ISSN 2455-071X

Estd. 2001

Tech Tonics

TIMSCDR Student Research Journal

Volume 19
2023-2024

Thakur Educational Trust's (Regd.)

Thakur Institute of Management Studies, Career Development & Research

Approved by AICTE, Govt. of Maharashtra & Affiliated to University of Mumbai

ISO 21001 : 2018 Certified • MCA Program Accredited by National Board of Accreditation (NBA)

Institute Accredited with A+ Grade by National Assessment and Accreditation Council (NAAC)

TECH TONICS: TIMSCDR Student Research Journal
ISSN : **2455-071X**

EDITORIAL BOARD

Editor-in-Chief
Dr. Vinita Gaikwad

Editorial Board Members
Dr. Padma Mishra
Ms. Thara C.

Student Members
1. Mohammad Maaz Mohammad Farooque Glasswala
2. Shaikh Ayesha
3. Dakshata Narayan Vaity
4. Netra Dhulap
5. Sonam Chaudhary
6. Yadav Pooja Devi Mahendra
7. Prachi Yadav
8. Aniket Vishwakarma
9. Ansari Tahera Kausar Mohd Khurdus
10. Nikita Shukla
11. Harsh Mishra
12. Gupta Sanjeevani Murlidhar
13. Siddhi santosh kotre
14. Annapurna Gupta

PUBLISHER

Thakur Institute of Management Studies, Career Development & Research
Thakur Educational Campus, Shyamnarayan Thakur Marg, Thakur Village,
Kandivali (E), Mumbai – 400 101
Telephone: 022 - 2884 0484/91, 022 - 67308301/02
Fax: 022 – 28852527
Email: timscdr@thakureducation.org
Website: www.timscdrmumbai.in

AIM
The research and development is transforming the computing paradigms and technology in multidimensional directions. Tech Tonics aims to inculcate research culture among post graduate students and make them aware of new innovations happenings in the field of information technology.

TECH TONICS
TIMSCDR Student Research Journal

Volume 19
Academic Year: 2023-2024

Published By
Thakur Institute of Management Studies, Career Development & Research
Thakur Educational Campus, Shyamnarayan Thakur Marg,
Thakur Village, Kandivali (E), Mumbai – 400 101

Vision

Thakur Institute of Management Studies, Career Development & Research will become a premier institute renowned internationally for providing education in software application to graduates from various disciplines.

Mission

To achieve excellence in providing software education so that students can grasp existing as well as emerging technologies and to inculcate leadership and managerial qualities in them so that they can deliver results in the organization they join.

Educational Organization Policy

We, the staff, faculty and management of Thakur Institute of Management Studies, Career Development and Research are committed to offer excellence in software education, in inclusive and conducive academic environment for holistic development of our students.

We work as a team and interact with students in proactive manner to achieve our Educational Organization Objectives and fulfill all academic, statutory and regulatory requirements. We strive for continual improvement of our Educational Organizations Management System.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO-1 : To enable students to gain knowledge across all domains of Information Technology with in-depth understanding of their applications.

PEO-2 : To enable students to analyze problems and to design and develop software solutions using emerging tools and technologies.

PEO-3 : To enable students to continue Life-long learning, Research and Entrepreneurial pursuit in their chosen fields.

PEO-4 : To develop communication, teamwork, and leadership skills necessary to manage multidisciplinary projects and serve the society as responsible and ethical software professionals.

PROGRAM OUTCOMES (POs)

1. **Computational Knowledge -** Apply domain specific knowledge of computing and mathematics for designing of software solutions for defined problems and requirements.
2. **Problem Analysis -** Understand and analyze a problem and suggest feasible solutions.
3. **Design/ Development of Solution -** Design, evaluate, and develop effective solutions for complex computing problems to meet desired needs.
4. **Conduct investigation of complex computing problems -** Design and conduct experiments and use research-based methods to investigate complex computing problems.
5 **Modern tools usage -** Use appropriate techniques and software tools for computing activities.
6. **Professional Ethics -** Understand and commit to professional norms, regulations and ethics.
7. **Lifelong Learning -** Recognize the need for and have the ability to engage in independent learning for continual professional development.
8. **Project management and finance -** Understand and apply project management principles, as a member or leader in multidisciplinary environments.
9. **Communication Efficacy -** Effectively communicate technical information, both oral and written with range of audience.
10. **Societal & Environmental Concern -** Analyze societal, environmental, cultural, and legal issues within local and global contexts when providing software solutions.
11. **Individual and Teamwork -** Work as a member or leader in diverse teams in multidisciplinary environments.
12. **Innovation and Entrepreneurship -** Use Innovation and Entrepreneurship for creation of value and wealth.

Editorial

The volume nineteen of the Institute Research Journal, Tech Tonics 19 is a compilation of scholarly research papers and articles written by students of MCA (Master of Computer Applications) course of TIMSCDR. The contents of the research papers and articles of this edition pertain to the application of Information Technology in various domains such as Agriculture, Medicine, Big Data, IoT, Digital Marketing etc.

The Journal showcases the research endeavors of Post Graduate level students in the area of their interest. The students got an opportunity to understand the relevance of standard research work through this academic exercise.

The nineteen edition of Tech Tonics, Research Journal is a modest effort to encourage the young, enthusiastic, and resourceful minds of the students to do research using latest techniques and innovate and pen down emerging ideas in the field of Information Technology and its diverse Applications.

Editor-in-Chief
Dr. Vinita Gaikwad
Director, TIMSCDR

Tech Tonics: TIMSCDR Student Research Journal, Volume 19

Research Papers/ Articles

1.	Harnessing Machine Learning and AI for Precision Farming **Priya Soni**	**1**
2.	A Comprehensive Approach Utilizing AI, IoT, and Traditional Practices to Enhancing Soil Nutrition and Crop Management **Dipak Govinda Warke, Dipak Yadav**	**5**
3.	A Study on AI and IoT Applications in Depression Management for revolutionizing Mental Health Care **Rashmi Angane, Parag More**	**8**
4.	A Study on IoT-Centric Solutions for Crop Harvesting for Advancing Sustainability in Agriculture **Deepak Kochar**	**10**
5.	Review on IoT-Based Solutions for Sustainable Lake Cleanup **Mahesh Shinde**	**14**
6.	Utilizing Macromedia Flash for Assessing Infant Nutrition Status: A Comprehensive Methodology and Application Development **Anurag Singh, Rohit singh**	**17**
7.	Leveraging Technology for Health on Revolutionizing Dietary Habits through Digital Interventions **Ayushi Bansal, Mayur Chauhan**	**21**
8.	A Study on the Challenges and Implementation Strategies for advancing Organic Agriculture in India **Rahul Gupta, Sonal Gupta**	**26**
9.	Analyzing Carbon Footprints Across Various Indian Cities: A Comparative Research Study **Rahul Gupta, Abhishek Gupta**	**30**
10.	IT-Based Biomedical Waste Management in Healthcare Facilities **Saurav Upadhyay, Justin Varghese**	**35**
11.	A Comprehensive Analysis of Plastic Bag Usage, Ban Implementation, and Public Perceptions **Ashutosh Yadav, Mukesh Yadav**	**39**
12.	Comparative study on measures aiming to ensure a healthy ecosystem by digitizing documents and storing them on the cloud **Durgesh S. Wakle, Kiran Wadawadagi**	**42**
13.	A Comprehensive Review of Escalating Challenges and Recycling Strategies in India: Unveiling the E-Waste Conundrum **Abhishek Yadav, Satyam Yadav**	**45**
14.	A Comprehensive Review on unravelling the Potential of Data Analytics in Indian Agriculture **Himesh Joshi**	**49**
15.	Enhancing Pharmaceutical Waste Management through IoT Technologies: Insights, Segregation, and Optimization **Krishnaratan Mishra**	**52**