

## Dr. SABU M K

Department of Computer Applications,  
Cochin University of Science & Technology,  
Kochi – 682 022, Kerala, INDIA.  
[sabumk@cusat.ac.in](mailto:sabumk@cusat.ac.in)

Mavunkal House, Karimpadam  
Chendamangalam P O  
Kerala – 683512, INDIA  
[sabu.mes@gmail.com](mailto:sabu.mes@gmail.com)

### CURRENT POSITION

Associate Professor and Head, Department of Computer Applications, Cochin University of Science and Technology, Kochi – 682 022, Kerala, INDIA.

### EDUCATION

- Ph. D (Computer Science) from School of Computer Sciences, M.G.University, Kottayam.  
Thesis titled ” Studies on Rough Set Theory with Applications to Data Mining”.
- Master of Computer Applications (MCA) from Govt. Engineering College, Thrissur, affiliated to University of Calicut.
- Bachelor of Science (B.Sc.) in Mathematics from S.N.M College, Maliankara, affiliated to M.G.University, Kottayam.

### RESEARCH AND TEACHING INTERESTS

Rough sets, Data mining, Fuzzy sets, Swarm Intelligence, Soft Computing, Artificial Intelligence and Machine learning.

### PUBLICATIONS

1. “Rule Induction using Rough Sets – A Modified Approach “ in the proceedings of the U.G.C Sponsored National Conference on Soft Computing, Organized by Department of Computer Applications, Marian College , Kuttikkanam (ISBN : 978-81-908520-1-2). It is also published in ACUMEN, the Marian Journal of Computer Science (Volume – 5; No.-2; ISSN: 0975-6981).
2. A book Chapter “A Rough Set Based Approach for Ranking Decision Rules” in the volume CCIS (Communication in Computer Science and Information Science) published by Springer(ISSN: 1865-0929; ISBN: 978-3-642-22708-0;e-ISSN:1865-0937; e-ISBN: 978-3-642-22709-7).
3. “Dimensionality Reduction – A Rough Set Approach” in the International Journal of Machine Intelligence, Volume 3, Issue 4(ISSN:0975-2927, e-ISSN:0975-9166).
4. “Rule Induction using Rough Set Theory – An Application in Agriculture” in the proceedings of the international conference on Computer Communication and Electrical Technology (ICCCET) organized by National College of Engineering , Tirunelveli, Tamilnadu and is now available in the IEEE Explore digital library (ISBN:978-1-4244-9392-0; IEEE Catalog Number : CFP1135M-CDR).
5. “A Novel Approach for Clustering using Rough Set Theory” in the proceedings of the International Conference on Mathematics and Computer Science (ICMCS 2009) organized by Layola College, Chennai, India(ISBN:978-81-8371-195-1).
6. “Rough Set Approaches for Mining Incomplete Information Systems” accepted for presentation at the 2008 International Conference on Intelligent Computing (ICIC 2008), at Shanghai, China and also published in Advanced Intelligent Computing Theories and Applications and is now

available in the volume “Lecture Notes in Artificial Intelligence (LNAI)” published in Springer (ISBN: 978-3-540-85983-3).

7. “A Rough Set Approach to Handle Missing Values in Incomplete Decision Table” in the proceedings of the Second International Conference on Cognition and Recognition (ICCR 08), organized by P.E.S College of Engineering, Mandya, Mysore, Karnataka (ISBN: 978-81-8424-307-9).
8. “A Rough Set Approach to Predict the Learning Disability in School Age Children” in the proceedings of the UGC sponsored National Seminar on Data Mining Applications in IT Enabled Services, organized by Department of Computer Sciences, M.E.S College, Nedumkandam, Kerala in 2008.
9. “Rough Sets in Association Rule Mining” in the proceedings of the UGC sponsored National Conference on Recent Advances in Information Security, organized by Mary Matha Arts and Science College, Manathavady, Wayanad, in 2007.
10. “Rough Set Theory as a Soft Computing Tool for Data Mining”, in the annual Technical Magazine IT GLIMPSE 2009-10, published by School of Computer Sciences, Mahatma Gandhi University, Kottayam.
11. “Rough Set Based Soft Computing Approaches for Attribute Reduction – A Review” in the proceedings of the UGC sponsored National Seminar on ICT for social development – Experience of Indian Villages by the department of Computer Science, MES College, Nedumkandam 2011.
12. “A Rough Set Based approach for Intrusion Detection” in the proceeding of the UGC sponsored National Seminar on Data Communication and Net Working organized by the department of Electronics, MES College, Marampally, in 2012.
13. Published a paper titled “A Rough Set based Feature Selection Approach for the Prediction of Learning Disabilities” in the International Journal of Advanced Computational Engineering and Networking (IJACEN) (December 2014, Vol. - 2, Issue – 2, pp. 43-48).
14. Published a paper titled “A novel hybrid feature selection approach for the prediction of Learning Disabilities in school-aged children” in the International Journal of Artificial Intelligence & Applications (IJAIA), March 2015, Vol. 6, No. 2, pp. 67-80.
15. Published a paper “Ranking decision rules using rough set theory - A comparative analysis” in Advances in Intelligent Systems and Computing (AISC), Volume 768, pp 567-579, **Springer**, August 2018 (Presented in the International Conference on Cognitive Informatics and Soft Computing (ICCISC – 2017) organized by the Department of Computer Science and Engineering & Department of Information Technology, Vignana Bharathi Institute of Technology, Hyderabad).
16. Published a paper titled “Automatic detection of tuberculosis bacilli from microscopic sputum smear images using deep learning methods” in the international journal of Biocybernetics and bio medical engineering 38 (2018) 691 – 699 published by **Elsevier** and available online at [www.sciencedirect.com](http://www.sciencedirect.com).
17. Published a paper titled “A Novel Relay Selection Algorithm using Ant Colony Optimization with Artificial Noise for Secrecy Enhancement in Cooperative Networks” in the International Journal of Communication Systems (<https://doi.org/10.1002/dac.3739>), Volume31, Issue14, e3739, September 2018, **Wiley**.
18. Published a paper titled “A Study on Machine Learning Techniques Algorithm on Stock Market Prediction” in the Online International Interdisciplinary Research Journal, {Bi -Monthly}, ISSN 2249-9598, Volume-08, Dec 2018 Special Issue (02)
19. Published a paper titled “Non-Local Means Image Denoising using Shapiro-Wilk Similarity Measure”, in IEEE Access 6: 66914-66922 (2018).
20. Published a paper titled “Feature selection using Ant Colony Optimization-A review on Heuristic Information Measurement”, in the International Journal of Applied Engineering Research ISSN 0973-4562 Volume 13, Number 3 (2018)
21. Published a book chapter titled “Tuberculosis Detection from Conventional Sputum Smear Microscopic Images using Machine Learning Techniques” in HCIRA 2019, Hybrid Computational Intelligence: Research and Applications published by CRC Press, Tyler and Francis group.

22. Published a paper titled “Feature Selection With Centre of Gravity Method using Ant Colony Optimization” in the International Journal of Recent Technology and Engineering (IJRTE)(Volume 8, Issue 3, pp 695-699, September 2019), published by Blue Eyes Intelligence & Sciences Publication.
23. Published a paper titled “CoGBUS- Center of Gravity Based Under Sampling Method for Imbalanced Data Classification”, in the International Journal of Recent Technology and Engineering (IJRTE) (Volume 8, Issue 2, pp 2463-2468, July 2019), published by Blue Eyes Intelligence & Sciences Publication.
24. Published a paper titled “Factors influencing the adoption of computerized medical diagnosing system for tuberculosis” in the International Journal of Information Technology, published by Springer.

## GRANTS AND HONORS

- Best performing teacher award, M.E.S College, Marampally (2007-2008).
- Best performing teacher award, M.E.S College, Marampally (2014-15).
- UGC awarded travel grant to visit Switzerland for presenting a research paper in the Second International conference on Artificial Intelligence and Applications, ARIA-2015.

## CONFERENCE PRESENTATIONS

- Presented a paper on “Selecting Significant rules from an information system- A Rough Set based approach” in the National Conference at SNM College, Maliankara on April 2013 and the same is published in the proceedings of the conference.
- Presented a paper titled “A Novel Rough Set Based Approach to Handle High Dimensional Datasets” in the Fifth International Joint Conference on Advances in Engineering and Technology, AET-2014 organized by IDES in Kochi, India and the same is published in the proceedings of the conference.
- Presented a paper titled “Feature Selection – A Novel Approach for Prediction of Learning Disabilities in School-aged Children” in the Second International conference on Artificial Intelligence and Applications, ARIA-2015 at Zurich, Switzerland and the same is published in the proceedings of the conference.
- Presented a paper titled “Rough Set Based Approaches to Attribute Reduction – A Comparative Study” in the UGC Sponsored National Conference at Rajagiri College of Social Sciences, Kalamassery, Kerala on 13-2-2013.
- Presented the paper titled “Rule Induction – A Rough Set Approach“ at M E S College , Marampally and the same is published in FORTIS, the biannual journal from MES College, Marampally (Vol. 1, Issue December 2012, ISSN 2320-6985).
- Presented a paper titled “GABOOST: A Clustering based Undersampling Algorithm for Highly Imbalanced Datasets using Genetic Algorithm”, in the International Conference on Innovations in Bio-Inspired Computing and Applications (IBICA 2018) held at Toc H Institute of Science & Technology, Kochi, India and the same is published in [Advances in Intelligent Systems and Computing](#) (AISC)book series (Volume 939, pp 235-246, May 2019), **Springer**.
- Presented a research paper titled “Building Rule Base for Decision Making - A Fuzzy-Rough Approach” and the same is presented in 1st International Conference on Machine Learning, Image Processing, Network Security and Data Sciences organized by NIT Kurukshetra, INDIA, March 2019. The proceedings of this conference will be published by Springer in their prestigious IETE Springer series.
- Presented a paper titled “Review on Rough set methods to construct decision tree” in International Conference on Digital Transformation of Business – Models, Enablers and Roadmaps, Organized by DDU Kausal Kendra, CUSAT, March 2019.

- Presented a paper titled “A Review on Imbalanced Bigdata Classification: Promises and Challenges” in International Conference on Digital Transformation of Business – Models, Enablers and Roadmaps, Organized by DDU Kausal Kendra, CUSAT, March 2019.
- Accepted for presentation, an abstract titled “Stock Market Prediction using Deep Learning Techniques” in the 30th European Conference on Operational Research (EURO2019), 23rd - 26th June, Dublin Ireland.

## **TEACHING AND ADVISING EXPERIENCE**

- 13 Years of Post Graduate level and 20 years of under graduate level teaching experience.
- Project Guidance for B.Tech, MCA & MSc (CS) students of M.G University, Kottayam, IGNOU, and CUSAT.

## **RESEARCH EXPERIENCE**

1. Approved Research Guide, Department of Computer Applications, Cochin University of Science and Technology, Cochin – 22.
2. Principal investigator – UGC funded Minor Research Project titled “Prediction of Learning Disabilities in School Aged Children – A Rough Set Approach” sanctioned on 2013.
3. Principal Investigator – CUSAT funded research project “A Rough Set approach to improve the performance of conventional Non Local Means image denoising algorithm” sanctioned in 2017.

## **ACADEMIC AFFILIATIONS**

1. Faculty Representative, IQAC, CUSAT.
2. Member, Board of Studies in Computer Science (PG), Kannur University,
3. Chairman, Expert Committee, Computer Engineering and Application (PG), Mahatma Gandhi (M.G) University, Kottayam, Kerala, India.
4. Subject Expert, Board of Studies in Computer Applications, St.Teresa's College (Autonomous)
5. Expert Committee Member, Labs to Industry Programme (PhD Start -Ups) for Computer science, School of Computer Science, M.G. University, Kottayam.
6. Chairman, Board of Studies (UG) in Computer Science, Vimala College, Thrissur (Autonomous).
7. Member, Academic Council, Cochin University of Science and Technology (CUSAT).
8. Member, Academic Council, Mahatma Gandhi University, Kottayam.
9. Special invitee, CBCSS syllabus revision committee, Mahatma Gandhi (M.G) University, Kottayam, Kerala, India.
10. Member, Board of Studies, Computer Science and Applications (PG), M.G. University, Kottayam, Kerala, India.
11. Special invitee, CBCSS syllabus revision committee, Kannur University, Kerala, India.
12. External Examiner, Directorate of Distance Education, Madurai, Kamaraj University, Kerala, India.
13. External Examiner, School of Distance Education, Bharathiar University, Kerala, India.
14. External Examiner for Project Evaluation and Viva-voce of MCA and MSc (Computer Science) Programmes of Kannur, University, Kerala, India.
15. External Examiner for the thesis evaluation and viva-voce of IV Semester M.Tech Examination, December 2014 of Department of Computer Science, University of Kerala.
16. External Examiner for Project Evaluation and Viva-voce of MCA and BCA Programmes of Indira Gandhi National Open University (IGNOU), New Delhi.
17. Chairman, Board of studies (UG) in Computer Applications of St. Teresa’s College, Ernakulam (Autonomous).

18. Internal Mentor, Walk With a Scholar (WWS) programme, M.E.S College, Marampally.
19. Placement coordinator, M.E.S College, Marampally during the academic year 2014-15. During this academic year around 217 students from various institutions including students from MES College get placed in various organizations such as Wipro, TCS, TechMahindra, etc.
20. Coordinator of the project sanctioned by the Department of Science and Technology (DST) to strengthen the teaching facilities in all Science Department of the College under FIST programme. DST sanctioned a sum of Rs. 80,00,000 (Rupees Eighty Lakh) for implementing the said project in M.E.S College Marampally in the academic year 2015-16.

## **PROFESSIONAL EXPERIENCE**

1. Resource person in UGC – HRDC - 10th Refresher Course in Computer Applications, University of Calicut
2. Resource person, Academic Staff College, Kannur University.
3. Resource person, Academic Staff College, Calicut University, Kerala, India.
4. Visiting faculty member, Kannur University, Kerala, India.
5. Resource person, UGC sponsored National Conference on Data Mining at BPC College, Piravom, Kerala, India.
6. Resource person, Workshop on Data Mining at RIT, Kottayam, Kerala, India.
7. Resource person, Refresher Course in Computer Applications, organized by Academic Staff College, Kannur University, Kerala, India, on November 2014.
8. Resource person, UGC Sponsored workshop on “Machine Learning Techniques for Data Mining – MLTDM 2015” organized by MES College, Marampally, Kerala, India on January 2015.
9. Resource person in the two day live workshop on “Data Mining Functionalities”, organized by the Department of MCA, MES-AIMAT, Marampally, Kerala, India on February 27-28, 2015.
10. Reviewer, International Journal of Artificial Intelligence and Applications (IJAIA)
11. Reviewer, International Conference on Knowledge Engineering- Theory and Practices, 2015, organized by Rajagiri College of Social Sciences, Kalamassery.
12. Resource Person, UGC Sponsored National Conference on “Information and Communication Technologies” organized by the Department of Computer Applications, BPC College, Piravom on March 2014.
13. Resource person, UGC sponsored three day National Seminar on “Cloud Computing” organized by the Department of Computer Science, M.E.S College, Nedumkandam, Idukki, Kerala on September 2015.
14. Resource person, UGC sponsored national conference on “Recent Trends in Data Mining” organized by the Department of Computer Applications, B.P.C College, Piravom, Kerala, India on December 2015.
15. Resource person, UGC sponsored national conference on “Artificial Intelligence (NCAI’16)” organized by the Department of Computer Science, Government College, Nedumangad, Thiruvananthapuram, Kerala, India on January 2016.
16. Resource person, UGC sponsored national Seminar on “Research Trends in Computer Science (RTCS ’16)” organized by the Department of Computer Science, M.E.S Ponnani College, Kerala, India on January 2016.
17. Resource person, UGC sponsored three day national Seminar on “Image Processing” organized by the Department of Computer Science, Sree Narayana College, Cherthala, Kerala, India on February 2016.
18. Resource person, UGC sponsored national Seminar on “Emerging Trends in ICT-Enabled Teaching Learning Process” organized by the Department of Computer Science, Pavanatma College, Murickassery, Kerala, India on February 2016.
19. Resource person in Faculty Development Programme organized by the Department of Computer Applications, TKM College of Engineering, Kollam, Kerala on February 2016.
20. Resource person in the six day National Level Faculty Development Programme on “DATA MINING AND ITS APPLICATIONS” organized by the Department of Information Technology,

College of Engineering, Vadakara under TEQIP Phase II, a project of Govt. of India on April 2016.

21. Resource person in the Short Term Training Programme on “Machine Learning Tools and Techniques” organized by Division of Computer Engineering, School of Engineering, Cochin University of Science and Technology, Cochin – 22, on September 2016.
22. Delivered a talk on 19-01-2018, in the area of “Load balancing in cloud – An Ant Colony Optimization approach” in one week KTU sponsored FDP on “Exploring the Applications of Embedded Systems and Internet of Things” organized by the Department of Electronics and Communication Engineering, Amal Jyothi College of Engineering, Kanjirappilly.
23. Resource person in the Two day State Level Conference on “Deep Neural Networks in Bioinformatics” held on 23<sup>rd</sup> and 24<sup>th</sup> August 2017 organized by the Department of Computer Applications, M.E.S College, Marampally and co-sponsored by Kerala State Council for Science, Technology and Environment.
24. Resource person in the National Seminar on “Rough Set Theory with Applications to Data Mining and Cyber Forensics” held on 13<sup>th</sup> November 2017 organized by the Department of Computer Science, K.K.T.M. Govt. College, Pullut and sponsored by Directorate of Collegiate Education, Govt. of Kerala.
25. Resource person in the FDP on “Discrete Mathematics and Graph Theory” held on 28<sup>th</sup> June 2017 organized by the Department of Mathematics, Adi Shankara Institute of Engineering and Technology, Kalady.
26. Resource person in the Three day National Workshop on “Recent Computing Techniques in Data Analytics (Nuevagia 2017)” held on 5<sup>th</sup> to 7<sup>th</sup> January 2017 organized by the Department of Computer Science, K.K.T.M. Govt. College, Chittur and sponsored by Directorate of Collegiate Education, Govt. of Kerala.
27. Invited as subject expert at MES College Marampally.
28. Invited as subject expert at School of Computer Sciences, M.G. University, Kottayam.
29. Invited as external examiner, MTech Dissertation and Viva-Voce Examination, University of Kerala.
30. Invited as external examiner, MTech Dissertation and Viva-Voce Examination, Royal College of Engineering & Technology, Thrissur.
31. Invited as external examiner, MCA Project Evaluation and Viva-Voce Examination, Kannur University.
32. Invited as external examiner, M.Phil Project Evaluation and Viva-Voce Examination, IITM-K Thiruvananthapuram.
33. Reviewer, 2019 International Conference on Data Science and Communication (IconDSC’19), Organized by Faculty of Engineering, CHRIST (Deemed to be University), Bangalore, on 1-2 March 2019.
34. Reviewer, International Conference on NextGen Information Systems and Technologies (NGIST ’18), jointly organized by Department of Computer Science and Engineering, NSS College of Engineering, Palakkad, Science and Engineering Research Board (SERB) and Kerala State Council for Science, Technology and Environment (KSCSTE) on July 19-20, 2018.
35. Invited as external examiner, MTech Dissertation and Viva-Voce Examination, National Institute of Karnataka, Surathkal.
36. External examiner, MCA Project evaluation and Viva-voce, APJ Abdul Kalam Technological University, Thiruvananthapuram.
37. Subject Expert, Screening cum Evaluation Committee for the placement of faculty, Department of Computer Science, KKTU Govt. College, Pullut, Kodungallur, Thrissur.
38. Subject Expert, Screening cum Evaluation Committee for the placement of faculty, Department of Computer Science Govt. College, Chittur, Palghat.
39. Member – International Rough Set Society

## **RELATED PROFESSIONAL EXPERIENCE**

### **Training Programmes/Courses attended**

1. Attended UGC Sponsored Refresher Course in “Advances in Computer Science” organized by Department of Computer Science, Cochin University of Science and Technology from 22-02-1999 to 15-03-1999.
2. UGC Sponsored Orientation Course organized by Academic Staff College, University of Calicut from 17-7-2003 to 13-08-2003.
3. UGC Sponsored Refresher Course in “Computer Applications” organized by Refresher Course Centre, Mahatma Gandhi University, Kottayam from 04-01-2005 to 25-01-2005.
4. UGC Sponsored Refresher Course in “Computer Applications” organized by Academic Staff College, University of Calicut from 1-7-2008 to 21-07-2008.
5. Short Course on “Data Mining and Machine Learning” organized by IIITMK, Thiruvananthapuram from 27-6-2011 to 01-07-2011.
6. Successfully completed NPTEL Online Certification course “Introduction to Data Analytics” conducted by Indian Institute of Technology, Madras from July to September 2016.
7. Attended two day National workshop on “nVIDIA GPU Programming” at Department of Computer Science, CUSAT from 25/09/2017 to 26/09/2017.
8. Winter School on Artificial Intelligence, Four day workshop, organized by IIT, Delhi from 18/01/2019 to 21/01/2019.

### **Seminar/Workshop/Symposium Co-ordinated**

1. Organizing Committee Member and Reviewer, National Conference on Computing and Communication (NCCC 2011), Organized by School of Computer Sciences, M.G. University, Kottayam.
2. Organizing Committee Member, National Conference on Computing Paradigms and Bio-Informatics (CPBI 2012), Organized by School of Computer Sciences, M.G. University, Kottayam.
3. Joint Convenor, UGC sponsored National Conference on Current Trends in Machine Learning Techniques and Applications, Organized by Department of Computer Applications, M.E.S College, Marampally, 2012.
4. Organizing Committee Member, National Conference on Recent Advances in Signal and Image Processing (NCRASIP 2012), Organized by School of Information Science and Technology, Kannur University.
5. Co-ordinator of the workshop “Campus to Corporate” organized by M.E.S College, Marampally in association with ORMA, the Alumni association of M.E.S College, Marampally on December 2012.
6. Co-ordinator of the UGC sponsored National Conference on “Soft Computing Techniques for Data Mining (NCSCTDM 2014)” organized by the Department of Computer Applications, M.E.S College, Marampally in association with Department of Computer Applications, Cochin University of Science and Technology on January 2014.
7. Organizing chair of the UGC sponsored Workshop on “Machine Learning Techniques for Data Mining (MLTDM 2015)” organized by the Department of Computer Applications, M.E.S College, Marampally on January 2015.
8. Organizing committee convener, two day workshop on “HADOOP: A Big Data Architecture & PYTHON: A Language for Scientific Computing” organized by the Department of Computer Applications, M.E.S College, Marampally on March 2016.
9. Organizing committee member, 7<sup>th</sup> National Conference on Indian Language Computing (NCILC 2017), organized by the Department of Computer Applications, CUSAT.

10. Organizing committee member, Five day International Workshop, Cyber Cube – 2017, organized by Cyber Intelligence Research Laboratory, Department of Computer Applications, CUSAT.
11. Co-ordinator, two day workshop on Cyber Crime Investigation and Digital Forensics Tools, organized by the Department of Computer Applications, CUSAT during Oct 20<sup>th</sup> and 21<sup>st</sup>, 2017.
12. Co-ordinator, five day workshop on “Syllabus/Curriculum Restructuring of PGCSS” of Mahatma Gandhi University at DePaul Institute of Science and Technology from 10/01/2019 to 14/01/2019.
13. Joint Coordinator, five day workshop on “Deep Learning”, organized by Department of Computer Applications, CUSAT from 19/02/2019 to 23/02/2019.
14. Summer School on Deep Learning, organized by Department of Computer Applications, CUSAT from 20/05/2019 to 24/05/2019.

### **Session Chair**

1. International Joint Conferences on Advances in Computer Engineering – ACE 2014, Advances in Engineering and Technology – AET 2014, Communication and Computer Networks – ComNet 2014, Power, Control and Instrumentation Engineering – PCIE 2014, organized by IDES on December 2014, at Kochi, India.
2. Fourth International Conference on Information Technology Convergence & Services – ITCS 2015, organized by AIRCC Publishing Corporation on January 2015 at Zurich, Switzerland
3. International conference on Knowledge Engineering – Theory and Practice, organized by Department of Computer Science, Rajagiri College of Social Sciences Kalamassery on July 2015.
4. 4<sup>th</sup> International Conference on Advances in Computing, Communications & Informatics – ICACCI – 2015, Kerala, India on August 2015.
5. International conference on Emerging Trends in Engineering and Management - ICETEM’16, organized by Sree Narayana Gurukulam College of Engineering, Kadayirippu on January 2016.
6. IEEE International Conference on Data Mining and Advanced Computing (SAPIENCE 2016) organized by Sree Narayana Gurukulam College of Engineering, Kadayirippu on March 2016.
7. National Seminar on “Data Mining and Cloud Computing” organized by Department of Computer Science, Naipunnya Institute of Management and Information Technology, Koratty, Thrissur, Kerala, on October 2016.
8. National Conference on “Recent Innovations in Data Science” jointly organized by Department of Computer Science and Engineering, Vadakara and Department of Information Technology, Kannur University on October 2016.
9. 7<sup>th</sup> National Conference on Indian Language Computing (NCILC 2017), organized by the Department of Computer Applications, CUSAT.
10. National Conference on Discrete Mathematics and Computing (NCDMC 2017), organized by the Department of Applied Science and Department of Computer Applications, College of Engineering, Vadakara.
11. IEEE International Conference on Circuits and Systems in Digital Enterprise Technology, organized by SAINTGITS College of Engineering, Kerala, on DEC 2018.