

International Conference on Emerging Trends in Technology, Science, Management and Upcoming Research in Computer Science

ICTSM-RCS-2023

Organized by: Tirumala Engineering College Jonnalagadda, Narasaraopeta, Andhra Pradesh 522601

> In association with Conference World and IARDO www.iardo.com

21st - 22nd April 2023

ISBN: 978-93-91535-47-6

International Conference on Emerging Trends in Technology, Science, Management and Upcoming Research in Computer Science

ICTSM-RCS-2023

Editors

DR. Y. V. NARAYANA

MR. JAGADEESHTHATI

Publish By: A.R. Research Publication

Preface

Conference World and AR Research Publication is fast growing group of academicians in Engineering, Sciences and Management. AR Research Publication is also known for fast reply and zero error work. Conference world has organized a various conferences at renowned places namely Delhi University; New Delhi, Jawaharlal Nehru University; New Delhi, PHD Chamber of Commerce and Industry New Delhi, YMCA New Delhi, India International Centre New Delhi Sri Venkateswara college of Engineering and Technology, Andhra Pradesh, Dhananjay Mahadik Group of Institutions (BIMAT), Shivaji University, Maharashtra, Vedant Engineering Kota and many more places across the country.

We are very pleased to introduce the proceedings of the International Conference on Emerging Trends in Technology, Science, Management and Upcoming Research in Computer Science [ICTSM-RCS-2023] as for previous conferences, the theme was the link between the information provided by conference world and the use made of this information in assessing structural integrity. These were the issues addressed by the papers presented at the conference. The level of interest in the subject matter of the conference was maintained from previous events and over 112 suitable papers were submitted for presentation at the conference.

Papers were well represented in the conference to arouse a high level of international interest. Three countries were represented in the final program from Europe, North America and Asia. In the event, the conference was highly successful. The presented papers maintained the high promise suggested by the written abstracts and the program was chaired in a professional and efficient way by the session chairmen who were selected for their international standing in the subject. The number of delegates was also highly gratifying, showing the high level of international interest in the subject. This is also indicated by the large number of countries, 01 represented by the delegates. This Proceeding provides the permanent record of what was presented. They indicate the state of development at the time of writing of all aspects of this important topic and will be invaluable to all workers in the field for that reason. Finally, it is appropriate that we record our thanks to our fellow members of the Technical Organizing Committee for encouraging participation from those areas. We are also indebted to those who served as chairmen, without their support, the conference could not have been the success that it was. We also acknowledge the authors themselves, without whose expert input there would have been no conference. Their efforts made a great contribution to its success.

About Conference

The purpose of International Conference on Emerging Trends in Technology, Science, Management and Upcoming Research in Computer Science is to bring together leading researchers, engineers and scientists in the domain of interest from India. We warmly welcome previous & prospected author to submit your new research papers to ICTSM-RCS-2023 and share the valuable experiences with the scientist and scholars. All full paper submissions will be peer reviewed and evaluated based on novelty, technical and/or research content, relevance with the theme and contributions. All Papers will be published in conference proceedings with ISBN number. Selected papers will be published in UGC Care Listed International Journal with ISSN & Conference proceeding having ISBN .

About College

Vision

To be a world class leader in transforming lives through an innovative, rigorous and compassionate approach by imparting high quality academic excellence in technical education to uplift the living standards of the rural youth by promoting the cutting edge technologies, employability, higher education and research with socio-ethical, eco-friendly and entrepreneurial values.

Mission

To develop high quality technical personnel with a sound footing on basic engineering principles, innovative research capabilities and exemplary professional conduct to lead and to use technology for the progress of mankind, training and adepting them to changing technological environment by providing the high quality instruction, infra, faculty, effective teaching and learning methods imbibing socio-ethical, eco-friendly and entrepreneurial values as the inner strength for rural development

Quality Policy

We, at Tirumala Engineering College, Strongly believe that Quality is the essence of life. Hence, TEC will constantly strive to improve the quality of education and training imparted to its students by establishing state-of-the-art laboratories and modernizing them continually, upgrading the knowledge and skills of its staff periodically and developing strong linkages with industry.

Origin of the College

Once, a dry and bleak area, Narasaraopet Division has transformed itself into a vast lush green vista; thanks to NagarjunaSagar waters. The green revolution has, in its turn, spawned the white as well as knowledge revolution. That explains the phenomenon of a phalanx of academic and technological institutes in and around Narasaraopet.

You are welcome to Tirumala Engineering College. Though a late starter, the Institution has emerged into a front-runner in the field of technical education. It has become a preferred destination for merit students and career- conscious faculty. In a short span of 8 years, it has discovered itself into an engineering institute, par-excellence.

Founded and funded in 2008 by Tirumala Milk Products Pvt. Ltd., an entrepreneurial marvel, the institute was set up on a 16 acre strip girdled by a lush green picturesque landscape. The pastoral environs provide a tranquil ambience for an unruffled pursuit of knowledge.

The Tirumala Milk Products Pvt. Ltd is stewarded by five humble sons of the soil, moderately educated, but fired by a spirit of enterprise. In a short span of 15 years, the Dairy Group expanded its transactions to all the four Southern states and ushered into one of the Mega-Industrial Houses. With its varied milk products, its annual turnover has astonishingly shot up to Rs:1500 Crores. Foreign investors, too, have started showing keen interest in the Dairy. IIM Students have come down to study this marvel of rular initiative. Their business preoccupations notwithstanding, the dairy management had always been conscious that the tremendous breakthrough they had achieved was made possible by the cooperation of the humble dairy farmers who formed the backbone of their industry. This nagging sense of gratitude is what inspired them to set up an Engineering College in the vicinity of their origins with a view to promoting technical education for faster growth among their rural brethren.

The management's vision of transforming the college into a center of excellence has come true in its short existence of 8 years. The growing strength of the college, EAMCET students' preference for this college, rush for management quota seats, lucrative placements--all these go to vindicate the popular esteem it enjoys. R&D guidance by experienced professors, placement training under veteran corporate trainers, campus interviews spread over the whole of final year, a well staffed and richly equipped English department to enrich communication skills, a galore of workshops and presentation seminars all through, and above all a disciplined academic ambience - are some of the features that the college can justly be proud of. The college has come to carve a special nich for itself in the university arena thanks to the combined efforts of its vibrant staff and dynamic principal.

Right now, the college offers four year B.Tech of CIVIL, MECHANICAL, EEE, ECE, CSE

CHIEF PATRONS

Sri Bolla Brahma Naidu, Chairman Sri. R Satyanarayana, Secretary & Correspondent

PATRON

Dr.Y.V.Narayana, Principal, Tirmula Engineering College

CONVENER

Mr. T. Jagadeesh HOD Dept of ECE

CO- CONVENERS

Dr. R. Lalu Naik, Professor, Dept. of CSE Mr. K. Gopi, Assoc. Prof, Dept. of IT Mr. S. Anil Kumar, Assoc. Prof, Dept. of CSE

ORGANIZING COMMITTEE

Dr. K. Sathish, Professor, Dept. of IT
Dr. A. Balaji, Professor, Dept. of CSE
Mr. Sk. Ansar, Assoc.Prof, Dept. of EEE
Mr. K. Midhun Kumar, Assoc.Prof, Dept. of CIVIL
Mr. Ch. Rajini kumar, Assoc.Prof, Dept. of MECH
Mr. D. Pavan Kumar, Sr.Asst.Prof, Dept. of IT
Dr. S. Pavan, Assoc.Prof, Dept. of ECE
Dr. G.V.V.Nagaraju, Assoc.Prof, Dept. of EEE

NATIONAL ADVISORY BOARD

Dr. Nagaraja V, Professor, School of Legal Studies, REVA University, Bangalore RajanalaSowjanyaYamini, Assistant professor at REVA University, Bangalore Dr. Rajesh. D.P, Dept. of Fisheries Resources & Management, College of Fisheries Mangaluru Dr. Nagendra S, PG Department of Business Administration, AIET, D.K. Karnataka India

Dr. Badiuddin Ahmed, Dept of Mgmt& Commerce, Maulana Azad National Urdu University,.

Dr. Jeet Singh, Officiating Principal, Head & Assistant Professor,

Department of Commerce, MahamayaRajkiyaMahavidalaya, Dist. Bijnor (UP), India Prof. Kishore Parth, Assistant Professor, L N Mishra College of Business Management, Bihar.

Ashwini S H, Karaumbiah's Academy for Learning and Sports (KALS) School, South Coorg

Sunitha M M, Assistant Professor, Dept. Commerce, Govt. First Grade College Virajpet Dr. Narinder Bali, Computer Eng. Excise & Taxation

Mr. ShrikantSanjayraoKhairnar, MACS-Agharkar Research Institute,Pune

R.K.Padmashini, Assistant Professor, AMET Deemed to be University

Dr. BhavanaNarain, Associate Professor, MSIT MATS University, Pandari Raipur, Chhattisgarh

Dr. Koduru Chandra Mouli, , NRI Institute of Technology, Visadala (Post),Guntur Andhra Pradesh,

KarthikeyanSenthilnathan, Dept. of Food Processing Technology,AMET Deemed to be University

Dr. Paresh Vyas, Head of Department, Christian Eminent College Indore, Indore, Madhya Pradesh

Dr. Prerana Dubey, Head of Department, Christian Eminent College Indore, Indore, Madhya Pradesh

Sumit Sharma, Professor/Christian Eminent College, Indore

Dr. Seema Modi, Asst. Prof., Christian Eminent College Indore, Madhya Pradesh

Dr. Amita Joshi (Vyas), Asst. Professor, Indore (M.P.)

Dr. Prabhat Kumar Dubey, Professor, Indore (M.P.)

Dr. Rajesh Vyas, Principal, LIG Main Rd, Near L.I.G. Square, Indore, Madhya Pradesh Dr. N. Srinivasan, ,St Peters Institute of Higher Education and Research, Avadi, Tamil

Nadu, India

Dr. Saroj Kumar Singh, Dept. of Rural Economics, S. N. S. R. K. S. College, Saharsa Bihar, India

Prof. Dr. MukeshKeshari, Professor, Faculty of Commerce, RSS Nager, Indore (M.P.). Dr. Mina DadaraoKoche, Plant Pathology Department, Shri Shivaji Agriculture College, Amravati

Dr. Sonali Abhang, Lecturer in Symbiosis Law School, Pune

Dr. Harish. N, Lecturer, Dept of Economics, Adarsha PU College, Bengaluru

Dr. Sajith Vijayaraghavan, Department of EC, College of Engineering, Trivandrum G Ramakrishna, Associate Professor, Mechanical Engineering Department, Rajamundry, AP

Mr. Neeraj Kumar, Assistant General Manager ,Galaxy Toyota, New Delhi Rajendra Babu Yadiki, Potti Sriramulu Chalavadi Mallikarjuna Rao College of Engg & Technology,

A.Vijay, Assistant Professor, Ambal Professional Group of Institutions

Tamilnidhi. M, Department of Electronics and Communication Engineering, , Anna University,

S.Kannadhasan, Assistant Professor, Cheran College of Engineering ,K.Paramathi, Karur

Dr. U. FathimaFarzana, Sri S. Ramasamy Naidu Memorial College, Sattur, Virudhunagardst.

Haroon Rashid, Assistant Professor & H.O.D Economics Government P.G College Rajouri (J&K)

Dr. Nancy Prasanna Joseph, SRM Institute of Science and Technology, Kattankulathur

International Advisory Board

Dr. Vijay Singh Rawat,
Assistant Professor, Adama Science and Technology University, Adama, Ethiopia
Prof. Dr. Amer A. Taqa,
DB'S . Department, College of Dentistry, Mosul University
Dr. Elsanosy M. Elamin
Assist. Pro. and Head Dept., Department of Electrical Engineering. University of
Kordofan, Faculty of Engineering, Elobeid, Sudan
Dr. P. Corell,
REU Program Director, Jackson State University, Jackson, USA
Chung-ta Kingch,
National Tsing Hua University Taiwan

Proceeding of the conference has been published with ISBN: 978-93-91535-47-6

International Conference on Emerging Trends in Technology, Science, Management and Upcoming Research in Computer Science [ICTSM-RCS-2023] organized at Tirumala Engineering College on 21st - 22nd April 2023.Total 191 papers were received for the conference and 111 papers were shortlisted by the committee.

Published by

AR Research Publication,

3/186 SantpuraGovindpuriModinagar- 201201 .Dist: Ghaziabad

International Conference on Emerging Trends in Technology, Science, Management and Upcoming Research in Computer Science [ICTSM-RCS-2023] (Vol-1) Copyright © 2023, by AR Research Publication (India)

No part of this publication may be reproduced or distributed in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise or stored in a database or retrieval system without the prior written permission of the publishers. The program listing (if any) may be entered, stored and executed in a computer system, but they may not be reproduced for publication.

This edition can be exported from India only by the publishers, AR Research Publication (India) ISBN: 978-93-91535-47-6

Managing Director: Gauri Sharma

Senior Researcher-Product Development: Ms. Pratima Singh

Head-Production (Higher Education and Professional): Satinder Kulkarni

Information contained in this work has been obtained by AR Research Publication (India), from sources believed to be reliable. However, neither AR Research Publication (India) nor its authors guarantee the accuracy or completeness of any information published herein, and neither AR Research Publication (India) nor its authors shall be responsible for any errors, omissions, or damages arising out of use of this information. This work is published with the understanding that AR Research Publication (India) and its authors are supplying information but are not attempting to render engineering or other professional services. If such services are required, the assistance of an appropriate professional should be sought.

Cover Design: Atul Kumar Sharma