

# **International Conference on Multidisciplinary Research and Latest Innovation**

**[ICMRLI-2022]**

**Organized by**

**Trinity College of Engineering and Research,  
Pune**

**Bopdev Ghat, Yewlewadi, Pisoli, Pune**

(Approved by AICTE, New Delhi, Govt. of Maharashtra & affiliated to  
Savitribai Phule Pune University)



**17<sup>th</sup> December 2022**

**In Association With:**



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**International Conference on Multidisciplinary  
Research and Latest Innovation**

**[ICMRLI-2022]**

**17<sup>th</sup> December 2022**

**Editors**

Prof. Abhijeet Bhikashet Auti

Dr. B. K Sarkar

Dr. Arun Kumar

Mrs. Reshu Gupta

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## *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 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 Multidisciplinary Research and Latest Innovation [ICMRLI-2022]. 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 39 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, 04 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 the College**

KJEI's Trinity College of Engineering and Research was established June 2008 at the scenic foothills of Bopdev Ghat, Yewlewadi, Pisoli, Pune. The College is approved by AICTE & DTE, Govt of Maharashtra and is affiliated to Savitribai Phule Pune University. The College offers courses in Electronics & Telecommunication, Mechanical Engg, Computer Engg, Information Technology, Civil & Electrical Engg. The college boasts of quality state of art infrastructure with well planned, designed adequate class rooms and labs. The College is in the forefront to impart quality education & to ultimately be recognized as a premiere knowledge centre.

Challenges and Opportunities are two sides of the same coin. We take every care of all-round personality development of individual student along with academic excellence.

## **Aim & Objective of the Conference- ICMRLI-2022**

The conference is aimed to bring together innovative academics and industrial experts in the field of Engineering and Technology to a common forum. The conference aspires to exhibit the technical excellence of budding technocrats, research scholars, representatives from the academia and industry.

The conference is also a space for creating collaborative links between academics and professional practitioners and their workplaces, aiming at long-term sharing of knowledge and discussions of highly current issues.

## **About ISRHE**

Institute for Social Reforms and Higher Education Charitable Trust aims to empower and uplift the socio-economic status of women and children by harnessing their entrepreneurial abilities and creating a means of sustainable Employment and Social security in the vulnerable lives.

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## **MESSAGE FROM PRESIDENT**



It gives me immense pleasure that the Trinity College of Engineering and Research, Pune, has organized International Conference on Multidisciplinary Research and Latest Innovation [ICMRLI-2022], in association with International Association of Research and Developed Organization (IARDO) and Conference World. Ever since the inception of our institute, we have been striving for excellence in various departments of Engineering and at the very same time marching forward with the mission of professional as well as technical development.

I believe in promoting events to be organized in KJEI which opens research and innovation avenues for students. This International Conference on Multidisciplinary Research and Latest Innovation [ICMRLI-2022] is one such step towards motivating students and researchers. The conference greatly encourages graduate and Post-graduate students, research scholars and faculty to present innovative ideas and latest discoveries in the field of engineering and Technology. I would like to extend my gratitude towards Research and development cell and all staff who had done excellent job for the success of this conference. I take this opportunity to extend my best wishes to all the participants of this conference for their future endeavors and also aspire that more and more people opt for research and bring laurels to themselves and to the field of education.

**Shri. Kalyan Jadhav**

**President, KJEI**

## MESSAGE FROM EXECUTIVE DIRECTOR



At the outset, a my appreciation and congratulations to Trinity College of Engineering and Research, Pune for successfully organizing International Conference on Multidisciplinary Research and Latest Innovation [ICMRLI-2022] on 17 December 2022. Education in general and technical education in particular, must be relevant to rapidly changing needs of the society, industry and business houses. The educational environment must be dynamic and quickly adaptable, so that professionals are capable of shouldering all encompassing global responsibilities.

The conference brought together students, researchers and educators of varied domains to share their ideas, views and also to explore their technical abilities. I am confident that this event will be useful to researchers and academicians to enhance their knowledge on the research topics of their chosen field.

I express my sincere thanks to all well-wishers for their valuable guidance and unstinted support, who have been directly or indirectly involved in organizing this conference. May you all always be in pursuit of Excellence.

**Maj Gen. Sameer Kalla, VSM (Retd),**  
**Executive Director, KJEI**



## MESSAGE FROM PRINCIPAL



Education is an instrument to enhance the capabilities of human beings to become knowledgeable, creative and good citizens which resulted in my urge to develop excellent educational facility. I am extremely happy as principal of Trinity College of Engineering and Research, Pune, hosting International Conference on Multidisciplinary Research and Latest Innovation [ICMRLI-2022].

It is a justified gesture to provide a platform for graduate students and researchers to present their work and seek experts' evaluation that provides insight in the work undertaken. I hope that the presentations, discussions, appreciations and suggestions will help in improving their research work. I extend my heartfelt wishes to all the participants who have contributed in making this conference a great success. It gives me pleasure to write for the proceeding of International Conference on Multidisciplinary Research and Latest Innovation [ICMRLI-2022]. an important event. Conferences of this magnitude help the graduate students and researchers to interact amongst themselves as well as experts in various areas. I feel that, with presentations and interactions with experts; students are exposed to the emerging trends in respective domains and the research work being carried out.

I would like to congratulate participants for contributing to this conference. I appreciate conference conveners, faculty coordinators, staff members of Trinity College of Engineering and Research, Pune for organizing the International Conference on Multidisciplinary Research and Latest Innovation [ICMRLI-2022].

**Prof. Abhijeet Bhikashet Auti**

**Principal, Trinity College of Engineering and Research, Pune**

## **Message of Session Chair**



### **Dear Professors and Researchers**

I hope this message finds you well. As the Session Chair for the upcoming International Research Conference on Innovation in Computing Technologies, I am thrilled to extend a warm welcome to all participants, researchers, and industry professionals. Our conference aims to be a melting pot of cutting-edge ideas, breakthroughs, and collaborative discussions in the dynamic field of computing technologies. It's an honor to lead a session that promises to be a platform for insightful presentations, engaging discussions, and the exchange of knowledge that drives innovation.

As we gather to explore the latest trends, challenges, and opportunities in computing technologies, I encourage each participant to embrace this unique opportunity for networking, learning, and forging connections with fellow enthusiasts in the field. I look forward to the rich tapestry of ideas that will unfold during our session, and I am confident that together, we can contribute to the advancement of computing technologies and pave the way for a future of innovation.

If you have any questions or need further information, please feel free to reach out. Let's make this conference a memorable and intellectually rewarding experience for everyone involved.

**Damodarrao Thakkalapelli**

(IEEE Senior Member)

Vice President, Department of Information Technology,  
Bank of America, Plano, Texas, USA

**All papers will undergo a double-blind peer review process and the criteria for acceptance will be based on quality, originality, technical content and relevance.**

Proceeding of the conference has been published with **ISBN: 978-93-9155-35-3**

**International Conference on Multidisciplinary Research and Latest Innovation [ICMRLI-2022]** Organized by: Trinity College of Engineering and Research, Pune ( Approved by AICTE, New Delhi, Govt. of Maharashtra & affiliated to Savitribai Phule Pune University) through online as well as offline with the collaboration of IARDO and Conference World on **17th December 2022**

Total 71 papers were received for the conference and 39 papers were shortlisted by the committee.

1. Accepted papers will be published in the peer reviewed international journals having ISSN & High Impact factor.
2. Selected Papers will be published in the UGC Care listed international journals having ISSN & High Impact factor.
3. Few very good quality Papers will be published in the Scopus indexed journal having ISSN & High Impact factor.
4. Author will get certificates, one for paper publication in Journal other for paper presentation in conference as per their choice
5. All the papers of the conference will be published in the conference proceeding with ISBN.
6. All the accepted and presented/ Non-Presented papers will be indexed in Google scholar & IDIIF.

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