

## Dr. Udit Satija

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CONTACT INFORMATION	Assistant Professor, Department of ECE Indian Institute of Information Technology (IIIT)- Dharwad Karnataka, India, PIN- 580029	+91-9460154047 us11@iitbbs.ac.in, uditsatija007@gmail.com
RESEARCH INTERESTS	Bio-medical signal processing, Wearable healthcare monitoring, Human activity monitoring, Pedestrian dead reckoning, Machine and deep learning, Bio-metric, Signal processing for big data in healthcare, Signal processing for wireless communication, Compressed sensing, Cognitive radios, Internet of things.	
EDUCATION	<p><b>Ph.D.</b>, Bio-medical Signal Processing at School of Electrical Sciences, Indian Institute of Technology Bhubaneswar, Odisha, India, July 2013 to June 2017. GPA - 8.6/10.0. Submitted-June 19, 2017. Defended-May 25, 2018.</p> <p><b>Master of Tech.</b>, Department of Electronics &amp; Communication Engineering, The LNM Institute of Information Technology, Jaipur, India, 2013. GPA: 9.14/10.</p> <p><b>Bachelor of Technology</b>, Electronics and Communication Engineering, RTU Kota, India. 2010. Marks: 73.99%, honours.</p> <p><b>Class XII</b>: RBSE Board, 2006. Marks: 65.23%.</p> <p><b>Class X</b>: RBSE Board. 2004. Marks: 77.33%</p>	
COMPUTER SKILLS	<p><b>Programming Languages</b>: C, VHDL, HTML, Python, Java and Android (Basic)</p> <p><b>Operating Systems</b>: GNU/Linux, Windows</p> <p><b>Software</b>: Matlab (Extensive Programming Experience), Multisim, System Generator, Xilinx</p> <p><b>Hardware</b>: Arduino, FPGA, WARP Kit, 8085 Microprocessor</p> <p><b>Others</b>: Latex, MySQL (Oracle 9i), DBA-1</p>	
ACADEMIC PROJECTS	<ol style="list-style-type: none"><li>1. <b>Deep learning based seizure EEG signal classification</b>: using convolutional neural network (CNN) under various noise conditions.</li><li>2. Automated Noise Detection and Classification Methods for Quality-Aware Analysis of Electrocardiogram Signals (Ph.D Thesis)</li><li>3. FPGA implementation of the developed ECG signal assessment method (During Ph.D.)</li><li>4. Developed android application for quality controlled cardiac event change detection (During Ph.D.)</li><li>5. Developed signal quality-aware system for IoT-based health care monitoring (During Ph.D.)</li><li>6. Developed signal quality-aware bio-metric system for identifying normal and chronic subjects (paper under preparation)</li><li>7. Human speech and mechanical sound classification using autocorrelation features and support vector machine classifier</li><li>8. Machine learning based modulation classification using statistical features</li><li>9. Human fall detection and classification based on cumulant features and SVM</li><li>10. Compressed sensing based blind spectrum sensing in cognitive radio (M.Tech. Project)</li><li>11. Micro-controller based heart rate monitor, Mobile bug, Advanced high frequency inverter (B.Tech. Projects)</li><li>12. Line follower robot, Obstacle avoider robot, Wireless controllable robot</li></ol>	

1. **U. Satija**, B. Ramkumar, M. S. Manikandan, "Automated ECG Noise Detection and Classification System for Unsupervised Healthcare Monitoring," *IEEE Journal of Biomedical and Health Informatics*, vol. 22, no. 3, pp. 722 - 732, May 2018. I.F.-3.45.
2. **U. Satija**, B. Ramkumar, M. S. Manikandan, "Real-Time signal quality-aware ECG telemetry system for IoT-based health care monitoring," *IEEE Internet of Things Journal*, vol. 4, no. 3, pp. 815-823, June 2017. doi: 10.1109/JIOT.2017.2670022. I.F.-7.59.
3. **U. Satija**, B. Ramkumar, M. S. Manikandan, "A review of signal processing techniques for ECG signal quality assessment," *IEEE Reviews in Biomedical Engineering*, Accepted, Feb. 2018.
4. **U. Satija**, N. Trivedi, G. Biswal, B. Ramkumar, "Specific emitter identification based on variational mode decomposition and spectral features in single hop and relaying scenarios" *IEEE Transactions on Information Forensics & Security*, Accepted, June 2018. I.F.-5.86.
5. **U. Satija**, B. Ramkumar, M. S. Manikandan, "An Automated ECG Signal Quality Assessment Method for Unsupervised Diagnostic Systems," *Biocybernetics and Biomedical Engineering (Elsevier)*, vol. 38, no.1, pp. 54-70, 2018.
6. **U. Satija**, B. Ramkumar, M. S. Manikandan, "Noise-Aware dictionary learning based sparse representation framework for detection and removal of single and combined noises from ECG signal," *IET Healthcare Technology Letters*, vol. 4, no. 1, pp. 2-12, Feb. 2017.
7. **U. Satija**, B. Ramkumar, M. S. Manikandan, "Robust Cardiac Event Change Detection Method for Long-term Healthcare Monitoring Applications," *IET Healthcare Technology Letters*, vol. 3, no. 2, pp. 116-123, May 2016.
8. **U. Satija**, B. Ramkumar, "Instantaneous mixture channel selection for blind equalization using cumulant features in MIMO systems," *Circuits System & Signal Processing (Springer)*, vol. 35, no. 12, pp. 4596-4606, Dec. 2016, DOI:10.1007/s00034-016-0272-0.
9. P. De, **U. Satija**, "Sparse Representation for Blind Spectrum Sensing in Cognitive Radio: A Compressed Sensing Approach," *Circuits System & Signal Processing (Springer)*, vol. 35, no. 12, pp. 4413-4444, Dec. 2016 DOI:10.1007/s00034-016-0279-6.
10. T. Dutta, **U. Satija**, B. Ramkumar, M. S. Manikandan, "Blind impulse estimation and removal using sparse signal decomposition framework for OFDM systems," *Circuits System & Signal Processing (Springer)*, vol. 37, no. 2, pp. 847-861 Feb. 2018.
11. **U. Satija**, B. Ramkumar, M. S. Manikandan, "A novel sparse classifier for automatic modulation classification using cyclostationary features," *Wireless Personal Communication (Springer)*, vol. 96, no. 3, 2017.
12. **U. Satija**, M. Mohanty, B. Ramkumar, "Cyclostationary features based modulation classification in presence of non-Gaussian noise using sparse signal decomposition," *Wireless Personal Communication (Springer)*, vol. 96, no. 4, 2017.

1. **U. Satija**, B. Ramkumar, M. S. Manikandan, "A unified sparse signal decomposition and reconstruction framework for elimination of muscle artifacts from ECG signal," *41st IEEE Int. Conf. Acoustics, Speech Signal Process. (ICASSP)*, Shanghai, China, 2016.
2. **U. Satija**, B. Ramkumar, M. S. Manikandan, "A Robust Sparse Signal Decomposition Framework for Baseline Wander Removal from ECG Signal," *IEEE Tencon*, Singapore, 2016.
3. **U. Satija**, B. Ramkumar, M. S. Manikandan, "Low-Complexity detection and classification of ECG noises for automated ECG analysis system," *Int. Conf. Signal Process. Commun. (SPCOM)*, 2016, (IISc Bangalore).
4. P.Dey, N. Trivedi, **U. Satija**, B. Ramkumar, M. S. Manikandan, "Single channel blind source separation for MISO communication systems," *IEEE 86th Vehicular Technology Conference (VTC2017- Fall)*, Toronto, 2017.
5. T. Dutta, **U. Satija**, B. Ramkumar, M. S. Manikandan, "A novel method for automatic modulation classification under non-Gaussian noise based on variational mode decomposition," *22nd Nat. Conf. Commun. (NCC) 2016*, IIT Guwahati, 2016.

6. A. Babu K., **U. Satija**, B. Ramkumar, M. S. Manikandan, "Blind channel length estimation for OFDM systems using cumulant features," *18th Int. Symp. Wireless Personal Multimedia Commun. 2015*, 2015.
7. M. Mohanty, **U. Satija**, B. Ramkumar, M. S. Manikandan, "Digital modulation classification under non-Gaussian noise using sparse signal decomposition and maximum likelihood," *21st Nat. Conf. Commun. (NCC) 2015, IIT Bombay*, 2015.

WORKSHOP AND  
TRAINING  
ATTENDED

1. Workshop on "High Performance Digital Signal Processing System Design and Implementation" organized by *IEEE Circuits and System Society Outreach* at IIT Bhubaneswar, Duration-15-17 Dec. 2015.
2. Workshop on "Robotics" organized by *Design and Innovation Centre*, IIT Bhubaneswar, Duration-9-12 Dec. 2015.
3. One day workshop on "Patent Writing" organized by *Design and Innovation Centre*, IIT Bhubaneswar, Feb. 13, 2016.
4. Short Course on "Convex Optimization for Wireless Communication" organized by *Indian Institute of Technology (IIT) Kanpur*, Duration-15-17 Sep. 2014.
5. Certified Course on "ORACLE 9i: Database Administrator -1" organized at *Sobhasaria Engineering College, Sikar*, Duration:Oct.-Nov. 2007, Total 30 days.
6. Vocational training on "Recent trends of mobile communication" from *BSNL Sikar*, June 2009.
7. Certified course on "VB.net and ASP.net" at *CMC academy*, Duration-60 hrs, July 2008.

EXPERIENCE  
AND AWARDS

1. Worked as an assistant professor at Shiv Nadar University, Greater Noida from Aug 2017-July 2018. **Responsibility:** Teaching and Research
2. Worked as Lecturer at 'Tagore Engineering College', Kuchaman city Nagaur (Rajasthan) for 7 months from Jan 2011 to July 2011. **Responsibility:** Teaching
3. Received IEEE signal processing society (SPS) travel grant for ICASSP 2016.
4. Received various awards at school and college levels in academics and extra curricular activities.
5. Reviewer for IEEE Signal Processing Letters, IEEE Journal of Biomedical and Health Informatics, IEEE Transaction on Instrumentation and Measurement, IET image processing and Science, Measurement & Technology, Wireless Personal Communication (Springer), International Journal of Communication Systems (Wiley), Tencon.

RESPONSIBILITIES

1. TA for different courses and labs for undergrad and postgraduate students @ LNMIIT and IIT Bhubaneswar
2. Administrative responsibilities including warden nominated member for hostel from Aug-2015 to Mar-2016 and residential assistant warden from April 2016 to Apr 2017 at IIT Bhubaneswar

REFERENCES

- Dr. Barathram. Ramkumar**, Assistant Professor, School of Electrical Sciences, IIT Bhubaneswar, Argul, Jatni, Khurda Road, Odisha-752050, India. Email: barathram@iitbbs.ac.in
- Dr. M. Sabarimalai Manikandan**, Assistant Professor, School of Electrical Sciences, IIT Bhubaneswar, Argul, Jatni, Khurda Road, Odisha-752050, India. Email: msm@iitbbs.ac.in
- Dr. Parthapratiim De**, Associate Professor, Dept. of ECE, NIT, Meghalaya, India. Email: de.pratim@gmail.com
- Dr. P. R. Sahu**, Associate Professor & Dean (Academics), School of Electrical Sciences, IIT Bhubaneswar, Argul, Jatni, Khurda Road, Odisha-752050, India. Email: prs@iitbbs.ac.in