UGC Approved Indexed Peer Reviewed Journal

ISSN: 2320-6586 (Online)

IILM UNIVERSITY

Technologies for Sustainable Development Goals 2025 (TECH4SDG-2025)

School of Computer Science & Engineering

IILM University Greater Noida

Presents

1st National Conference

on

Technologies for Sustainable Development Goals 2025 (TECH4SDG-2025)

3rd March 2025

Technically Co-Sponsored by IEEE UP SECTION (INDIA)

Venue:

IILM University, Greater Noida

Plot No.18,16, Knowledge Park II, Greater Noida, Uttar Pradesh 201306

Procedings Published at

International Journal of Research in Modern Engineering and Emerging Technology

Vol. 13, Sp. Issue 1, April 2025

Doi: https://doi.org/10.63345/ijrmeet.org.v13.si1.1301

Editor-in-Chief

Dr. Mylavarapu Seetharama Prasad

www.ijrmeet.org

INDEX

S. No.	Particulars	Page No.
1	A Comparative Study On Load Balancing Algorithms And Its Types **Methily Johri & Aditri Ashish**	1–10
2	Optimizing Supply Chain Management with Ethereum 2.0: Innovations in Blockchain Technology **Ayush Gupta & Dr. Ambuj Kumar Agarwal**	11–17
3	Smart Surveillance: "A Real-Time Crowd Analysis System for Density and Anomaly Detection" **Komal Sharma, Dr. Pankaj Kumar Varshney, Aditi Aggarwal & Gaurav Kumar**	17–22
4	AI-Driven Network Optimization: Matching Policyholders to Cost-Effective Providers Using Business Intelligence **Ruchi Mangharamani & Prof. (Dr) Sangeet Vashishtha**	23–29
5	The Future of UX: Designing for Emerging Technologies (AI, AR, VR, Voice UI) **Ojas Gupta & Prof.(Dr.) Arpit Jain**	30–37
6	Enhancing Liquidity Stress Testing: Best Practices for Modern Banking Risks **Padmini Bulani & Dr Abhishek Jain**	38–45
7	AI-Powered Investment Strategies: Optimizing Risk and Returns in Modern Banking **Aditya Mehra & Dr. Shakeb Khan**	46–53
8	Scaling Customer Journey Optimization in a Multi-Tenant Distributed System **Sumit Kumar Agrawal & Prof. (Dr) MSR Prasad**	54–61
9	Object Detection Using Convolutional Neural Networks: Advances, Techniques, and Applications	62–69

S. No.	Particulars	Page No.
	Bharath Thandalam Rajasekaran, Saravanan Thirumazhisai Prabhagaran & Prof. (Dr) Punit Goel	
10	AI-Augmented Intrusion Detection Systems for High-Speed Optical Networks **Sattvik Sharma & Prof.(Dr) Avneesh Kumar**	70–77
11	Generative AI in Data Security: Opportunities and Challenges **Vybhavreddy Kammireddy Changalreddy, Piyush Bipinkumar Desai & Prof (Dr) Ajay Shriram Kushwaha**	78–86
12	Integrating Salesforce with Cloud-Based Data Warehousing for Unified Analytics **Nidhi Shashikumar & Dr S P Singh**	87–94
13	AI-Powered Cybersecurity: A Unified Approach to Protecting Enterprise, Cloud, and SaaS Applications **Varun Grover, Khushmeet Singh & Er. Siddharth**	95–103
14	Sales and Order Analysis Using Excel-Based Dashboard: A Case Study on Vrinda Store **Mohd Ammar Khan & Harun Faridi**	104–106
15	ChatMania: A Realtime Chat Application **Dr. Kirti Shukla & Anshika**	107–110
16	Digital Surveillance and Domestic Abuse: A Legal Vacuum in Indian Marital Relationships **Vishal Nehra & Dr. Rakesh Kumar**	110–116
17	The Role of Emotional Appeal in Online Advertisements Targeting Working Women in Delhi-NCR **Mona Mishra & Dr. Praveen Mittal**	116–120
18	AI-Driven Data Governance Strategies for Enhanced Cloud Security in Enterprises **Chandana Pandey & Dr Gauri Shanker Kushwaha**	121–123

S. No.	Particulars	Page No.
19	Evolution of Social Media Advertising and Consumer Behavior **Mr. Pramod Rana & Prof (Dr) Punit Goel**	124–129
20	Sustainability Accounting Practices in Indian Manufacturing Firms **Mrs. Sonal Jain & Dr. Ajit Singh**	129–134
21	Fundamental Rights vs. Reasonable Restrictions: A Study of Evolving Judicial Balances **Mrs. Anshika Agarwal & Dr. Vijay Kumar Singh**	134–139
22	सतत शिक्षा के लिए हिंदी साहित्य की भूमिका: सतत विकास लक्ष्य-4 (गुणवत्तापूर्ण शिक्षा) का सांस्कृतिक विश्लेषण **श्रीमती रेणु गुप्ता, डॉ. बृजलता शर्मा**	140–144
23	Mind–Gut Synergy in Chronic Lifestyle Conditions: Evaluating Psychotherapy-Driven Behavioral Change and Microbiota-Mediated Metabolic Repair **Krithika. V, Dr. Sarbesh Kumar Singh**	145–151
24	प्राचीन शिक्षा प्रणाली से आधुनिक AI आधारित शिक्षा की ओर संक्रमण **गौरव जोशी, डॉ सारिका गोयल**	152–159
25	पर्वतीय क्षेत्रों में शिक्षा के डिजिटलीकरण की चुनौतियाँ एवं संभावनाएँ **राकेश उनियाल, डॉ. मीनाक्षी हर्राव वर्मा**	160–168
26	Women Leadership and Democratic Participation in India: Challenges and Opportunities in Parliamentary Politics **Renu Yadav, Dr. P.P.S. Rana**	169–176
27	Evaluating GST Effects on Competitiveness and Industrial Development **Aman Goel, Dr. Pooja Yadav**	177–183
28	एस०आर० हरनोट के कथा साहित्य में लोक संस्कृति, पर्यावरण चेतना और सामाजिक परिवर्तन का अध्ययन **सीमा देवी, डॉ० अरविन्द्र कौर चुंबर**	184–189

S. No.	Particulars	Page No.
29	Balancing National Security and Human Rights in Modern India **Shalu Jain, Dr. Vijay Kumar**	190–197
30	Economic Performance Drivers and Fiscal Resilience in Indian Airports **Lalit Kumar Sharma, Dr. Pooja Yadav**	198–203
31	Educational Governance and AI Learning Outcomes in Government Elementary Schools **Dr. Shubhra Chaturvedi**	203–210
32	Artificial Intelligence and the Future of Teacher Roles in India Classroom **Neeru Verma**	211–220
33	Research Culture Among Undergraduate Students in Indian Universities **Dr. Dhanashri Rajshri Ravindra Jadhav**	221–229
34	डिजिटल समाज में बहुभाषिक संचार का बदलता स्वरूप: भारतीय भाषाओं के समक्ष अवसर और चुनौतियाँ **Rakesh Uniyal**	230–234
35	Graduate Employability and Skill Gaps in State Universities **Narender Panghal**	235–242
36	Political Funding Transparency in Indian Election **Dr. Anand Kumar Dwivedi**	243–252
37	AI-Powered Platforms for Data Analytics and Audience Development **Sachin Sangal**	253–258
38	Engineering Leadership Models in AI Startups: Balancing Innovation and Operational Efficiency **Dr. Kalpesh Rasiklal Rakholia**	259–269
39	Challenges in Integrating CWSN in Regular Classrooms **Anil Kumar**	270–280
40	An Artificial Intelligence-Based Legal Compliance Framework for Real-Time Environmental Governance to Advance SDGs 9, 12, 13, and 16 **Dr. Jyoti Janardhan Reddy**	281–288

S. No.	Particulars	Page No.
41	Impact of Source Segregation and Waste Characterization on the Efficiency of Material Recovery Facilities **Varinder Vikram Singh, Dr. Pankaj Kumar Bharti**	289–296
42	Significance of Emotional Intelligence of schedule caste students in relation to Self-concept at secondary level **Mrs. Varsha Asher Wasker, Dr. Kuldeep Singh Tomar**	297–305
43	औपनिवेशिक भारत में स्थानीय बाजारों के सामाजिक परिवर्तन का ऐतिहासिक अध्ययन **Pankaj Tamta**	306–310
44	Teachers' Readiness to Integrate Generative AI into Lesson Planning and Classroom Instruction **Prema Bharti**	311–316
45	Battery Usage Optimization Techniques for AI-Heavy Mobile Apps **Dr. Akankasha Kathuria**	317–321
46	Gender, Technology, and Changing Family Structures in Urban India: A Socio-cultural Analysis **Prof. Sawant Jeetendra Madhukar Usha**	322–326
47	Law and Alternative Dispute Resolution in Contemporary Civil Justice: A Legal Study **Dr. Pooja Khurana**	327–331
48	English Literature and the Representation of Women in Contemporary Fiction: A Corpus-Based Study of Narrative Agency, 2000–2024 **Dr. Abu Farah Hoque**	332–336
49	Agricultural Impact of Biochar and Reduced Fertilizer on Mustard Soil Health and Yield **Dr. Bibhu Santosh Behera**	337–346
50	Ethical and Privacy Frameworks for AI-Driven Customer Data Analytics in Medical Profession **Dr. Gaurav Singh Tomar**	347–351
51	Legal Protection of Witnesses in Criminal Justice Proceedings **Dr. Jyoti Janardhan Reddy**	352–357

S. No.	Particulars	Page No.
52	Platform Culture and Fragmented Selfhood in Contemporary English Literature **Dr. Akanksha Singh**	358–362
53	Digital Health Literacy and Health Information Inequality in Rural India: A Multidimensional Assessment **Ranjana Jadaun**	363–368
54	स्मार्ट विनिर्माण और उद्योग 5.0 में कृत्रिम बुद्धिमत्ता, मानव-केंद्रित तकनीक और सतत विकास का अंतःविषयक अध्ययन **Dr. Ghamendra Kumar Sahu**	369–375
55	Contribution of Yoga-Based Breathing Techniques to Daily Stress Management **Dr. Sweta Kumari**	376–387
56	Algorithmic Silence and Unspoken Meaning in Contemporary English Fiction **Dr. Jyoti Devi**	388–396
57	Cost-Benefit Analysis of Custom Image Analysis Tools in Oncology Research **Sumit Malhotra**	397–405
58	उच्च शिक्षा में सूक्ष्म अधिगम तकनीकों का शैक्षिक प्रभाव **Ram Singh**	406–412
59	Optimising Laboratory Workflows with Low-Code/No-Code Software Solutions **Dr. Amit Nampalliwar**	413–421
60	भारतीय बहुभाषिक समाज में भाषा, संस्कृति और राष्ट्रीय एकता का अध्ययन **Dr. Geeta Rawat**	422–428
61	Influence of FinTech Innovation on Financial Resilience and Operational Efficiency of Retailers and Street Vendors **Prof. Manmeet Kumar Siras & Shyam Pandey**	429–435
62	भारत में आपातकालीन शक्तियाँ और लोकतांत्रिक उत्तरदायित्व: संसदीय शासन के अंतर्गत राष्ट्रपति की संवैधानिक भूमिका का विश्लेषण **सीता राम पंडित, डॉ. पी. पी. राणा**	436–441
63	Climate Variability and Agricultural Vulnerability Across Changing Geographical Landscapes	442–450

S. No.	Particulars	Page No.
	Dr. Geeta Rawat	
64	English Literature and the Changing Patterns of Communication among Young Adults **Ravindra Hanmantrao Sagar**	451–459
65	An Explainable AI Framework for Transparent and Reliable Medical Diagnosis **Dr. Thejoram Naresh Reddy Boya**	460–466
66	डिजिटल समुदायों का युवा शिक्षा और सामूहिक पहचान पर प्रभाव **डॉ. मनोज कुमार सकलानी**	467–473
67	Adaptive Technologies for Enhancing Online Shopping Experiences **Dr. Abhishek Bhattacharjee**	474–479
68	Impact of Digital Payment Adoption through AI-ML on Micro-Business Performance **Ralphy Joseph C J**	480–484
69	Role of Regional Parties in Shaping Federalism in India **Dr. Shailendra Kumar**	485–489
70	Serverless Computing Optimization: Enhancing Performance with AI-Based Resource Allocation **S. Venkatasubramanian**	490–495
71	Student Satisfaction in Autonomous vs. Affiliated Colleges **Dr. Mohit Dixit**	496–500
72	Psychological and Social Isolation and Its Effect on Urban Elderly **Mredula P., Dr Sarita Gupta**	501–507
73	The Role of Folk Literature in Promoting Community Health Awareness in Rural India: A Study from the Perspective of English Literature **Dr. Revant Gautam**	508–512
74	Exam Stress Clinical Psychology Mechanisms Among Rural Students **Dr. Avinash D. Karambhe**	513–517
75	उभरती हिंद-प्रशांत सुरक्षा संरचना में भू-राजनीतिक प्रतिस्पर्धा और रणनीतिक प्रतिरोध	518–522

S. No.	Particulars	Page No.
	Dr. Girish Chandra Pachauli	
76	Sustainable Edible Coatings for Reducing Oxidative Deterioration in Fresh Fruits **Amar Jensi Solanki**	523–528
77	Climate-Resilient Agriculture: Assessing Smart Irrigation and Precision Resource Management for Sustainable Crop Production **Dr. Bibhu Santosh Behera**	529–534

ChatMania: A Realtime Chat Application

Dr. Kirti Shukla
Department of CSE
IILM University
Greater Noida, Uttar Pradesh, India
ss@gmail.com
Anshika
Department of CSE
IILM University
Greater Noida, Uttar Pradesh, India
ss@gmail.com

***Abstract*— ChatMania is a real-time web-based chat application designed to facilitate seamless communication between users through group messaging in dedicated chat rooms. Built using modern web technologies such as Node.js, Socket.IO, HTML/CSS, and JavaScript, the application supports instant message delivery, user authentication, and data storage using MongoDB. ChatMania aims to bridge the communication gap in today's fast-paced digital world by offering a simple, secure, and efficient platform. This project emphasizes real-time communication, ease of use, and system scalability, making it suitable for both personal and organizational use. With features like chat history, user profiles, and room-based messaging, ChatMania is a practical solution for enhancing connectivity and collaboration.**

***Keywords*—** *Real-Time Chat, WebSocket, Socket.IO, Node.js, JavaScript, MongoDB, Group Messaging, Chat Application, Online Communication, Web Development.*

Introduction

ChatMania is real-time chat web base application with that we can send messages in group in different rooms. The "ChatMania" has been developed to override the problems dominant in practicing manual system. This software is supported to eliminate and, in some cases reduce hardships faced by this existing system. Moreover, this system is designed for the particular need of the company to carry out operations in a smooth and effective manner.

The application is reduced as much as possible to avoid errors while entering the data. It also provides error message while entering invalid data. No formal knowledge is needed for the user use this system. Thus, by this all it proves it is user-friendly. ChatMania, as described above can lead to free, secure, reliable and fast management system. It can assist the user to concentrate on their other activities rather to concentrate on the record keeping. Thus, it will help organization in better utilization of resources.

Basically, the project describes how to manage for good performance and better services for the clients. Here's a brief overview of the key technologies commonly used:

1. Frontend Technologies:

- HTML/CSS: These are the fundamental technologies for styling the user interface of the application.
- JavaScript: It is essential for handling user interactions in real-time. It is used to update and change both HTML and CSS.

2. Backend Technologies:

- *Node.js*: It is an open-source, cross-platform, JavaScript runtime environment that executes JavaScript code outside of a web browser. Node.js is a popular, lightweight web framework, and it is used for making the logic of real-time chat applications.
- *Socket.IO*: It is a JavaScript library for real-time web applications**.** It enables real-time, bi-directional communication between web clients and servers. It has two parts − a client-side library that runs in the browser, and a server-side library for node.js. Both components have an identical API. Today the applications on Internet are based on Client-Server architecture. A client is someone who requests something from a Server. A Server, based on the request, responds with appropriate results.
- *Moment.js*: It is also a JavaScript library that is used for validating, parsing, manipulating and displaying dates and times in a real-time web application.

Objectives

As we know people become busy day by day and their distance also increases. So, the main aim of "ChatMania" is decrease the distance of people. The main objective of the "ChatMania" is to manage the details of Chat User and Group Chat. Chatting apps make it easier, simpler, and faster to connect with everyone and it is also easy to use. Online messaging apps are often used by young people to talk to their friend and peers. Staying connected with your friends is valuable, but online messaging also gives young people opportunities to develop their social skills in a range of formal and informal contexts. It will track all the details about the chat history, chat profile and user.

Related Work

1. *Real time chat application using web applications*

The paper titled "Real-Time Chat Application" by Pratham Bharti presents a web-based chat application developed for real-time communication. The application allows users to create accounts, join chat rooms, and send messages instantly. It includes user authentication and authorization to ensure secure access

2. *Professional Chat Application Based on Natural Language Processing*

This paper discusses the development of a professional chat application that incorporates natural language processing to filter inappropriate messages, ensuring a secure and respectful communication environment. It also emphasizes the use of encryption techniques for data security.

3. *Secure End-to-End Chat Application: A Comprehensive Guide*

This guide provides an overview of designing secure chat applications, focusing on end-to-end encryption to protect user conversations. It also suggests future enhancements like secure voice and video calls and automatic blocking of spammers.

4. *Developing an End-to-End Secure Chat Application*

The paper titled "Developing an End-to-End Secure Chat Application" by Noor Sabah, Jamal M. Kadhim, and Ban N. Dhannoon from Al-Nahrain University (2017) presents a comprehensive design for a secure mobile chat application aimed at ensuring user privacy and data protection.

5. *A Comparison of Chat Applications in Terms of Security and Privacy*

The paper titled "A Comparison of Chat Applications in Terms of Security and Privacy" by Johnny Botha, C. Van 't Wout, and L. Leenen, published by the Council for Scientific and Industrial Research (CSIR) in 2019, provides an in-depth analysis of various messaging applications, evaluating their security and privacy features.

6. *Implementation Application Internal Chat Messenger Using Android System*

The paper titled "Implementation Application Internal Chat Messenger Using Android System" provides a comprehensive overview of developing an internal messaging application tailored for organizational use. The primary objective is to facilitate seamless communication among employees within an organization through a dedicated Android-based chat application.

Proposed methodology

The methodology for developing a real-time chat application involves several steps:

1. *Requirement Analysis*: Document the requirements of the real-time chat application. This includes functional requirements as well as non-functional requirements.
2. *Technology Selection*: Choose the appropriate web development technologies for building the frontend and backend of the chat application. This may include JavaScript frameworks/libraries for the frontend (e.g., React.js, Vue.js) and backend technologies (e.g., Node.js, Django, Flask).
3. *Architecture Design*: Design the architecture of the chat application, considering factors such as scalability, real-time communication, and data storage. Decide on the architecture for the frontend (e.g., single page application) and backend (e.g., RESTful API, WebSocket).
4. *Frontend Development*: Develop the user interface of the chat application using HTML, CSS, and JavaScript. Implement features such as message input/output, user authentication, and real-time updates using the selected frontend technologies.
5. *Backend Development*: Implement the server-side logic of the chat application using the chosen backend technology. This includes handling user authentication, managing WebSocket connections, and storing/retrieving chat messages from a database.
6. *Real-Time Communication*: Implement real-time communication between clients and the server using WebSocket or a similar technology. Ensure that messages are delivered in real-time to all connected clients and that the system can handle a large number of concurrent connections.
7. *Database Integration*: Integrate a database system (e.g., MySQL, MongoDB) to store chat messages, user information, and session data. Design and implement database schemas to efficiently store and retrieve data.
8. *Testing*: Software testing is any important activity aimed at evaluating an attribute or capability of a program or system and determining that it meets its required results. Testing is a very important but an expensive activity. The purpose of testing can be quality assurance, verification and validation or reliability estimation. This includes unit testing, integration testing, and end-to-end testing of the application's features.
9. *Deployment*: Deploy the chat application to a production environment, such as a cloud server or web hosting platform. Configure the deployment environment for scalability, reliability, and security.
10. *Monitoring and Maintenance*: Set up monitoring tools to track the performance and usage of the chat application in real-time. Monitor server health, database performance, and user activity to identify and address any issues that arise. Perform regular maintenance tasks, such as applying security patches, optimizing performance, and adding new features based on user feedback. By following this methodology, we use effectively design, develop, deploy, and maintain a real-time chat application using web development technologies.

Gantt Chart

We estimated the number of weeks required for each of the seven tasks as follows:

Analysis	2 Weeks
Design	1 Weeks
Coding	2 Weeks

Testing	2 Days
Write Manual	1 Day
Implementation	1 Day
Maintenance	1 Week

Detail schedule of activities are listed in the Gantt chart shown in figure below:

Fig.2. Gantt Chart

Activities	1 Feb-14 Feb	15 Feb-21 Feb	22 Feb – 7Mar	8 Mar – 9 Mar	10 Mar	11 Mar	12 Mar – 18 Mar
PROBLEM ANALYSIS							
DESINING							
CODING							
TESTING							
WRITE MANUAL							
IMPLEMENTATION							
MAINTAINANCE							

Results And Outcomes

As the task of this application is to connect people with each other. The features that this application provides is:

- Real-time Communication
- Messages Feature
- Security and Privacy.

Here, are the outcomes for this application:

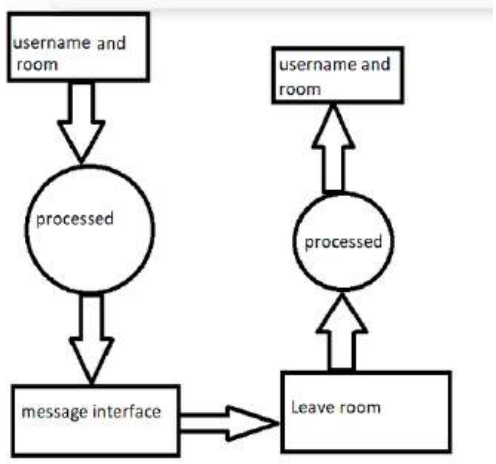


Fig . 3 . Data flow diagram of ChatMania



Fig . 4 . Username and Room Activity



Fig . 5 . Welcome Activity



Fig. 6. Message Activity



Fig . 7 . Leave Room Activity



Fig .8. Username and Room name Activity

Conclusion

ChatMania successfully demonstrates the development and deployment of a real-time chat application using modern web technologies. The platform supports secure, efficient, and real-time communication among users in multiple chat rooms. Through intuitive design, robust backend integration, and real-time WebSocket communication, the application meets the growing need for digital connectivity. The system's modular architecture allows for easy maintenance and future scalability. With planned enhancements like multimedia messaging, private rooms, and voice/video calls, ChatMania is well-positioned to evolve into a comprehensive communication tool. Ultimately, the project showcases how web technologies can be leveraged to build user-centric, real-time applications that address current communication challenges.

References

[1] Prof. Badal Bhushan, Rabiya Hoda, Nikhat Anjum, Pratham Bharti, *Real-Time Chat Application Using Web Applications*, Journal of Scientific research in Engineering and Management

[2] Noor Sabah, Ban N. Dhannoon, *Developing an End-to-End Secure Chat Application*, Al-Nahrain University, 2017.

[3] Johnny Botha, C. Van 't Wout, L. Leenen, A Comparison of Chat Applications in Terms of Security and Privacy, CSIR, 2019.

[4] Robi Sanjaya, Abba Suganda Girsang*: Implementation of Internal Chat Messenger Using Android System* – Research paper focused on organizational chat systems.

[5] Mainka Saharan, Neeraj Kumar, Vijay Kumar, Akshay Juneja:*Secure End-to-End Chat Application: A Comprehensive Guide* – Guide focusing on encryption and secure messaging architecture.

[6] Karthick S1, R John Victor2, Manikandan S3, Bhargavi Goswami: *Professional Chat Application Based on NLP* – Emphasis on content