

**INTERNATIONAL WORKSHOP &
INTERNATIONAL CONFERENCE
ON
MATHEMATICAL TECHNIQUES FOR
MACHINE LEARNING AND QUANTUM
COMPUTING
(IWCMLQC-2024)**

02 – 07 DECEMBER, 2024

Jointly organized by



**Department of Mathematics,
The Gandhigram Rural Institute (GRI)
(Deemed to be University),
Ministry of Education, Govt. of India,
Gandhigram – 624 302, Dindigul,
Tamil Nadu, India.
(International Workshop,
02 – 04 DECEMBER, 2024)**

and



**Department of Mathematics,
Cochin University of Science and Technology
(CUSAT), Kochi,
Kerala, India.
(International Conference,
05 – 07 DECEMBER, 2024)**

**In Connection with
NATIONAL MATHEMATICS DAY-2024**

ABOUT GRI

The GRI, founded by two dedicated disciples and contemporaries of Mahatma Gandhi, Dr. G. Ramachandran and Dr. T. S. Soundaram Ramachandran, has as its foundation Mahatma Gandhi's revolutionary philosophy of Nai Talim, which effectively bridges the cognitive and practical dimensions, and focuses on the holistic development of learners, with an emphasis on skill development through value-based education, rooted in indigenous cultures and traditions. Since its establishment in 1956, GRI has been unstintingly contributing to higher education and has successfully pioneered rural higher education. The curricular model developed at GRI organically integrating teaching, research, and extension has earned the Institute, the status of Deemed University in 1976 by UGC, the five-star status by NAAC in 2002, 'A' Grade during the re-accreditation in 2010 by NAAC and 'A' Grade in its third cycle of reaccreditation in the year 2016.

**About Department of
Mathematics, GRI**

The Department of Mathematics was established in 1965 at the GRI, Tamil Nadu. The major research fields being carried out in this department are Stability Problems of Dynamical Systems, including Neural Networks and Intelligent Systems, Fractal Theory and its applications, Fuzzy Clustering in Medical Images, Optimization in Marketing related problems, Control theory, Graph Theory, Algebraic Graph Theory and Quantum Computing Algorithms. The department has published more than 755 research articles in SCI journals with SCOPUS citations of more than 12283. Funding for research and development is provided by UGC, NBHM, CSIR, DST-FIST and SERB continuously for the past 17 years to the faculty members. As a result of consistent performance in research, the department was recently upgraded with UGC-SAP (DSA-I). International-level research

collaborations are being undertaken with Deakin University, Australia, Institute of Mathematical Sciences, University of Malaya, Malaysia, Nanyang Technological University, Singapore, Yonsei University, South Korea, United Arab Emirates University, UAE, University of Texas at Arlington, Texas, USA, Pusan/ Kunsan National Universities, South Korea. So far, the department has successfully conducted ten International Conferences. Cochin University of Science and Technology

ABOUT CUSAT

CUSAT was initially constituted as the University of Cochin through an Act of Kerala Government on 10th July 1971. The CUSAT in February 1986, redefining its objectives as "promoting Graduate and Post-Graduate studies and Advanced Research in Applied Sciences, Technology, Industry, Commerce, Management and Social Sciences." CUSAT is now a world-ranking university with the specific purpose of developing higher education, emphasizing post-graduate studies and research in applied science, technology, industry, humanities, and commerce. CUSAT has consecutively been figured in the Times Higher Education World Ranking since 2017. The Times ranks around 1500 best universities worldwide annually with around 60 universities from India out of 967. CUSAT has also found a place in the QS World University Ranking and the National Institutional Ranking Framework (NIRF) of the India Government

**About Department of
Mathematics, CUSAT**

The combined Department of Mathematics and Statistics came into existence in November 1976, with the major objective of developing it to a Centre of Excellence in this region in mathematical sciences and applications and to provide facilities for training, study and research in these areas. This Department was bifurcated to form an independent Department of Mathematics on 1st January, 1996. The Department conducts an M.Sc. Degree

programme, M.Phil. Programme in Mathematics and Ph.D. programmes. The students generally take up teaching positions or opt for research. Our students find admission to Ph.D. programmes offered in various National Institutes such as IITs, IMSc, ISI, TIFR etc. Apart from giving instruction in post graduate courses, the Department has from the very beginning taken the leadership in promoting research in mathematics and its applications, especially in this part of the country. This was realized in a two-fold way one, by guiding young researchers to do their doctoral work and two, by conducting extension programmes which will improve the instruction at the school and college levels and encourage youngsters to take up research.

ABOUT IWCMLQC-2024

The International Workshop & International Conference on Mathematical Techniques for Machine Learning and Quantum Computing (IWCMLQC-2024) aims to bring together professors, researchers, scholars, and students to exchange knowledge, discuss the latest advancements both in the fields of machine learning and quantum computing, foster collaborations, and explore new avenues of mathematical research. This workshop aims at providing a forum for members of the research and academy. It enables the participants to understand the recent technologies in quantum computing, Machine Learning and its applications. Quantum computing techniques have formed an explosion of research methodology in quantum Data Science. The sessions include both the discussion of Quantum Computing and Machine Learning techniques in real time applications and the challenge to apply practically. The sessions also include hands on training on domains like Quantum Algorithms, Optimization, Predictive modelling and Machine Learning techniques. We hope that the outcome of IWCMLQC-2024 will lead to a significant contribution to the knowledge base in these up-to-date scientific fields.

ORGANIZING COMMITTEE

International	
Workshop	Conference
Chief Patron Dr. N. Panchanatham Vice-Chancellor The Gandhigram Rural Institute-DTBU	Chief Patron Dr. M. Junaid Bushiri Vice-Chancellor (i/c) Cochin University of Science and Technology
Patron Dr. L. Rathakrishnan Registrar i/c The Gandhigram Rural Institute-DTBU	Patron Dr. Arun A. U. Registrar Cochin University of Science and Technology
Convenor Dr. P. Balasubramaniam Professor Dept. of Mathematics, GRI-DTBU	Convenor Dr. Sasi Gopalan Professor Dept. of Mathematics, CUSAT
Joint-Convenor Dr. R. Uthayakumar Professor & Head Dept. of Mathematics, GRI-DTBU	Joint-Convenor Dr. Shery Fernandez Professor & Head Dept. of Mathematics, CUSAT
Organizing Secretary Dr. G. Nagamani +91 9789519104 Assistant Professor Dept. of Mathematics, GRI-DTBU	Organizing Secretary Dr. Tanushree Pandit +91 8960419388 Assistant Professor Dept. of Mathematics, CUSAT
Organizing Team Members	Organizing Team Members

Dr. G. Mahadevan Dr. P. Muthukumar Dr. R. Rajkumar Dr. M. Suresh Kumar Dr. M. Sankaranarayanan Dr. D. Sharmila Dr. A. A. Navish Mrs. M. Kaladevi	Dr. Aparna Lakshmanan Dr. A. Noufal Dr. V. B. Kiran Kumar Dr. Ambily A. A. Dr. Tathagata Banerjee Dr. Shankar P Dr. Linu Pinto Dr. A. Vijaykumar Dr. P. G. Romeo Dr. K. P. Naveenachandran
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Advisory Committee Members

Dr. Chao Zhang, Shanxi University, China
Dr. Kurunathan Ratnavelu, UCSI University, Malaysia
Dr. Sunil Jacob John, NIT Calicut
Dr. R. P. Thangavelu, Chief Scientist, CSIR
Dr. M. Sithartha Muthu Vijayan, Senior Scientist, CSIR
Dr. Viswanathan Puthan Veedu, IIT Delhi
Dr. Bindu Krishnan, IBM Kochi
Dr. T. Baiju, Manipal Institute of Technology
Dr. S. Alam, IIST Kolkata
Dr. K. Murugesan, NIT Trichy

INVITED SPEAKERS

Dr. Mahyar Mahinzaeim
Aalen University, Germany
Dr. Tan Chee Pin
Monash University, Malaysia
Dr. Chee Peng Lim
IISRI, Deakin University, Australia
Dr. Enrique Zuazua
Friedrich Alexander University, Bilbao, Spain
Dr. Binayak S. Choudhury
IIST, Shibpur, India
Dr. Anil Prabhakar
IIT, Madras, Chennai, India
Dr. Anke Meyer Baese
Florida State University, USA
Dr. P. Raveendran
Monash University, Malaysia

Dr. R. Raja

Alagappa University, Karaikudi, India

Dr. Sayooj Aby Jose

Seoul National University, Republic of Korea

Dr. R. Balasubramanian

IMSC, Chennai, India

Dr. Tanmoy Som

Indian Institute of Technology, Banaras, India

Dr. C. Vijayalakshmi

Central University of Tamil Nadu, Thiruvavur, India

Dr. M. Lakshmanan

Bharathidasan University, Trichy, India

Dr. Ritajit Majumdar

IBM Quantum, Bengaluru, India

Dr. Raju. K. George

IISST, Trivandrum, Kerala, India

Dr. Sanjeev Kumar

IIT Roorkee, Roorkee, India

Dr. Arya Kumar Bedabrata Chand

IIT Madras, Chennai, India

Dr. Farhan Musanna

Thapar Institute, Patiala, Punjab, India

Dr. S. Sumitra

IISST, Trivandrum, Kerala, India

Dr. Joydeep Dutta

IIT Kanpur, Uttar Pradesh, India

Dr. M N N Namboodiri

CUSAT, Kochi, Kerala, India

Mr. Sahil Athrij

NVIDIA, California, USA

Dr. Shariful Alam

IEST, Shibpur, India

Mr. Rohit T. P

CUSAT, Kochi, Kerala, India

CALL FOR PAPERS

Topics of interest include, but are not limited to:

- ✚ Quantum Computing
- ✚ Dynamical Systems
- ✚ Quantum Control
- ✚ Quantum Optimization

- ✚ Optimization Techniques
- ✚ Image Processing
- ✚ Fractional Calculus
- ✚ Quantum Graphs & Networks
- ✚ AI & Machine Learning
- ✚ Neural Networks
- ✚ Quantum Fractals
- ✚ Fuzzy Sets & Systems

ABSTRACT SUBMISSION

Authors are invited to submit abstract of the paper, which must describe previously unpublished work and may not be submitted concurrently to another conference with refereed proceedings or to a refereed journal. Only accepted and registered papers will be allowed to be presented at this conference. The details of the preparation and submission of the abstract and full paper can be found on the conference website. Those who want to publish the papers after peer reviewed process must submit the full paper before the due date.

PUBLICATIONS

After the peer review process, the selected full-length papers presented in the conference will be submitted for possible publication in SCI/SCOPUS/UGC-CARE indexed journals/ Springer Proceedings/ AIP Conference Proceedings.

REGISTRATION FEE

Category	Workshop	Conference	Both
Faculty / Industrialists	1500/-	3500	4500/-
Full Time Research Scholars	1000/-	2500/-	3000/-
Part Time Research Scholars	1250/-	3000/-	3750/-
Students	500/-	1500/-	1500/-
Participation Only	-	1250/-	750/-

ACCOMMODATION

A limited number of accommodations for the participants will be arranged for both workshop and conference at GRI and CUSAT respectively on a payment basis/ free of cost based on the availability of grants on prior request.

**IMPORTANT DATES**

Last Date for Abstract Submission	: 21.11.2024
Last Date for Full Paper Submission	: 21.11.2024
Last Date for Registration	: 25.11.2024

**CONTACT DETAILS**International Workshop:

Dr. G. Nagamani (+91 9789519104)

International Conference:

Dr. Shery Fernandez (+91 9846762450)

E-mail: iwcmtmlqc2024@gmail.com (Both)iwmtmlqc2024@gmail.com (Workshop)icmtmlqc2024@gmail.com (Conference)Website: [IWCMTMLQC-2024 \(google.com\)](http://IWCMTMLQC-2024.google.com)**WORKSHOP VENUE****Silver Jubilee Hall**

The Gandhigram Rural Institute

(Deemed to be University)

Gandhigram-624302, Dindigul, Tamil Nadu, India.

CONFERENCE VENUE**Seminar Complex**

Cochin University of Science and Technology

Kochi-682022, Kerala, India.