

# **Prof. (Dr.) Ciza Thomas**

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**Email: cizathomas@gmail.com**



## **CURRENT AND FORMER POSITIONS:**

- Currently Vice Chancellor of Kerala University of Digital Sciences, Innovation and Technology, Kerala
- Former Vice Chancellor of APJ Abdul Kalam Technological University, Kerala
- Former Director (in-charge), Directorate of Technical Education, Government of Kerala
- Former Senior Joint Director, Directorate of Technical Education, Government of Kerala
- Former Principal, Government Engineering College, Barton Hill, Trivandrum, Kerala
- Former Professor and Head, Department of Electronics and Communication Engineering, College of Engineering, Trivandrum, Kerala
- Former Professor and Head, Department of Computer Applications, College of Engineering, Trivandrum, Kerala
- Former Professor and Dean, Karunya University, Coimbatore, Tamil Nadu
- Ombudsperson, Indian Institute of Space Science and Technology, Department of Space, Government of India

## **EDUCATIONAL QUALIFICATION**

- B.Tech & M.Tech from College of Engineering, Trivandrum, Kerala, India
- Ph.D. from Indian Institute of Science, Bangalore, India

## **AWARDS / HONOURS**

- Appreciation Award in 2010 by the Higher Education Department, Government of Kerala, for implementing the institutional repository and the e-learning system for all Government Engineering Colleges and Polytechnics in the State of Kerala.
- E-learning IT Award for the year 2014 by the Government of Kerala
- Best Paper Awards in four International Conferences
- Catholicate Best Scientist Award 2023

## **HIGHLIGHTS**

- Undergone training at Carnegie Mellon University and Computer Emergency Response Team (CERT), USA with India Government scholarship
- Collaborator of the MapleSAT project of Waterloo University, Canada  
<https://sites.google.com/a/gsd.uwaterloo.ca/maplesat/maplesat>  
<https://sites.google.com/a/gsd.uwaterloo.ca/maplesat/publications-1> \
- Scientific partner of Centre for Multidisciplinary Research, Innovation and Collaboration, UK.
- Industry Chair of International Conference (AppSecurity 2016) held in UK \
- Co-ordinator of International Workshop on Trusted Systems in collaboration with Stevens Institute, USA, 2015 \
- Collaborative work with Professor from IISc, Bangalore
- Steering Committee member of many conferences held in UK and UAE
- Founding Member of Engineering Research Council of the APJ Abdul Kalam Technological University
- Research Sub-committee member of Kerala State Higher Education Council
- Lead Auditor for ISO certification (certified by Neigel Baur Associates, UK)
- Guest Editor to a Special Issue for IEEE security and Privacy
- Guest Editor to a Special Issue for Journal of Computer Networks and Communications Hindawi Publishing
- Guest Editor to a Special issue on Smart Cyber Security Systems for the International Journal on Cyber Situational Awareness
- Successfully completed the challenges of the edition 2020 of the Indian Dutch Cyber Security School in November 2020
- Ph.D with a good contribution to the research field of Network Security and Sensor Fusion from the Indian Institute of Science, Bangalore, India
- Visiting faculty for collaborative research work at Indian Institute of Science, Bangalore
- Guiding eight PhD scholars (and four received their doctoral degrees) in the field of Cyber Security, Sensor Fusion, Intrusion Detection, Spam Detection, and Explainable Artificial Intelligence.
- 99 International Conference and Journal publications, 50 National Conferences, two magazine articles, and 24 book chapters
- Edited Seven books with international publishers
- Chairperson of the Technical Committee of Higher Education
- Member of various technical committees in the State of Kerala
- Steering committee member, technical committee member, Industry chair, session chair, organizing committee member, etc. of many international conferences
- Technical Programme Committee member of more than 100 conferences
- NPTEL contributor [https://nptel.ac.in/syllabus/syllabus\\_pdf/106106105.pdf](https://nptel.ac.in/syllabus/syllabus_pdf/106106105.pdf)

- Lead Auditor for ISO certification (certified by Neigel Baur Associates, UK)
- Implemented the Kbase project, which is an institutional repository and e-learning system for all the Engineering Colleges and Polytechnics under the Directorate of Technical Education of Kerala State in 2010
- Developed the curriculum, course contents and supported the “Additional Skill Acquisition Programme” of the Higher Education Department on “Electronic Product Testing”
- Technical Committee member of the e-Governance Project implementation of the Corporation of Trivandrum
- Technical committee member for the implementation of security features to Kerala State Lotteries
- Business Advisory Committee member of the ASAP project in the telecom sector
- Business Advisory Committee (BAC) member of KASE - the State Skill Development Mission of Govt. of Kerala
- Held the post of co-coordinator of the IMPACT Project which is an Indo-Swiss collaboration project.
- Chairman of the Higher Education Department’s project on the Additional Skill Acquisition Programme on Electronic Product Testing for the degree students of Kerala
- Steering Committee member for the preparation of the proposal for the IT@College project of the Higher Education Council of the Government of Kerala
- Purchase Committee member of various computer and Electronic equipment purchases in various departments of the Government of Kerala.
- KSCSTE - Selection Committee member for post-doctoral fellowship in Engineering
- KSCSTE - Evaluator for research proposals
- KSCSTE - Reviewer for Kerala Science Congress
- Technical expert in various Purchase committees in the State
- Question paper setter for various tests (recruitment and promotion) in public sector organizations
- Panel member for SLEEK 2015
- KTU - Selection Committee member for Faculty Development Programmes
- Committee member for the IT@College project of the Higher Education Department of Government of Kerala.
- Committee member for the Young Innovators Programme of the Higher Education Department of Government of Kerala and coordinating the Engineering Colleges in the State.
- CERD funded student project “Adaptive Traction Control using Neural Networks” successfully undertaken.
- Subject expert for faculty interview at various self-financing Colleges in the State

- Chairman of Board of Governance of Government Central Polytechnic, Trivandrum.
- Nodal officer for file Adalat in Technical Education of Government of Kerala
- Convener of admission to courses B.Tech (Lateral Entry), MTech, MCA, Centralized Seat Allotment Board, BFA, and MFA 2019-20
- Chairperson of the Technical Committee of Higher Education for IT-related purchase
- Chairperson of the anti-corruption and vigilance cell at the Directorate of Technical Education
- Chairperson of the Sexual Harassment Committee at the Directorate of Technical Education
- Chairperson of the Malayalam Language in Technical Education department
- Member of the technical committee of Additional Skill Acquisition Programme of Kerala
- Invited speakers to various academic and research organizations like the Indian Space Research Organization and Defence Research and Development Organization
- Organized training for various defence and research organizations and is an active resource person
- Resource person for the Govt. of India sponsored courses held annually at the Indian Institute of Science, Bangalore on Information Security from 2005 to 2011
- Visiting faculty for collaborative research work at Indian Institute of Science, Bangalore since 2011
- Resource person for various events conducted by the Data Security Council of India (DSCI) in 2018
- Panelist at the Digital Indian Celebrations of VSSC, Trivandrum, 3 Aug. 2018 • Moderator at various National and International Conferences
- Research Supervisor for PhD programmes of the University of Kerala in the branches of Electronics and Communication Engineering and also Computer Science and Engineering
- Research Supervisor for PhD Programmes of APJ Abdul Kalam Technological University, Kerala
- Permanent member of the Doctoral Committee in the subjects Electronics and Communication Engineering and Computer Science and Engineering, of the University of Kerala
- Convener, Board of Studies in Engineering PG, University of Kerala
- Member, Board of Studies in Engineering UG, University of Kerala
- Curriculum Committee Chairman of the B.Tech Electronics and Communication course at the APJ Abdul Kalam Technological University
- Technical Committee member of the B.Sc Electronics/ Computer science Degree

courses of Kerala University since 1996.

- Question Paper setter for Kerala, MG, Calicut and Anna Universities
- Chairman of the B.Tech Electronics and Communication valuation at the Kerala Technological University 2015 and 2016
- Chairman of the M.Tech Electronics and Communication valuation at the Kerala Technological University 2015 and 2016
- Subject expert and Viva examiner for qualifying examination leading to Ph. D. degree at various Universities
- Board of Studies in Industry driven courses were constituted in APJAKTU so as to include most relevant subjects in the curriculum

## **BOOKS EDITED**

1. nSensor Fusion and its Applications, Sciyo books, Sept. 2010, ISBN978-953-307-101 5, Doi10.5772/3302, [Sensor Fusion and its Applications | IntechOpen](#)
2. Sensor Fusion: Foundation and Applications, Intech Books, Jun. 2011, ISBN978-953-307-446-7, Doi10.5772/680, [Sensor Fusion - Foundation and Applications | IntechOpen](#)
3. Complex Systems, Sustainability and Innovation, Intech Books, Nov. 2016, ISBN978-953-51-2842-7, Doi10.5772/62659, [Complex Systems, Sustainability and Innovation | IntechOpen](#)
4. Ontology in Information Science, Intech Books, Dec. 2017, ISBN978-953-51-3888-4, Doi10.5772/65599, [Ontology in Information Science | IntechOpen](#)
5. Data Mining, Intech Books, Jun. 2018, ISBN978-1-78923-597-5, Doi10.5772/intechopen.71371, [Data Mining | IntechOpen](#)
6. Computer Security Threats, InTech Books, Aug. 2020, ISBN978-1-83880-240-0, Doi10.5772/intechopen.83233, [Computer Security Threats | IntechOpen](#)
7. Data Mining – Concepts and Applications, InTech Books, Jan. 2022, ISBN978-1-83969-267-3, Doi10.5772/intechopen.95167, [Data Mining - Concepts and Applications | Intech Open](#)
8. Applications of Data Mining (in Process)

## **RESEARCH PUBLICATIONS**

### **(ONLY INTERNATIONAL PUBLICATIONS LISTED HERE)**

1. Selection of Intrusion Detection Threshold Bounds for Effective Sensor Fusion, Proceeding of SPIE, 2007
2. Performance Enhancement of Intrusion Detection Systems using Advances in Sensor Fusion Techvista, Microsoft Research Symposium Conference Proceedings, 2007
3. Usefulness of DARPA Dataset for Intrusion Detection System Evaluation, Proceeding of SPIE, 2008

4. Improvement in Minority Attack Detection with Skewness in Network, Traffic Proceeding of SPIE, 2008
5. Advanced Sensor Fusion Technique for Enhanced Intrusion Detection International Conference on Intelligence and Security Informatics Conference Proceedings 2008
6. Performance Enhancement of Intrusion Detection Systems using Advances in Sensor Fusion, Proceedings of the International Conference on Information Fusion, Conference Proceedings, 2008
7. Modified Evidence Theory for Performance Enhancement of Intrusion Detection Systems, Proceedings of the International Conference on Information Fusion, Conference Proceedings, 2008
8. Mathematical Analysis of Sensor Fusion for Intrusion Detection Systems, Proceedings of the International Conference on Communications and Networking, International Conference, 2009
9. Improvement in Attack Detection using Advances in Sensor Fusion, IEEE Transactions on Information Forensics and Security, International Journal, 2009 (SCI indexed, impact factor-6.211)
10. Intrusion Detection using Flow-based Analysis of Network Traffic IEEE Computer Society, International Conference Proceedings, 2010
11. Mathematical Basis of Sensor Fusion in Intrusion Detection Systems, Sensor Fusion and its Applications, Sciyo books, 2010
12. Attack-Detection Scenario in a Secured Network Environment, IEEE Magazine on Security and Privacy, IEEE Magazine, 2010
13. Intrusion Detection Using Flow-based Analysis of Network Traffic, Springer Communications in Computer and Information Science, Springer Advances in Networks and Communications, 2011
14. Performance Enhancement in Attack Detection with Imbalance in Network Traffic Privacy, Intrusion Detection, and Response: Technologies for Protecting Networks, IGI Global Publishers, 2011
15. Sensor Fusion for Enhancement in Intrusion Detection, Sensor Fusion: Foundation and Applications InTech Books, 2011
16. Issues and Challenges in Intrusion Detection with Skewed Network Traffic International Conference on Innovative Mobile and Internet Services in Ubiquitous Computing, International Conference Proceedings, 2011
17. Usefulness of Sensor Fusion for Security Incident Analysis Situational Awareness in Computer Network Defense: Principles, methods and Applications, IGI Global Publishers, 2011
18. Advanced Security Incident Analysis with Sensor Correlation Situational Awareness in Computer Network Defense: Principles, methods and Applications, IGI Global Publishers, 2011
19. Denial of Service Attack Detection using Flow-based Analysis of Network Traffic,

- Journal of Communication and Computers, David Publishing, ISSN:1548-7709, International Journal, 2012
20. Improvement in Intrusion Detection for Imbalanced Network Traffic, International Journal of Security and Networks John Wiley Publishers, International Journal, 309-324, 2012
  21. Spam War: Battling Ham against Spam, Proceedings of IEEE Conference on Industrial Electronics, International Conference Proceedings, 2012
  22. Evaluation of Mitigation Methods for Distributed Denial of Service Attacks, Proceedings of IEEE Conference on Industrial Electronics International Conference Proceedings, 2012
  23. Threats and its Countermeasures on a Secured Network Environment, Proceedings of International Conference on Security of Internet of Things, International Conference Proceedings, 2012
  24. Detection of Drive-by-download Attacks: A Static Approach Proceedings of IEEE Conference on Control, Communications and Computing, International Conference Proceedings, 2013
  25. Detection of Phishing URLs using Machine Learning Techniques, Proceedings of IEEE Conference on Control, Communications and Computing, International Conference Proceedings, 2013
  26. Feasibility of Machine Learning Techniques in Reducing the False Positives in Intrusion Detection Systems, International Journal of Computer Science and Mobile Computing International Journal, 2013
  27. Spray Characterization using combined radon and Hough Transforms, IEEE International Conference on Signal Processing, Informatics, Communication and Energy Systems IEEE SPICES 2015 Conference Proceedings, 2015
  28. Optimizing False Alerts using Multi- objective PSO method IEEE International Conference on Signal Processing, Informatics, Communication and Energy Systems, IEEE SPICES 2015 Conference Proceedings, 2015
  29. DDoS Attack Detection using Fast Entropy, Approach on Flow-based Network Traffic Second International Symposium on Big Data and Cloud Computing Challenges Conference Proceedings, 2015
  30. DDoS Attack Detection using Fast Entropy, Approach on Flow-based Network Traffic Elsevier Procedia Computer Science, volume 50, 2015, pg 30-36, Journal Publication, 2015
  31. Evaluation of mitigation methods for distributed denial of service attacks, Recent Advances in Intelligent Computational Systems IEEE RAICS Conference Proceedings, 2015
  32. Performance Evaluation of Different Classifiers with Benchmark Datasets in Spam Detection International Conference on Data Mining and Advanced Computing SAPIENCE 2016 Conference Proceedings, 2016
  33. Gaussian Kernel Based Fuzzy C-Means Clustering Algorithm for Image



- Segmentation, The Second International Conference on Computer Science, Engineering and Information Technology Conference Proceedings, 2016
34. Draping of Arial Images onto Digital Terrain Elevation data, ICSSP 2016 McGrawhill Journal page No. 325-330, Conference Proceedings, 2016
  35. Introduction to Complex Systems, Sustainability and Innovation Complex Systems, Sustainability and Innovation, INTECH publishers, 2016
  36. Improving the Performance of CDCL solvers ISEES 2016, International Conference on Information Systems, Energy, Environment and Safety Emerging Scenario Conference Proceedings, 94-110, 2016
  37. Game Theoretical Analysis of Usable Security, International Conference on Applied Mathematics and Theoretical Computer Science, 2018
  38. Machine Learning-based Restart Policy for CDCL SAT Solvers, 21<sup>st</sup> International Conference on Theory and Applications of Satisfiability Testing, SAT 2018 43
  39. A Survey on Metamorphic Malware Detection based on Hidden Markov Model, International Conference on Advances in Computing, Communications and Informatics, 357-362, ICACCI 2018
  40. Machine Learning-based Restart Policy for CDCL SAT Solvers, Lecture notes in Computer Science book series, LNCS, volume 10929
  41. Game Theoretical Analysis of Usable Security and Privacy, Journal of Security and Privacy, Wiley, 2018, DOI: 10.1002/spy2.55
  42. Efficient DDoS Flood Attack Detection using Dynamic Thresholding on Flow-Based Network Traffic, Journal on Computers & Security, Elsevier, 82:284-295, 2019
  43. Crime identification using traffic analysis of HTTP Botnet, Encyclopaedia of Criminal Activities and the Deep Web, IGI Publishers, 2019
  44. Entropy Based High-Rate DDoS Attack detection using GARCH Model, international conference on intelligent computing and signal processing (IntelliSig2019)
  45. Entropy Based High-Rate DDoS Attack detection using GARCH Model, Book chapter in Narosa Publications, 2019
  46. Can India aim to deliver a world-class higher education system? Review article in Higher Education Review Magazine:  
<https://www.thehighereducationreview.com/magazines/colleges-in-germany-special-april-2019/> Pg No: {{26-28}}.
  47. Detection of Medical Apps using Advanced Machine Learning Techniques, Book on Computational Intelligence for Machine Learning and Health Care Informatics, De-Gruyter Publishers, 2019
  48. Improved PSO for Optimizing the Performance of Intrusion Detection Systems, Fifth International Symposium on Intelligent Systems Technologies and Applications (ISTA'19) - Best paper Award
  49. A Novel Framework for Spam Hunting by Tracking Concept Drift, Second



- International Conference on Computer Networks and Communication Technologies. ICCNCT 2019.
50. Improved PSO for Optimizing the Performance of Intrusion Detection Systems, Special Section in the Journal of Intelligent and Fuzzy Systems, IOS Press, 38(5):6537-6547 (2020)
  51. A Novel Framework for Spam Hunting by Tracking Concept Drift. In: Smys S., Senjyu T., Lafata P. (eds), Springer Lecture Notes on Data Engineering and Communications Technologies, vol 44, 2020
  52. Crime Identification Using Traffic Analysis of HTTP Botnet, Encyclopaedia of Criminal Activities and the Deep Web, 2020, DOI: 10.4018/978-1-5225-9715 5.ch074
  53. Introduction to Computer Security Threats, book chapter in the book titled Computer Security Threats, Intech Publishers, 2020
  54. Gaussian Kernel Based Fuzzy C-Means Clustering Algorithm for Image Segmentation, The Second International Conference on Computer Science, Engineering and Information Technology (CSITY 2016) Chennai, India, April 02~03, 2016, ISBN : 978-1-921987-49-6, Vol 6, No 6, April 2016, AIRCC Publishing Corporation.
  55. Gaussian kernel Based Fuzzy C-Means Clustering Algorithm for Image Segmentation, Computer Science & Information Technology (CS & IT), pp. 47–56, 2016. © CS & IT-CSCP 2016, DOI : 10.5121/csit.2016.60405
  56. Detection of Brain Tumor in MRI images Using Optimized ANFIS Classifier, International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems, World Scientific
  57. Detection of Distributed Denial of Service Attacks based on Information Theoretic Approach in Different Time Series Models, Journal of Information Security and Applications, Elsevier, Volume 55, 2020, 102621, ISSN 2214-2126, <https://doi.org/10.1016/j.jisa.2020.102621>. (SCI indexed, impact factor-2.327) (<http://www.sciencedirect.com/science/article/pii/S2214212620307869>)
  58. Efficient Discrimination of Flash Crowd from DDoS Attack, Journal of Parallel and Distributed Computing, Elsevier, 2020
  59. Analysis of UNSW-NB15 Dataset Using Machine Learning Classifiers, Communications in Computer and Information Science Springer, 2020
  60. Identifying Network Intrusion Using Enhanced Whale Optimization Algorithm, Advances in Intelligent Systems and Computing (Springer, Germany), 2020
  61. Knowledge Base Representation of Emails Using Ontology for Spam Filtering, Advances in Intelligent Systems and Computing Springer book series, AISC, volume 1133, 2020
  62. Usefulness of Data Analytics for Detecting DDoS Attack Present in Network Traffic Data in the book titled "Data Science and Data Analytics: Opportunities and Challenges" CRC Press, USA

63. Detection of Medical Health Care Apps using Advanced Clustering Techniques in the book titled "Data Science and Data Analytics: Opportunities and Challenges", CRC Press, USA
64. Significance of Feature Selection and Pruning Algorithms in Machine Learning Classification of E-mails, Artificial Intelligence for Cyber Security - Methods, Issues and Possible Horizons or Opportunities, Studies in Computational Intelligence, Springer Series
65. Low-Rate Multi-Vector DDoS attack Detection Using Information Gain Based Feature Selection, 3rd International conference on computer networks, big data and IOT ICCBI 2020
66. ProDroid - An Android malware detection framework based on Profile Hidden Markov Model, Elsevier Pervasive and Mobile Computing, 2021
67. An analytical study of deterrent cross-domain responses through the cyberspace with special reference to India, Journal of Cybernomics, Scholastic Seed Inc., Sep.2020
68. Low-Rate Multi-Vector DDoS attack Detection Using Information Gain Based Feature Selection, Springer Computer Networks, Big Data and IoT, 2021
69. MemDroid - LSTM based Malware Detection Framework for Android Devices, IEEE Pune section International Conference (IEEE PuneCon) 2021.
70. Explainable Artificial Intelligence in Cybersecurity: A Brief Review, 4th International Conference on Security and Privacy (ISEA-ISAP 2021), 2021
71. Evaluation of Strategic Decision taken by Autonomous Agent using Explainable AI, 4th International Conference on Security and Privacy (ISEA-ISAP 2021)
72. Low-Rate Multi-vector DDoS Attack Detection Using Information Gain Based Feature Selection, Springer Lecture Notes on Data Engineering and Communications Technologies book series (LNDECT), Volume 66, June 2021
73. Significance of Feature Selection and Pruning Algorithms in Machine Learning Classification of E-Mails, Chapter in the Studies in Computational Intelligence Springer book series, Volume 972, June 2021
74. XAI for Intrusion Detection System: Comparing Explanations Based on Global and Local Scope, Springer Journal of Computer Virology and Hacking Techniques, 2022 pp.1-23. DOI <https://doi.org/10.1007/s11416-022-00441-2>
75. Ontology-based emotional decision-making in self-evolving defensive agents", IEEE ACCESS, October 2022
76. Attack Detection Availing Feature Discretion Using Random Forest Classifier, First International Conference on Computational Intelligence Paradigms, December 2022
77. Brain Tumor Detection in MRI Images using Adaptive-ANFIS Classifier with Segmentation of Tumor and Edema, Springer Journal on Soft Computing, DOI [10.1007/s00500-022-07687-4](https://doi.org/10.1007/s00500-022-07687-4)
78. Attack Detection Availing Feature Discretion Using Random Forest Classifier,

Computer Science & Engineering: An International Journal (CSEIJ), Vol 12, No 6, December 2022

79. Healthcare App Detection using Optimized Clustering, Artificial Intelligence in Science, ACC Science Publishing, 2024
80. Study on self-awareness of autonomous defensive agents using game theory, Sadhana Publishing (under review)
81. Validating Network Attack Concepts: A TCAV-driven Approach, Springer Journal of Computer Virology and Hacking Techniques, 2024
82. Enhancing Cybersecurity: Optimizing Intrusion Detection through Advanced Feature Engineering on Linear Support Vector Machines, Journal of Computer and Security, Elsevier (under review)
83. Detection and classification of breast cancer in mammogram images using entropy-based C-means Clustering and RMCNN, Multimedia Tools and Applications, Springer, 2024
84. Improved minority attack detection in Intrusion Detection System using efficient feature selection algorithms, Expert Systems, Wiley Publishers, 2024, <https://doi.org/10.1111/exsy.13546>
85. Android Threat Detection using Principal Component Analysis and Light GBM Classification, Springer Lecture Notes on Smart Cyber Physical Systems, 2024
86. Rainfall Patterns and Hydrological Trends at Malampuzha Dam, Kerala: A 21-year Statistical Evaluation, Water and Agricultural Sustainability under Changing Climate, 2024
87. Navigating Data Imbalance in Intrusion Detection Systems through Generative Adversarial Networks with Computational Intelligence, Exploring Generative AI with Computational Intelligence: Navigating the Uncertainty of Creative Machines, CRC, Taylor and Francis, U. K., 2024
88. Privacy-Preserving Secure Computation: Bridging Traditional Healthcare and Metaverse Telemedicine, Elsevier Publishers, 2024
89. Adapting to Decentralization: The Evolution of Computing Paradigms and Machine Learning in Federated Learning, Elsevier Publishers, 2024
90. AI-assisted Approach to Medical Care, Biomedical Image Processing using Metacare and Exascale Computing, CRC Press, 2024
91. Introduction to Image Fusion, Biomedical Image Processing using Metacare and Exascale Computing, CRC Press, 2024
92. Chat GPT in Education: Opportunities, Challenges, and Implications, OpenAI and Smart ChatGPT: Revolution, Application, and Significance of AI in Industry 5.0, CRC Press, 2024
93. Security and Privacy Issues in Chat GPT, OpenAI and Smart ChatGPT: Revolution, Application, and Significance of AI in Industry 5.0, CRC Press, 2024
94. GAI-enhanced Intrusion Detection using BEGAN-GRU Framework to address Data Imbalance, 3rd International Conference on Automation, Computing and

Renewable Systems, December 2024

95. Enhanced Intrusion Detection through Optimized Feature Selection in Deep Neural Networks, IEEE International Conference on Smart Electronics and Communication Systems 2024 (ISENSE 2024)

96. Low Rate Multi-vector DDoS Attack Detection Using Information Gain Based Feature Selection, May 2021, DOI: 10.1007/978-981-16-0965-7\_53, In book: Computer Networks, Big Data and IoT

*More than 100 research publications in International Conference Proceedings and reputed International Journals, 50 in National Conferences and two in National Journals (National publications not listed).*

## **RESEARCH PROMOTIONAL ACTIVITIES**

- Served as Technical Program committee member in more than 100 International Conferences of high repute
- Reviewer of many International journals including:
- IEEE Transactions on Neural Networks
- IEEE Transactions on Neural Networks and Machine Learning
- IEEE Transactions on Pattern and Machine Intelligence
- IEEE Security and Privacy
- IEEE Transactions on Signal Processing
- IEEE Networks
- John Wiley International Journal on Security and Communications Networks
- Elsevier Journal of Computers and Security
- International Journal of Cyber Situational Awareness
- International Journal on Information Management Systems
- International Journal on Network Security
- Journal of the Network and Systems Management
- Wiley Security and Privacy
- Hindawi Journal of Computer Networks and Communications
- Hindawi Journal of Security and Computer Networks
- Reviewed more than 300 papers for various International Conferences
- Session chair of nine International Conferences and many National Conferences
- Steering Committee member, Industry chair, Program Committee chair, Keynote and tutorial Chair of various International Conferences
- Presented a research paper at the Microsoft Techvista Symposium in Oct.2007.
- Presented two research papers at the SPIE International Symposium held in March 2008 at Orlando, Florida, US.
- Was recommended for nomination as member to the Indian National Science Academy
- Reviewed several PhD and MS theses from reputed institutions in India.

- Collaborative work with Prof. N. Balakrishnan of IISc Bangalore
- Collaborative work with Prof. Vijay Ganesh of Waterloo University, Canada. <https://sites.google.com/a/gsd.uwaterloo.ca/maplesat/maplesat>. This MAPLESAT solver won the 2016 SAT competition (Application/Main tracks).
- Member of Engineering Research Council of the Kerala Technological University
- Research sub-Committee member of Kerala State Higher Education Council
- Steering Committee member of International Conference (e-Policy 2016) held in UK.
- Steering Committee member of International Conference (Cyber Security 2015) held in UK
- Industry Chair (co-chairing with a Professor of MIT, USA) of International Conference (AppSecurity 2016) held in UK
- Co-ordinator (coordinated with Prof. Chandra Mouli of Stevens Institute, USA) of International Workshop on Trusted Systems 2015
- Keynote, Plenary and Tutorial Chair of IEEE ICC 2013 (Keynote speaker Prof. Theo Gevers from Netherlands and Tutorial Chair Prof. Vijay Ganesh from Waterloo University, Canada)
- Publication Chair of IEEE ICC 2015 (Published the accepted papers in IEEE Xplore)
- Session chair, ICTT 2012, NCTT 2013, RAICS2013, RAICS2015, ICACCI 2013, ICACCI 2015 and many national conferences
- Editor-in-Chief to a Special issue on Smart Cyber Security Systems for the International Journal on Cyber Situational Awareness (IJCSA), ISSN 2057-2182; ISSN: (Online) 2057-2182; DOI: 10.22619/IJCSA
- Guest Editor to a Special Issue for IEEE security and Privacy
- Guest Editor to a Special Issue for Journal of Computer Networks and Communications Hindawi Publishing
- Member of the Editorial Board of the International Journal on Cyber Situational Awareness
- Member of the Editorial Board of the International Journal on Information Warfare and Cyber Forensics
- Member of the Editorial Board of the American Association for Science and Technology <http://aascit.org>
- Member of the Editorial Board of International Journal of Computer Science and Information Technology <http://www.hrpub.org>
- Associate Editor of the International Journal of Computing and Digital Systems, University of Bahrain, Scientific Publishing Center.
- Research Committee Member, Centre for Engineering Research and Development from 2010-2014
- Research Supervisor for PhD programmes of the University of Kerala in the

branches of Electronics and Communication Engineering and also Computer Science and Engineering

- Permanent member of the Doctoral Committee in the subjects Electronics and Communication Engineering and Computer Science and Engineering, of the University of Kerala
- Authoring a book on “Network Security” for Oxford International Press
- Invited speaker to various academic and research organizations like Indian Space Research Organization and Defence Research and Development Organization
- Article published in the Higher Education Review Magazine: <https://www.thehighereducationreview.com/magazines/colleges-in-germany-special-april-2019/> Pg No: {{26-28}}.
- Organized training for various defence and research organizations and is an active resource person
- Organizing Secretary of the 18<sup>th</sup> National Conference on Technological Trends NCTT 2017.
- Program Committee Chair of the 17<sup>th</sup> International Conference on Information Technology ICIT2018
- Program Committee member of the IEEE International Conference on Cyber Science IEEE Cyber Science 2019
- Program Committee member of the IEEE International Conference Cyber 2020

### **COURSES CO-ORDINATED (LAST 7 YEARS)**

- One day training programme on introducing JGate for the M.Tech Students, PhD scholars and faculty of Colleges in Trivandrum by Innovative Solutions Ltd (2013)
- One day training programme on Introducing Knimbus for the Faculty and librarians of Engineering Colleges (2013)
- One day workshop programme on Introducing Science Direct and Mendeley for the faculty and M.Tech students of College of Engineering Trivandrum Sponsored by Elsevier (2014)
- One day workshop programme on Introducing the FPGA products for Telecommunication for the faculty and M.Tech students(2014)
- One day workshop programme on HFSS for the Faculty and M.Tech students(2014)
- One day Seminar on Antenna Design, IEEE Kerala Chapter (2014)
- One day Alumni Lecture Series on Moving to Management: Some thoughts, for the faculty and students of CET by CETAA (2015)
- One day Alumni Lecture Series on Induction Training for Fresher for the Faculty and students of CET by CETAA (2016).
- One day Seminar on Innovative and Sustainable Technology for the Faculty and

students of CET by CETAA (2016)

- Five days Faculty Development Programme on Intelligent Systems for Telecommunications and Internet for the faculty from various Engineering Colleges, sponsored by Directorate of Technical Education (2015).
- Five days Faculty Development Programme on Network and System Administration for the faculty from various Engineering Colleges, sponsored by Directorate of Technical Education (2015)
- Five days Faculty Development Programme on Information Systems Security Theory and Practice for the faculty from various Engineering Colleges, sponsored by Directorate of Technical Education (2015)
- Five days Faculty Development Programme on Advanced Computing with MATLAB – Theory and Practice for the faculty from various Engineering Colleges, sponsored by Directorate of Technical Education (2017)
- Five days Faculty Development Programme on Hands on Training in Network Simulation for the faculty from various Engineering Colleges, sponsored by Directorate of Technical Education (2017)
- Five days Faculty Development Programme on Advanced Network Administration for the faculty from various Engineering Colleges, sponsored by Directorate of Technical Education (2018)
- One day workshop on Outcome-based Education sponsored by PTA for the faculty of College of Engineering Trivandrum (2018)
- One day workshop on MATLAB sponsored by MathWorks for faculty and students of College of Engineering Trivandrum (2018)
- One day workshop on Mendeley and Science Direct sponsored by Elsevier for faculty and students of College of Engineering Trivandrum (2018)
- One day workshop on e-waste management sponsored by Ministry of Electronics and Information Technology for faculty and students of College of Engineering Trivandrum (2019)
- Two days Workshop on Mobile making and Internet of Things, 23, 24, March 2019 co-ordinating with IIT Bombay.

### **COURSES & SEMINAR PARTICIPATED (LAST SEVEN YEARS)**

- Advanced Training in Networking Devices, CET, Trivandrum, Directorate of Technical Education (3 days)
- Workshop for Electronic Product Testing, Model Finishing School, Higher Education Department (1 day)
- Workshop on identifying and providing skills for electronics and related industries, Hotel Abad Plaza, Cochi, Higher Education Department (1 day)



- Research Methodology, GECBH, Trivandrum, TEQIP II (1 week)
- Computer Networking, IITB, Mumbai, MHRD (Four weeks)
- Elsevier Library Connect Seminar, Residency Tower, Elsevier (1 day)
- Pedagogy for Effective use of ICT in Engineering Education, IITB, Mumbai, MHRD (Four weeks)
- Elsevier Library Connect Seminar, South Park, Elsevier (1 day)
- IEEE APS Distinguished Speaker Programme, CET, Trivandrum, IEEE Kerala Chapter (1 day)
- Intelligent Systems for Telecommunications and Internet, CET, Trivandrum, Directorate of Technical Education (5 days)
- M.Tech Cluster Workshop, GEC, Barton Hill, TEQIP II (1 day)
- Network System Administration, CET, Trivandrum, Directorate of Technical Education (5 days)
- Information System Security, CET, Trivandrum, Directorate of Technical Education (5 days)
- Moving to Management – Some thoughts (Coordinated and Participated), CET, Trivandrum, CETAA Distinguished Alumni Series (1 day)
- Green Energy and Energy Management (Coordinated and Participated), CET, Trivandrum, CETAA Distinguished Alumni Series (1 day)
- Induction Training for Fresher (Coordinated and Participated), CET, Trivandrum, CETAA Distinguished Alumni Series (1 day)
- Innovative and Sustainable Technology (Coordinated and Participated), CET, Trivandrum, CETAA Distinguished Alumni Series (1day)
- Strategic planning by Principals and HoDs, GEC, Painavu, sponsored by DTE 3 days (20,21,22, Oct.2017)
- Proposal Writing, sponsored by ITC and SR, CET, 5 days, 23-27 July 201
- Vigilance and Anti-corruption Bureau, One day workshop, 1 November 2019
- Panelist at the International webinar on "Paradigm shift towards online libraries during pandemic" conducted by New Age publishers, 12 Sep.2020
- Participated in the Indian Dutch Cyber Security School during September/October 2020
- Successfully completed the challenges of the edition 2020 of the Indian Dutch Cyber Security School in November 2020
- Successfully completed the Cyber Crimes and Information Security course conducted by Institute of Management in Government, Government of Kerala from 23-25 March 2022
- Successfully completed the Salesforce Platform Developer training conducted by

ICT Academy, 23-27 September 2024

## **PUBLIC TALKS**

- “Introducing Linux Essentials” at Indian Institute of Science for STTP, Jan. 1999.
- “Incident Handling” at Indian Institute of Science for India Government Officials, Jan. 2010.
- “Network Security” at LBS College of Engineering, Trivandrum for faculty of Engineering Colleges funded by India Government, Jan. 2010
- “Information Technology” at SCT College of Engineering, Trivandrum for faculty of Engineering Colleges funded by India Government, Apr.2010.
- “Network Security and Incident Handling” at Amal Jyothi College of Engineering and Technology for the faculty of Engineering Colleges in Kerala, May 2010.
- “My research way of life” at Amal Jyothi College of Engineering and Technology to motivate the faculty of Engineering Colleges in Kerala to pursue higher studies, May 2010.
- “Incident Handling” at Rajagiri College of Engineering and Technology for the M.Tech students, Industry participants, and faculty of Engineering Colleges in Kerala, July 2010
- “Network Security: Challenges and Issues” Invited talk at the International Conference on Cyber Security in August 2010.
- ” Introducing Kbase ” for the Principals of all Government Colleges of Kerala State in Jan 2011
- “Enhanced learning strategies”, One day workshop organised at Trivandrum by the ISTE Kerala Chapter, May 2011. “Intrusion Detection and Prevention” Two weeks training programme for the Govt. of India sponsored courses run at Indian Institute of Science, Bangalore on Information Security in June 2011
- “Incident Handling”, for a short-term training programme for the faculty of Engineering Colleges at University Staff College, Trivandrum, October 2011
- “e-tutoring”, at College of Engineering Trivandrum for the faculty of Engineering Colleges, sponsored by Directorate of Technical Education, Government of Kerala, May 2012
- “Computer Incident Detection and Prevention”, at College of Engineering Trivandrum for the faculty of Engineering Colleges, sponsored by Directorate of Technical Education, Government of Kerala, Oct. 2012.
- “Network Incident Handling” at a Short-Term Training organized by GEC, Wayanad, and sponsored by TEQIP, February 2013.
- “Basics of Image Processing”, at CUSAT, Cochi, for a two-week short term programme sponsored by TEQIP in June 2013
- “Introduction to Image Processing” at Government Central Polytechnic,

Trivandrum, under Visiting Faculty Programme, February 2014

- “D-space Implementation and its applications”, at College of Engineering Trivandrum for the faculty and librarians of Engineering Colleges, sponsored by Directorate of Technical Education, Government of Kerala, February 2014.
- “Fundamentals of Image Processing”, Invited talk under Visiting Faculty Scheme at Government Central Polytechnic, Trivandrum in March 2014.
- “Security in Ad-hoc Sensor Networks”, for a short-term training programme for the faculty of Engineering Colleges at Government Engineering College, Barton Hill, Aug. 2014.
- “Network Security Threats and its Handling”, for a short-term training programme for the faculty of Engineering Colleges at Government Engineering College, Kidangoor, Nov. 2014.
- “Security Threat Mitigation and Handling”, at Amrita Viswavidhyapeetham, Kollam, in Feb. 2015.
- “e-tutoring – Effective Teaching and Learning, at Government College, Kariavattom, in January, 2016
- “Introduction to VLSI”, Keynote address for the faculty development programme at Govt. Engineering College, Perumon
- IEEE 5G Summit Research Symposium chair, 2016
- “Deep tech researches in the area of cybersecurity” at the DSCI’s (Data Security Council Of India (DSCI)) “Women in Security” initiative, 27,28 June 2018
- “Transformational elements of Cyber Security & Data Protection: devices, data & distributed architecture” at the DSCI’s (Data Security Council Of India (DSCI)) Best Practices Meet, 12 June 2018
- Panelist at the Workshop on Women in Cybersecurity Research, 25-26, May 2018
- Inaugural speech at the Workshop on ‘Machine Learning ’at College of Engineering, Thiruvananthapuram on 16th February, 2018 organised by IEEE Signal Processing Society in association with Department of Electronics & Communication, College of Engineering, Thiruvananthapuram.
- Panelist on “e-Governance: Challenges and Opportunities” at the Digital Indian Celebrations of VSSC, Trivandrum, 3 Aug. 2018
- "Information Theoretic Approach to Cyber Security" at College of Engineering, Aranmula, 18 January 2019
- “Rejuvenation of Akkulam Lake”, Presidential address at the National Seminar at GEC Barton Hill, March 2019
- “Introduction to Cyber Security”, Keynote address for the faculty development programme at Govt. Engineering College, Perumon, 22 Jul. 2019
- NSS State Annual Meet, Special address at LBS Engineering College, Poojappura,

27 Jul.2019

- ASAP SDPK Launch, Special address at SCT College of Engineering, Pappanamcode, 23 October 2019
- Inauguration of Annual Show at College of Fine Arts Thiruvananthapuram, 20 January 2020
- Inauguration of Yamistha 2020, the Management Fest at School of Management, College of Engineering Trivandrum
- Presidential address at the National Seminar on "Waste to Wealth" organised by Translational Engineering Centre, GEC Barton Hill, 6 March 2020
- Webinar on Science Direct and Knimbus for technical education, April 2020
- IEEE key panelist on " WiE AG of IEEE SB GEC Palakkad on the topic, Is the current academic system relevant to present life careers?"
- International webinar on the "Effectiveness of e-resources" conducted by the New Age Publishers Ltd.
- Moderator to the two days National web conference on "Online teaching and learning - lessons from the COVID 19 pandemic".
- Speaker for the FDP for the IEDC nodal officers of Polytechnics at GPTC Perinthalmanna, 2021
- Speaker at DX21 Digital Transformation Summit organized by Digital University, Kerala, February 15-16, 2021
- Speaker for the "Preveshanotsav 2021" at GCI Mannathala
- Keynote Address for the Orientation Programme for Freshers at John Cox Memorial College of Engineering and Technology, November 2022
- Inauguration and launch of NeST Digital Youth Hackathon 2022-23 in December 2022
- Inauguration and launch of an exclusive placement drive of ACSIA Technologies exclusively for Differently abled Engineering final year students in a function held at Mar Baselios College of Engineering & Technology, Trivandrum.
- Special Address at an industry summit in association with Group of Technology Companies in and Kerala Knowledge Economy, which was attended by leadership from Industry, K.M. Abraham, Chief Principal Secretary to Hon.ble Chief Minister of Kerala, and Shri. K. N. Balagopal, Minister for Finance, Government of Kerala
- Panelist on Bridging the Industry-Academia gap enumerating the steps already implemented by APJAKTU for bridging the gap especially, two-month internship for B.Tech S8 students, one-year Dissertation for M.Tech students, Industry Electives and other interventions expected from APJAKTU
- Inauguration of an interactive online session on "Fulbright Fellowships and hosting scholars from the U.S in Indian campuses" for the faculty and researchers

of all engineering Colleges in Kerala State

- Inauguration of a One-day Orientation Program on AICTE Technical Book Translation for Diploma courses in Malayalam Language with comprehensive hands-on training of one Page Malayalam translation colleges in Kerala
- Inauguration of Center for Medical Equipment Testing at Department of Biomedical Engineering, Sahridaya College of Engineering and Technology
- Inauguration of an FDP on Project Based Learning by ECE Department in a function held at Sahridaya College of Engineering and Technology
- Address as Chief Guest of the graduation ceremony of Rajadhani Group of Institutions
- Inauguration and launch of Siemens Associate Centre for Automation and Drives, located within Muthoot Siemens Centre of Excellence in a function held at Muthoot Institute of Science and Technology
- Inauguration of the National conference on operations Research, Differential Equations, Numerical Analysis, Computing and Applications from March 23, 2023 to March 25, 2023
- Talk on Explainable AI in cybersecurity at the IEEE Women in Engineering Affinity Group at Central University Kasargode on 23 January 2024
- Inaugurated and delivered a Keynote address at the National Conference on Recent Innovations In Computer And Information Technology (RICIT-2024)". The conference is scheduled on April 18- 19, 2024 of CE Perumon
- Invited speaker and panelist at the educational Summit of LinkedIn and Andorncom
- Inaugurated the ACM National Colloquim on "Generative AI" on June 27, 2024 at Karunya Institute of Technology and Sciences, Coimbatore, India
- Science Exhibition Inauguration speech at Madhuvan Sai Balagram School, Trivandrum on 2 March 2024
- Chief Guest at Convocation ceremony at KPM school, Mayyanadu on 6 May 2024
- Chief Guest at Convocation ceremony at St. George's Mount School, Kaipatoor on 15 June 2024
- Speaker at the Industry-Academia Strategy Conclave IASC 2024-Discovering Synergies: Bridging Academia and Industry, 18 October 2024, Coimbatore

**INTERNATIONAL/ NATIONAL/ UNIVERSITY LEVEL/ STATE LEVEL/  
INSTITUTION LEVEL ACTIVITIES/DEPARTMENT LEVEL ACTIVITIES:**

- Program chair of a conference ICIT 2018 with Prof. Madhavi Ganapathiraju, Professor, Pittsburgh University, USA, as the General Chair
- Program chair of a conference Cyber Science 2019 with Prof. Cyril Onwubiko,

Director, Research-series, UK as the General Chair

- Industry Chair (co-chairing with a Professor of MIT, USA) of International Conference (AppSecurity 2016) held in UK
- Co-ordinator (co-coordinated with Prof. Chandra Mouli of Stevens Institute, USA) of International Workshop on Trusted Systems 2015
- Steering Committee member of many conferences held in UK and UAE Inaugurated and launched NeST Digital Youth Hackathon 2022
- Launched an exclusive placement drive of ACSIA Technologies exclusively for Differently abled Engineering final year students
- Speaker and panelist at the industry summit in association with Group of Technology Companies in and Kerala Knowledge Economy.
- Participated in a panel discussion on Bridging the Industry- Academia gap enumerating the steps already implemented by APJAKTU for bridging the gap especially, two-month internship for B.Tech S8 students, one-year Dissertation for M.Tech students, Industry Electives and other interventions expected from APJAKTU.
- Visited Acsia Technologies and TCS Trivandrum campus and held discussions with the leadership at TCS and Acsia for suggestions for the upcoming curriculum revision and also outlined the industry engagement and industry electives implemented by the University for M.Tech students. Inaugurated an interactive online session on “Fulbright Fellowships and hosting scholars from the U.S in Indian campuses” for the faculty and researchers of all affiliated colleges
- Inaugurated Center for Medical Equipment Testing at Department of Biomedical Engineering, Sahrdaya College of Engineering and Technology
- Inaugurated an FDP on Project Based Learning by ECE Department in a function held at Sahrdaya College of Engineering and Technology.
- Chief Guest of the graduation ceremony of Rajadhani Group of Institutions
- Launched Siemens Associate Centre for Automation and Drives, located within Muthoot Siemens Centre of Excellence in a function held at Muthoot Institute of Science and Technology.
- Inaugurated a National conference on operations Research, Differential Equations, Numerical Analysis, Computing and Applications from March 23, 2023 to March 25, 2023, co-sponsored by KSCSTE supported by Indian Society for Technical Education (MCET Chapter) and Kerala Mathematical Association.
- In charge of Digital Library of College of Engineering Trivandrum (CET) and co-ordinating the subscription of e-journals and e-books for the twelve years, Secretary, Parent Teacher Association (2008-2010), Staff Advisor, College Union (2011-2013), Secretary of Alumni Association (2015-2017), Treasurer for the

College Staff Club (2000-2002), Staff treasurer for the College Union during 2002, Joint Secretary of CETAA during 2010-2011, 2014-2015, Executive committee member, CETAA (2010-11), Member, Industry Institute Interaction Cell (2012-2017), Co-ordinator of Part time (evening) B.Tech and M.Tech programmes, Internal Quality Auditor for ISO certification (certified by STQC, MIT, Govt. of India), ISO9000 Lead Auditor ( Neigel Baur associates, UK), co-ordinator for various STTP and other training programmes, General Convener for Inter Collegiate Arts Festival Sargam 2012, General Convener for Technical Festival Drishti 2012, General Convener for Cultural Festival Dhwani 2013, General Convener for Guruvandanam 2014 , General Convener for the Alumni meet CETAA Day 2015 & CETAA Day 2016, General Convener for one day seminar second and third editions, FASTER 2015 & FASTER 2016, General Convener for granting of the GEMS scholarship in 2016 & 2017, General Convener for granting of the CETAA awards and endowments in 2016 & 2017

- Organising Secretary for the National Conference NCTT 2017
- Keynote, Plenary and Tutorial Chair of International Conference ICC 2013
- Publication Chair of International Conference ICC 2015
- Head of Department (2011-12, 2017-19), U.G. Professor (2012-2017), P.G. Professor (2016-2018), Research Co-ordinator (2015-2018), Staff advisor (2012-2017 for M.Tech Microwave and Television Engineering Stream), Staff Advisor for 1992-1996, 1997-2001, 2001-2004, & 2007-2011 Electronics & Communication and Applied Electronics & Instrumentation batches, Undergraduate Co-ordinator of the Applied Electronics and Instrumentation branch (2012-2017), M.Tech co-ordinator of the Microwave and Television Engineering stream (2012-2017)