effect of AMPA receptor desensitization on Synaptic Integration under Complete Synaptic Drive in Striatal Medium Spiny Neurons (2010).</p> <p>33. Computational Investigation of Role of Inactivating KIR in Synaptic Integration in Striatal Medium Spiny Neurons (2010).</p> <p>34. Syringe pump with wireless control. (2007).</p> <p>35. Apnea Detector (2005).</p> <p><u>PG Level:</u></p> <p>•</p> | |
| Recommended Students for Higher Education | <p><u>Name of the Student</u></p> <p>Aagam Shah</p> <p>Parin Dedhia</p> <p>Rutuja Zinjal</p> <p>Aditi Gupta</p> <p>Antara Dandekar</p> <p>Saumya Vora</p> <p>Siddhi Bhandarkar</p> <p>Shalini Subramanian</p> | <p><u>University/Industry</u></p> <p>Johns Hopkins University</p> <p>Cornell University</p> <p>Duke University Graduate School, Indiana University Graduate CAS</p> <p>University of Michigan</p> <p>BU-College of Engineering</p> <p>Cornell University</p> <p>University of Houston</p> <p>BU-College of Engineering, Stanford University, UBritish</p> |

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| | <p>Amey Desai Vedashree R Omkar Desai Nikunj Savla Tarak Bakhda Anju Nambiar Kushagra Shah Drishti Dani</p> | <p>University of Minnesota School of Public Health Viterbi School of Engineering BU-College of Engineering University of Southern California Texas A&M University University of Southern California University of Southern California Stevens Institute of Technology</p> |
| Institute/Department Responsibility handled: | | <ul style="list-style-type: none"> • Exam Co-Ordinator (AI_DS) • Term -Test Co-Ordinator (AI_DS, 2024-25) • Term -Test Co-Ordinator (CSEDS, 2023-24) • Project In charge (Electronics Department, 2021-2023) • coordinator for IIRS/ISRO outreach programme • “Session Chair” during “International Conference on Wireless Communication (ICWiCOM 2019)” at D.J. Sanghvi College of Engineering. • Core Committee member of NAAC committee of the college (2018-19). • Member of branding committee of the college. • CAP coordinator for department of Biomedical Engineering and Chemical Engineering for the year 2017-18 and 2018-19. • Member of Internal Quality Assurance Cell of the college (2015-21) • Working in Library committee (2013-23). • Working in Sport’s committee (2013-23). • Organized a two-day state level workshop “BEAT 2K12” in Dept. of Biomedical Engg.in February 2012. • Worked as coordinator for a two-day workshop “BEAT 2010” organized by Biomedical Engg. Dept. at D.J. Sanghvi College of Engg. in March 2010. • Working in Admission Committee since 2004 • Worked as a coordinator for one-day seminar on “Nanotechnology” organised by Biomedical Engg. Dept. at D.J. Sanghvi College of Engg. in January 2007. • Worked as an organizing committee member for National Conference “Information and Communication Technology” on ‘Recent Trends and Future Challenges’, organised by EXTC Engg. Dept. at D.J. Sanghvi College of Engg. in February 2006. • Cultural committee member, 2004. |

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| | | <ul style="list-style-type: none"> • Worked as an organizing committee member for STTP on “Biomedical Instrumentation and Healthcare, June 2003” organised by Biomedical Engg. Dept. at D.J. Sanghvi College of Engineering • Worked in Time-Table committee for the academic year 2003-2004, 2004-2005 and 2010-2011. |
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