# Somaiya Vidyavihar University

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| **Name: Dr. Rupali Pankaj Patil** | **E-mail: rupalipatil@somaiya.edu** |
| **Google Scholar Profile Scopus Profile  Vidwan Profile  Orcid ID** | |

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| **Contact No: 9820993651** |
| Department/Section: Electronics and Telecommunication Engineering |
| College:  K J Somaiya College of Engineering |

| DOJ Somaiya: 02-07-2007 | Career Experience: 17 Yrs | Industry Experience:_Nil | Teaching Experience:17 Yrs |
|---|---|---|---|
| Present Academic Designation: Associate Professor | | Present Administrative Designation: | |

### Area of research/specialization and Courses Delivered

Research domain/interests/areas

Signal Processing & Information Systems, Machine learning, Deep learning & Artificial Intelligence, Data science, Computer Vision, Communication & Data Networks.

Courses Delivered

Principles of Data Science, Data Structures and Analysis of Algorithms in Python and C, Computer Vision, Programming in C, Wireless communication, Wireless Networks, Signals and Systems, Random signal analysis, Data analysis and Interpretation, Image Processing, Mobile Communication, Digital Logic Design for UG, Image and Video Processing for PG (EXTC), Research Methodology for Ph.D.

| Recognition as a teacher by any University | UG: Yes | PG:  Yes | Ph.D : Yes |
|---|---|---|---|

Details of Recognitions
1. UG teacher recognition by Mumbai University
2. PG teacher recognition by Mumbai University
3. PhD Guide approval by Somaiya Vidyavihar University

### Education

| Examination | Name of the Degree | University/Board | Institute/College | Year | CPI/SPI/ %Marks |
|---|---|---|---|---|---|
| Ph.D | Electronics and Telecommunication Engineering | Mumbai University | Rajiv Gandhi Institute of Technology, Andheri, Mumbai | May 2020 | --- |
| PG | Electronics Engineering | Mumbai University | Ramrao Adik Institute of Technology, Nerul, Navi Mumbai | August 2008 | 68.05 % (First class) |
| UG | Electronics and Telecommunication Engineering | North Maharashtra University, Jalgoan | Government college of Engineering | July 2002 | 67.64 % (First class with Distinction) |

### Notable Experience Details

| Sr. No | Name of the organization | Designation | Date of Joining | Date of Leaving | Experience (Years) |
|---|---|---|---|---|---|
| 1. | K.J. Somaiya College of Engineering, Vidyavihar | Assistant Professor | 02/07/2007 | Till today | 16 |

| 2. | Ramrao Adik Institute of Technology, Mumbai | Lecturer | 01/01/2006 | 31/12/2006 | 01 |
|----|-----|-----|-----|-----|-----|

| Research Accomplishments and Projects | |
|-----|-----|
| No of students pursuing Ph.D as on date: 01 | No of students completed Ph.D as on date:Nil |
| No of students completed PG thesis / Project work as on date: 03 | No of groups completed UG projects as on date: 20+ |

| Publications Total: 23 | Number of Peer review Journal papers: 07 **(Post Ph.D.: 04)** | Number of Conference papers: 14 **(Post Ph.D.: 06)** |
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**Details of Publications**:

**International Journals**

1. **Patil R**, Karandikar R. Computationally Efficient LOB Algorithm for Digitization of Degraded Paper ECG Reports. *Biomed Pharmacol J* 2023;16(1).**Scopus, CiteScore 1.4.**

2. **Sawant Manisha**, Rupali Patil, Tanmay Shikhare, Shreyas Nagle, Sakshi Chavan, Shivang Negi, and Neeraj Dhanraj Bokde. "A Selective Review on Recent Advancements in Long, Short and Ultra-Short-Term Wind Power Prediction." *Energies* 15, no. 21 (2022): 8107. **SCI, Impact Factor 3.252, CiteScore 5.0**

3. **Akshay Yadav**, Rupali Patil and R.G.Karadikar,"Analysis of static and dynamic characteristics of IPv4 and IPv6", *Gradiva review journal*, 25th April2022 DOI: 10.37897.GRJ.2022.V8I8.22.50382. **Scopus, CiteScore 1.4.**

4. **Mishra Siddharth**, Gaurav Khatwani, Rupali Patil, Darshan Sapariya, Vruddhi Shah, Darsh Parmar, Sharath Dinesh, Prathamesh Daphal, and Ninad Mehendale. "ECG paper record digitization and diagnosis using deep learning." **Springer** *Journal of medical and biological engineering* 41, no. 4 (2021): 422-432. **Scopus, Impact Factor 2.213.**

5. Patil, Rupali, and Ramesh Karandikar. "Image digitization of discontinuous and degraded electrocardiogram paper records using an entropy-based bit plane slicing algorithm." **Elsevier** *Journal of electrocardiology* 51, no. 4 (2018): 707-713. **Scopus, Impact Factor 1.38, CiteScore 2.4.**

6. Patil, Rupali, and R. Karandikar. "Robust algorithm for digitization of degraded electrocardiogram paper records." *ICTACT Journal on Communication Technology* 8, no. 3 (2017). **UGC CARE List Group I**

7. Rashi Shah, Srushti Aparajit, Riddhi Chopdekar and Rupali Patil, "Machine Learning based Approach for Detection of Cyberbullying Tweets", *International Journal of Computer Applications* 175(37):52-57, December 2020

**Conferences**

8. **Ghosh, Trisha**, and Rupali Patil. "Explainable Artificial Intelligence For Pseudo Social Media Profile Detection." In 2024 First International Conference on Pioneering Developments in Computer Science & Digital Technologies (IC2SDT),NIT Delhi, India, pp. 477-482. **IEEE**, 2024.

9. **Siddharth Singh**, Alfiya Anware, and Rupali Patil, "Exploring Advanced Approaches in Wind Speed Forecasting", *presented at 8th International Conference on Computing Communication, control and Automation in association with **IEEE** Pune Section (ICCUBEA-2024),* PCCOE, Pune, Maharashtra, India during August 23-24, 2024

10. **M. J. More**, N. S. Jain, R. Patil, P. K. Panchal and A. K. Pai, "Web-based Emergency Alert System for Driver's Drowsiness and Medical Exigency," *2023 **IEEE** Pune Section International Conference (PuneCon)*, Pune, India, pp. 1-6, 2023

11. **Patil, Rupali**, Bhairav Narkhede, Stuti Gaonkar, and Tirth Dave. "Deep Learning Based Marathi Sentence Recognition using Devnagari Character Identification." In *2023 International Conference on Communication System, Computing and IT Applications (CSCITA)*, pp. 10-15. **IEEE**, 2023.

12. **Aparajit, Srushti**, Rashi Shah, Riddhi Chopdekar, and Rupali Patil. "Data Protection: The Cloud Security Perspective." In 2022 3rd International Conference for Emerging Technology (INCET), pp. 1-5. **IEEE**, 2022.

13. **Pradhan, Shradha** S., and Rupali Patil. "Comparison of deep learning approaches for plant disease

detection." In *Proceedings of International Conference on Wireless Communication: ICWiCOM 2019*, pp. 575-583. **Springer** Singapore, 2020.

14. Shaikh, Jasmine, and Rupali Patil. "Fake news detection using machine learning." In *2020 IEEE International Symposium on Sustainable Energy, Signal Processing and Cyber Security (iSSSC)*, pp. 1-5. **IEEE**, 2020.

15. Mulla, Jasmin B., Ajay Khandare, and Rupali P. Patil. "Timing Signal Generator for High Frequency Radar." In *2020 IEEE 1st International Conference for Convergence in Engineering (ICCE)*, pp. 152-155. **IEEE**, 2020.

16. Patil, Rupali, Nishant Gada, and Krisha Gala. "Twitter data visualization and sentiment analysis of article 370." In *2019 International Conference on Advances in Computing, Communication and Control (ICAC3)*, pp. 1-4. **IEEE**, 2019.

17. Patil, Rupali, and Ramesh Karandikar. "Digitization and Parameter Extraction of Preserved Paper Electrocardiogram Records." *In Soft Computing and Signal Processing*, pp. 487-495. **Springer**, Singapore, 2019.

18. Patil, Rupali, and R. G. Karandikar. "Digital signal preservation approaches of archived biomedical paper records—A review." In *2016 5th International Conference on Wireless Networks and Embedded Systems (WECON)*, pp. 1-4. **IEEE**, 2016.

19. Patil, Rupali, and R. G. Karandikar. "Digitization of documented signals using vertical scanning." *In 2015 International Conference on Microwave, Optical and Communication Engineering (ICMOCE)*, pp. 239-242. **IEEE**, 2015. .

20. Rupali Patil, "Design of PID controller using Genetic Algorithm," *National Conference on "Emerging Trends in Computer, Communication and Information Technology"*, KJSCE, Mumbai, April. 21-23, 2009.

21. Rupali Patil, " Quantitative Analysis of Linear prediction algorithm" *National Conference on Information and Communication Technology organized by NYSS College of Engineering and Research*, Nagpur 23rd and 24th Dec 2010.

**General Articles**

22. R. Patil, A. Velingkar, M. N. Parmar, S. Khandhar, and B. Prajapati, "Machine Vision Enabled Bot for Object Tracking", *jinav j. inf. vis.*, vol. 1, no. 1, pp. 15-26, Oct. 2020.

23. R. Patil, U. Patel, and T. Sarkar, "COVID-19 cases prediction using regression and novel SSM model for non-converged countries", *J. Appl. Sci. Eng. Technol. Educ.*, vol. 3, no. 1, pp. 74-81, Aug. 2020.

**Articles in Process**

1. Harshal Somani, Rudrani Sinare, Aakash Rai and Rupali Patil, "Short term wind power prediction using explainable deep model", *International Journal of Information Technology, Springer Link*, Jan2024.

**Patent:**
Title: System and method for predicting an advancing heart disease using a squeeze recurrent neural network with political optimization for gene expression data analysis
Inventors:(1) Chetan Aher; (2) Sarika Zaware; (3) Milind Gajare; (4) Vinayak Bairagi; (5) Rupali Patil
Patent No.: 2023/07569
Status: Granted
Filed 2023-07-31 Published 2024-02-28

| No of Research / consultancy / projects completed:Rs: Nil | No of Research projects on-going: 01 | No of Research projects on applied as on date: 02 |
|---|---|---|

**Details of Research / consultancy / projects:**
**On-going**
1. Research proposal on Machine Learning-Based Binary categorization of Oral Cancer using Orthopantomogram (OPG) images in collaboration with Department of Dentistry, K.J. Somaiya Medical College and Research Centre, Somaiya Ayurvihar. Received Ethics and Scientific approval from K.J. Somaiya Medical College and Research Centre, Somaiya Ayurvihar.

# Somaiya Vidyavihar University

**Applied**

1. Research proposal on "Electromyography (EMG) controlled robotic mechanism for people with leg amputation" under CSR funding of ONGC Ltd. India. for the research funding, March 2022
2. "A Novel Indigenously Developed Cost-Effective Portable Platelet Function Analyzer (PFA): Validation in a Wide Range of Bleeding Disorders" submitted at the ICMR e-PMS portal (31-Jul-2023 16:40:41 PM). The reference id of your proposal is <IIRPIG-2023-0001553/F1>.

| **FDPs/Seminars/Workshops/Training Programs Attended/ Organized/ Delivered** |
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**Attended**

1. One Week ISTE approved Short-Term Training Programme on "AI and ML-Enhanced Geospatial Analytics: Real-World Case Studies organized by Department of Information Technology in association with IQAC- KJSCE, IEEE -IGRSS Bombay Chapter held at K J Somaiya College of Engineering, Somaiya Vidyavihar University, Mumbai, conducted from 8th July to 12th July 2024.
2. Organized ISTE approved Self-Financing Faculty Development Program on "Recent trends in Applied Networking and Cyber Security" held during 06 May 2024 to 11 May 2024 organized by Somaiya Vidyavihar University, K. J. Somaiya College of Engineering, Mumbai, Maharashtra.
3. Online Short-Term Course on "Artificial Intelligence Machine Learning & Deep Learning Applications" conducted by the Department of Computer Science and Engineering, NIT Warangal in association with CCE, NIT Warangal from 31-03-2023 to 09-04-2023.
4. Online course on "Introduction to Statistics" by Coursera, $10^{th}$ January - $7^{th}$ March 2022.
5. Webinar on "DECODE: It's not only an Image!" IEEE Bombay Section WIE Affinity, organized by Department of Information Technology, KJSCE in association with IEEE Bombay Section WIE Affinity, $19^{th}$ February 2022.
6. National Webinar on "Challenges, Innovations and Adaptations of Covid-19: Science & Society Perspectives" jointly organized by Department of Science & Humanities, K. J. Somaiya College of Engineering and S K Somaiya College, Somaiya Vidyavihar University on 29th and 30th October 2021.
7. Online FDP on "IUCEE Project Management FDP for NEP 2020 Implementation", 4th-$31^{st}$ July 2021, Organized Indo Universal Collaboration for Engineering Education(IUCEE) conducted by Dr.Manu Vora, Business Excellence, Inc. Chicago, USA and Dr.Anil Kumar Agrawal, BHU, Varanasi
8. Attended Online Workshop on LOCF- Train the trainers Learning Outcomes based Curriculum Framework organized by, Somaiya Vidyavihar University on 22nd & 23rd April, 2021.
9. Participated in the awareness campaign on "Covid-19"Vaccination" hosted by Thakur Institute of management Studies, carrier development and Research and MKSD college in association with D-Link India limited from 11 February to April 2021.
10. CCNAv7: Switching, Routing, and Wireless Essentials, organized by Department of EXTC and Cisco Networking Academy,25-30 July 2020
11. CCNAv7: Enterprise Networking, Security, and Automation, organized by Department of EXTC and Cisco Networking Academy, 01-08August 2020
12. CCNA Routing and Switching: Introduction to Networks, organized by Department of EXTC and Cisco Networking Academy, 1st July- 5th July, 2019
13. Completed online course (20 Hrs.) on AWS Academy Cloud Foundations, $21^{st}$ February 2020.
14. NPTEL FDP on "Python for Data Science" organized by IIT, Madras, 4-weeks, August-September 2019.
15. Completed online course on "Introduction to Cybersecurity" organized by Cisco Networking Academy, September 2019

**Organized**

1. IQAC_SVU approved Hands-on workshop on **"The Cyber Resiliance Masterclass"** is organized for SVU faculty, staff, and students on 23 September 2024
2. **An Interactive session organized with Cyber Industry, DeepCyte**s on 24th November 2022 from 5:00 pm to 6:00 pm followed by a discussion on the Internship offering open for FY, SY, an TY all

branch students with DeepCytes.

3. Webinar on "**Ethical Hacking and Internship opportunities**" on 02 June 2022 for FY-TY Engineer students by Cyber Industry Deepcytes, Mumbai

4. Webinar on **"Metaverse: The Next Digital Dimension"** for everyone at Somaiya Vidyavihar Univers (SVU), in association with ISTE Teacher's chapter KJSCE, 30th April 2022.

5. Webinar on **"Recent Trends and Opportunities in the field of Networking, Telecommunications and Signal Processing"** for EXTC faculty and FY-LY EXTC students, 17th June 2021.

6. Two months Training Programme on " **Coding Skills and basic data structures**" was organised for EXTC Laboratory Assistants by faculty members, Prof.Baishakhi Bose, Prof Rupali P. Patil and Shilpa N.Vatkar, of Electronics & Telecommunication Engineering department during September to November 2019

7. Two days "**Refresher course on Data structures and object oriented programming Language"** was organised by faculty members, Prof.Baishakhi Bose, Prof Rupali P. Patil and Shilpa N.Vatkar, of Electronics & Telecommunication Engineering department on 22nd and 23rd August 2019.

8. A workshop was organized on **"Python for Interested Learners"** Wednesday, 29th May 2019 at 2 pm to 6 pm in seminar hall B-113 for SY-TY-LY BTech.students (all branches). Total participants were more than 52. By our EXTC alumni Mr. Devang Savla--Testing and Automation Engineer at Mahindra Susten.

9. A Guest lecture was organized **"Innovation Management and Design Thinking"** on Friday 21st Sepetember, 2018 at 3:45 pm to 5.15 pm in seminar hall A 225 for LY BTech.students. by Mr. Zubin Unwalla ( 2012 batch alumni) from RPG Enterprises.

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**Internship offered**

1. **Topic: "Analysis based on GIS " to SY CCE students, ongoing**
2. **Topic: "Oral Cancer Detection using OPG images" to TY EXTC and SY CCE students, ongoing.**
3. Topic: "Time Series analysis: Wind power predication" to SY COMP, IT and EXTC students, ongoing.
4. Topic: "Cyber security tools and analysis" with Cyber Industry, DeepCytes from June 2022 till now. The same is converted into Semester Long Internship and placement offers.
5. Topic: "Sentiment analysis of Omicron Variant of Covid-19" to TY students, in the period from 20/01/2022 to 28/04/2022.
6. Topic: "ECG lead detection using region detection algorithms" to TY students, in the period from 16/06/2021 to 16/08/2021.
7. Topic: "Covid Outbreak prediction using Machine Learning" to TY EXTC student, in the period from 10/12/2019 to 21/01/2020.
8. Topic: "Twitter data Analysis on Article 370" to TY EXTC students, in the period from 10/12/2019 to 21/01/2020.
9. Topic: "Shadow removal of ECG Images" to TY EXTC student, in the period from 10/12/2019 to 21/01/2020.
10. Guided/ Mentored students of Open CV OCR project (Internship) by ROBOCON.
11. Topic: "Fake news detection using Machine learning" for TY EXTC student, in the period from 10/12/2019 to 21/01/2020.
12. Topic: "Interfacing of Sensors using LPC 4088" to TY EXTC and ETRX students, in the period from 4/08/2019 to 08/10/2019.

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**Delivered**
1. **Delivered session for the Staff Development Program on "Enhancing Software Skills in Python Programming" conducted from 4th-11th December 2023 organized by FSDC, SVU.**

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| Notable Key Scholastic Achievements | |
|---|---|
| 1. | **Appointment as Subject Expert for Board of Studies** Electronics and Telecommunication Engineering, Lokmanya Tilak Jankalyan Shikshan Sanstha's,LOKMANYA TILAK COLLEGE OF ENGINEERING , University of Mumbai |
| 2. | **Invited as Session Chair** 6th IEEE INTERNATIONAL CONFERENCE "Emerging Smart Computing & Informatics" (IEEE ESCI-2024) 5th – 7th March 2024 Technically Co-Sponsored by IEEE Organized by |

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| | Institute of Information Technology Pune– 411001, Maharashtra, India |
| 3. | **Invited as Scientific committee member of "International Conference on Recent Advances in Engineering and Computer Applications ICRAECA 23, Hybrid Conference"** scheduled to held on 14th & 15th July 2023 at LJ University Ahmedabad Campus jointly organized by LJ University & IFERP |
| 4. | **Invited as Judge for Sunhacks 2022: Sandip University Nashik** (Maharashtra), 10th -12th November 2022 |
| 5. | **Invited as Session Chair** at 7th International Conference for Convergence in Technology (I2CT) in association with IEEE Bombay Section during 7th to 9th April 2022. |
| 6. | **Invited as Session Chair** at 3rd International Conference of Emerging Technologies (INCET) 2022, technically Co-sponsored by IEEE Bangalore section in Jain College of Engineering , Belagavi ,Karnataka ,India. |
| 7. | **Working as reviewer** at various International conferences and Journals |
| 8. | **Approached by STEMI (Europe)** for digitization of paper ECG images captured in Helicopter Mobile Ambulance and submitted prototype software model to STEMI. |
| 9. | **Collaboration with SIRAC** for following projects: <br> A statistical and deep learning-based daily infected count prediction system for COVID-19. <br> Digitization of ECG paper records using waveform extraction and conversion into 1D signal. |
| 10. | **Invited as External Examiner** for Final year UG projects and for Mini Projects by Vivekanand Education Society's Institute Of Technology, Chembur, Mumbai. May 2021, October 2021 and November 2022, April2023. |
| 11. | **Best Paper Award** at ICAECT-2022, Vidyalankar Institute of Technology, Mumbai, 7-8 April 2022. |
| 12. | **As a captain of KJSCE cricket team secured 3rd Place and won Woman of the Match award** at TOSS 2022. |

| **Notable Positions and Responsibility** | |
|---|---|
| 1. | Coordinator, Computer and Communication Engineering program offered by EXTC department. |
| 2. | Department Coordinator, Criteria IV, NAAC, SVU. |
| 3. | Initiated and established "**Cyber Cell**" at Institute level with EXTC Alumnus Shubham Parik, Global Alliance head, DeepCytes Cyber Lab(UK). Activities under this cell: Internships, Semester Long Internships, Placements, Expert Lectures, **MoU**, STTP etc. |
| 4. | Coordinator, committee for Energy Audit, Green Campus Initiative, Somaiya Vidyavihar University (SVU), since September 2023. |
| 5. | Member of Examination Standing Committee, SVU, since 29 November 2021 |
| 6. | Member of Result and Moderation Committee, KJSCE, since November-December 2017 |
| 7. | Member of Indian Society of Technical Education, New Delhi, India, since 2009. |
| 8. | Laboratory In-charge: Wireless Communication Laboratory from 2013 till 2021. Project Laboratory In-charge since Jan 2022. |
| 9. | Department Examination Committee member, since July2022. |

Date:    15/10/2024                                                        **Signature of Faculty Member**