

# **2021 Fourth International Conference on Computational Intelligence and Communication Technologies (CCICT 2021)**

**Sonepat, India  
3 July 2021**



**IEEE Catalog Number: CFP21AT5-POD  
ISBN: 978-1-6654-2393-9**

**Copyright © 2021 by the Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP21AT5-POD
ISBN (Print-On-Demand):	978-1-6654-2393-9
ISBN (Online):	978-1-6654-2392-2

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# 2021 Fourth International Conference on Computational Intelligence and Communication Technologies (CCICT) **CCICT 2021**

## Table of Contents

Message from the Patrons	xiii
Message from the General Chairs	xiv
Message from the Program Chairs	xvi
Message from the Program Co-Chair	xviii
Organizing Committee	xix
Program Committee	xx
Reviewers	xxii

## Artificial Intelligence, Machine Learning and Bio Inspired Computing

A Comprehensive Review of Adversarial Learning and Impact of Unsharing Weights Across Classes	1
<i>S Vignesh (Delhi Technological University, India), Bhawna Bhawna (Delhi Technological University, India), Shubham Anand (Delhi Technological University, India), and Shailender Kumar (Delhi Technological University, India)</i>	
A GA Optimized Fuzzy Logic Controller for Two Area Automatic Generation Control under Dynamic Behavior of Power System	9
<i>Vishal Jain (BMIET, India), Ejay Nsugbe (Nsugbe Research Labs Swindon, United Kingdom), and Sunil Gupta (Maharaja Surajmal Institute of Technology, India)</i>	
Analysis of Automated text Generation using Deep Learning	14
<i>Manoj Kumar (Delhi Technological University, New Delhi, India), Abhishek Singh (Delhi Technological University, New Delhi, India), Arnav Kumar (Delhi Technological University, New Delhi, India), and Ankit Kumar (Delhi Technological University, New Delhi, India)</i>	
Analysis of Global Research Proceedings in Artificial Intelligence	19
<i>Vedang Ratan Vatsa (Delhi, India)</i>	
Fingerprint Spoofing Attacks and their Deep Learning-Enabled Remediation: State-of-the-Art, Taxonomy, and Future Directions	22
<i>Rutbaa Ishfaq (Central University of Jammu, India), Arvind Selwal (Central University of Jammu, India), and Deepika Sharma (Central University of Jammu, India)</i>	

Framework for Machine Learning Based Task Allocation in Dasd Environment .29.....	
	<i>Madan Singh (J.C. Bose University of Science and Technology, YMCA, Faridabad), Naresh Chauhan (J.C. Bose University of Science and Technology, YMCA, Faridabad), and Rashmi Popli (J.C. Bose University of Science and Technology, YMCA, Faridabad)</i>
Identifying Best Suited Soil Based on its Physical and Chemical Properties Using Machine Learning .35.....	
	<i>Jyoti Nanwal (J. C. Bose University of Science and Technology, YMCA, Faridabad, India) and Preeti Sethi (J. C. Bose University of Science and Technology, YMCA, Faridabad, India)</i>
Machine Learning and Deep Learning for Malware and Ransomware Attacks in 6G Network .39	
	<i>Ankita Ankita (Chitkara University, Punjab) and Shalli Rani (Chitkara University, Punjab)</i>
Machine Learning Based Classification of Academic Stress Factors .45.....	
	<i>Kashish Bhatia (Punjabi University, Patiala, India), Manish Kumar (Punjab Engineering College, Chandigarh, India), Rajesh Kumar Bhatia (Punjab Engineering College, Chandigarh, India), Aakankasha Sharma (Punjab Engineering College, Chandigarh, India), and Krittika Chhabra (Punjab Engineering College, Chandigarh, India)</i>
Novel Paths to Convert Teens from Consumers to Producers of Technology in Developing Countries .51.....	
	<i>Ramy Said Agieb (MTI University, Cairo, Egypt)</i>
Optimization of the Combine Cycle Plants based on the Supplementary Heat Used for HRSG for Different Fuels Using C++ and MATLAB Code Simulation .55.....	
	<i>Rajesh Kumar (Shri Vishwakarma Skill University, India), Manisha Sharma (KEC, India), and Hemant K Upadhyay (BMIT, India)</i>
Palm-Print Identification based on Deep Residual Networks .60.....	
	<i>Poonam Poonia (Birla Institute of Technology and Science, Pilani, India) and Pawan K. Ajmera (Birla Institute of Technology and Science, Pilani, India)</i>
SAPS: Automatic Saffron Adulteration Prediction Systems, Research Issues, and Prospective Solutions .64.....	
	<i>Junaid Amin (Central University of Jammu, Jammu and Kashmir, India), Arvind Selwal (Central University of Jammu, Jammu and Kashmir, India), and Ambreen Sabha (Central University of Jammu, Jammu and Kashmir, India)</i>

## **Circuits and Systems and Quantum Computing**

FPGA Based Design of Multifunction ALU .72.....	
	<i>Anup Kumar (Delhi Technological University, India), Manish Kumar (Delhi Technological University, India), Gouri Shankar Jha (Delhi Technological University, India), and Kriti Suneja (Delhi Technological University, India)</i>
QSDC : Future of Quantum Communication - A Study .77.....	
	<i>Baldeep Singh Dhillon (Defence Institute of Advanced Technology, India) and Manisha J Nene (Defence Institute of Advanced Technology, India)</i>
Quantum Memory Multiple Access .84.....	
	<i>Ankit Sharma (Defence Institute of Advanced Technology, Maharashtra, India) and Manisha J Nene (Defence Institute of Advanced Technology, Maharashtra, India)</i>

Turing Machine based Syllable Splitter .87.....	
	<i>Abhishek Mallik (Delhi Technological University, New Delhi, India) and Anavi Khetarpal (Delhi Technological University, New Delhi, India)</i>

## COVID-19 Technologies and Data Analysis

A Study on Strategies of Trading the News Using Massive Data Mining .91.....	
	<i>Prabakaran Natarajan (Vellore Institute of Technology, India), Rajasekaran Palaniappan (PSNA College of Engineering and Technology, India), Kannadasan Rajenderan (Vellore Institute of Technology, India), and Nagarajan Pandian (Rajalakshmi Institute of Technology, India)</i>
Convolutional Neural Network for Covid-19 Detection from X-Ray Images .100.....	
	<i>Anju Jain (Guru Jambheshwar University of Science and Technology, India), Saroj Ratnoo (Guru Jambheshwar University of Science and Technology, India), and Dinesh Kumar (Delhi Technological University, India)</i>
Covid 19 Tracker Using REST API Android App .105.....	
	<i>Keshav Kulsresth (Galgotias University, Uttar Pradesh, India), Shivam Shasheesh (Galgotias University, Uttar Pradesh, India), Chandan Mishra (Galgotias University, Uttar Pradesh, India), and Arjun K P (Galgotias University, Uttar Pradesh, India)</i>
COVID19 Tweeter Dataset Sentiment Analysis .110.....	
	<i>Anubhav Kumar (Ethiopian Institute of Technology, Mekelle, Ethiopia), Kyongsik Yun (California Institute of Technology, California, USA), Teklay Gebregzabiher (Ethiopian Institute of Technology, Mekelle, Ethiopia), Berihu Yohannes Tesfay (Ethiopian Institute of Technology, Mekelle, Ethiopia), and Solomon Gebremeskel Adane (Ethiopian Institute of Technology, Mekelle, Ethiopia)</i>
Sentiment Analysis of Amazon Food Review Data .116.....	
	<i>Sneha Choudhary (Jagannath Institute of Management Sciences) and Charu Chhabra (RDIAS, GGSIPU)</i>

## Digital Security, Information Privacy and Web Technology

A Systematic Review and Analysis of Blockchain Technology for Corporate Remittance and Settlement Process .121.....	
	<i>Parveen Mor (Amity School of Engineering and Technology, Haryana, India), Rajesh Kumar Tyagi (Department of Computer Science and Engineering, Haryana, India), Charu Jain (Amity School of Engineering and Technology, Haryana, India), and Deepak Kumar Verma (ABES Engineering College, Uttarpradesh, India)</i>
Comparative Analysis of Acquisition Methods in Digital Forensics .129.....	
	<i>Himanshu Dubey (Guru Gobind Singh Indraprastha University, Delhi, India), Shobha Bhatt (Netaji Subhash University of Technology, East Campus, Delhi, India), and Geetanjali Garg (Delhi Technological University, Delhi, India)</i>
Estonia's E-Governance and Digital Public Service Delivery Solutions .135.....	
	<i>Vedang Ratan Vatsa (Delhi, India) and Parth Chhapparwal (Delhi, India)</i>

Gathering Multi-Dimensional Data of Scalable Container-Based Cluster for Performance Analysis .139.....	
	<i>Arkan Abdulalah Khudur (University of Mosul, Iraq) and Rawaa Putros Polos (University of Mosul, Iraq)</i>
Literature Review : A Comparative Study of Real Time Streaming Technologies and Apache Kafka .146.....	
	<i>Shubham Vyas (Amity School of Engineering and Technology, Gurgaon, Haryana, India), Rajesh Kumar Tyagi (Amity School of Engineering and Technology, Gurgaon, Haryana, India), Charu Jain (Amity School of Engineering and Technology, Gurgaon, Haryana, India), and Shashank Sahu (Ajay Kumar Garg Engineering College, Ghaziabad, Uttar Pradesh, India)</i>
Mail Security Alert using Pca and Eigen Vector: A Review .154.....	
	<i>Jyoti Rajput (BPSMV, India) and Sonal Beniwal (BPSMV, India)</i>
Performance Factor Impacting Behavior of Microservices in Various Hosting Domains .160.....	
	<i>Sushant Jhingran (Sharda University, Greater Noida, India) and Nitin Rakesh (Sharda University, Greater Noida, India)</i>
Software Security (Capture the Flag) .165.....	
	<i>Raju Singh (John Hopkins University)</i>
Stacking Ensemble-Based Automatic Web Page Classification .169.....	
	<i>Deeksha Deeksha (HCL Technologies, Noida, India), Rajesh Bhatia (Punjab Engineering College, Chandigarh, India), Shikhar Bhardwaj (Punjab Engineering College, Chandigarh, India), Manish Kumar (Punjab Engineering College, Chandigarh, India), Kashish Bhatia (Punjabi University, Patiala, India), and Shabeg Singh Gill (Indraprastha Institute of Information Technology, Delhi, India)</i>
Automation of Question-Answer Generation .175.....	
	<i>Alok Kumar (Chhatrapati Shahuji Maharaj University, Kanpur, India), Deepika Singh (Chhatrapati Shahuji Maharaj University, Kanpur, India), Aditi Kharadi (Chhatrapati Shahuji Maharaj University, Kanpur, India), and Mala Kumari (Chhatrapati Shahuji Maharaj University, Kanpur, India)</i>
Educational Technology at Older Adult English Language Courses During the Pandemic .181..	
	<i>Iva Koutska (Technical University of Liberec, Czech Republic) and Kamila Biniek (Karkonosze University of the Third Age, The Karkonosze State Applied Sciences University, Jelenia Góra, Poland)</i>
Experiences and Reflections on Teaching Large Introductory Java Programming Course to First Year Information Systems Undergraduate Students .187.....	
	<i>Sampson D Asare (University of Botswana, Gaborone, Botswana) and B. Gopolang (University of Botswana, Gaborone, Botswana)</i>
Role and Impact of Digital Technologies in E-Learning Amidst COVID-19 Pandemic .194.....	
	<i>Rohit Bansal (Vaish College of Engineering, Haryana, India), Ankur Gupta (Vaish College of Engineering, Haryana, India), Ram Singh (Quantum University, Uttarakhand, India), and Vinay Kumar Nassa (South Point Group of Institutions, Haryana, India)</i>

## Health Care Analytics

A – Review on IoT-Assisted ECG Monitoring Framework for Health Care Applications .203.....	
	<i>Pradeep Kumar Vishwakarma (IEC University, Solan, Himachal Pradesh) and Randeep Singh (IEC University, Solan, Himachal Pradesh)</i>

A Review on Machine Learning Applications in Medical Tourism .....	208
<i>Rekha Nagar (Computer Science &amp; Engineering, UIET, MDU, Rohtak, India), Yudhvir Singh (Computer Science &amp; Engineering, UIET, MDU, Rohtak, India), Vivek Jaglan (Computer Science &amp; Engineering, Graphic Era Hill University, Dehradun, India), and Meenakshi Malik (Computer Science &amp; Engineering, UIET, MDU, Rohtak, India)</i>	
Analysis of Various Brain Tumour Detection Techniques .....	216
<i>Manisha Tyagi (Deenbandhu Chhotu Ram University Of Science and Technology, India) and Priyanka Singh (Deenbandhu Chhotu Ram University Of Science and Technology, India)</i>	
Detection of Mosquito using Digital Image Processing .....	224
<i>Rohan Hatekar (Sardar Patel Institute of Technology, India), Pratik Gawli (Sardar Patel Institute of Technology, India), Raksha Kamath (Sardar Patel Institute of Technology, India), and Amol Deshpande (Sardar Patel Institute of Technology, India)</i>	
Efficiency Improvement of IoT in Healthcare Using Embedded Fuzzy Technique .....	230
<i>Harish Kumar Mittal (BM Institute of Engineering and Technology, Sonapat, India) and Divya Mittal (BMU, Rohtak, India)</i>	
Performance Analysis of Glaucoma Detection Techniques .....	236
<i>Deepti Sahu (Sharda University, Greater Noida, India) and Mandeep Kaur (Sharda University, Greater Noida, India)</i>	
Pregnancy Labor Prediction using a Self-Sorting Cybernetic Model .....	N/A
<i>Ejay Nsugbe (Nsugbe Research Labs, Swindon, United Kingdom), Oluwarotimi Williams Samuel (Shenzhen Institute of Advanced Technology, Shenzhen, China), Ibrahim Sanusi (Sheffield University, Sheffield, United Kingdom), Vishal Jain (BMIET, Sonapat, India), Suresh Vishwakarma (University of Trinidad and Tobago), and Dawn Adams (Ulster University, Northern Ireland)</i>	

## Digital Image and Video Processing

Analysis of Multi-Features Combination of Unsupervised Content Based Image Retrieval with Different Degrees of Accuracy .....	249
<i>S. M. Zakariya (University Polytechnic, Aligarh Muslim University, Aligarh, India) and Imtiaz A. Khan (University Polytechnic, Aligarh Muslim University, Aligarh, India)</i>	
Challenges in Automatic License Plate Recognition System: An Indian Scenario .....	255
<i>Pankaj Mukhija (DCRUST, Sonapat, India), Pawan Kumar Dahiya (DCRUST, Sonapat, India), and Priyanka Priyanka (DCRUST, Sonapat, India)</i>	
FinCaT: Fingerprint Cancellable Template Protection Remediation Schemes, Challenges, and Future Directions .....	260
<i>Eain Ul Sehar (Central University of Jammu, India), Arvind Selwal (Central University of Jammu, India), and Deepika Sharma (Central University of Jammu, India)</i>	
Method and System for Rom Optimization by Detecting Duplicate Audio Contents .....	268
<i>Ashish Chopra (Samsung Research Institute, Noida, India), Rajat Gupta (Samsung Research Institute, Noida, India), Tanuj Kalra (Samsung Research Institute, Noida, India), and Anmol Kesharwani (Samsung Research Institute, Noida, India)</i>	

Offline Marathi Character to Text Conversion .276.....	<i>Ketaki Ransing (Sardar Patel Institute of Technology, Mumbai, India), Mehul Patole (Sardar Patel Institute of Technology, Mumbai, India), Apurva Lingayat (Sardar Patel Institute of Technology, Mumbai, India), and Amol Deshpande (Sardar Patel Institute of Technology, Mumbai, India)</i>
PointRend Segmentation for a Densely Occluded Moving Object in a Video .282.....	<i>Suresha M (Kuvempu University, India), Kuppa S (Kuvempu University, India), and Raghukumar D S (Kuvempu University, India)</i>
SCD based Video Watermarking by Using Wavelet Transform and SVD .288.....	<i>Praful Saxena (MUIT, Lucknow, India) and Santosh Kumar (MUIT, Lucknow, India)</i>
Text Recognition by Air Drawing .292.....	<i>Jay Patel (Pandit Deendayal Energy University, Gandhinagar, India), Umang Mehta (Pandit Deendayal Energy University, Gandhinagar, India), Kevin Panchal (Pandit Deendayal Energy University, Gandhinagar, India), Dev Tailor (Pandit Deendayal Energy University, Gandhinagar, India), and Devam Zanzmera (Pandit Deendayal Energy University, Gandhinagar, India)</i>

## Internet of Everything and Wireless Sensor Networks

An Android Based Smart Robotic Vehicle for Border Security Surveillance System .296.....	<i>Krunal B. Pawar (Rajarambapu Institution of Technology, Rajaramnagar, Sangli, Maharashtra, India), Nagaraj V. Dharwadkar (Rajarambapu Institution of Technology, Rajaramnagar, Sangli, Maharashtra, India), Pradeep A. Deshpande (BLDEA's V.P.Dr.P.G.Halakatti College of Engineering and Technology, Vijayapura, Karnataka, India), Shivakumar K. Honawad (BLDEA's V.P.Dr.P.G.Halakatti College of Engineering and Technology, Vijayapura, Karnataka, India), and Pramod A. Dharmadhikari (Rajarambapu Institute of Technology, Rajaramnagar, Sangli, Maharashtra, India)</i>
An Energy Efficient Hierarchical Routing Algorithm for IoT-Enabled WSNs .302.....	<i>Pankaj Yadav (IIT (BHU), Varanasi, India), Prashant Singh (IIT (BHU), Varanasi, India), Gagandeep Kaur (ABV-IIITM, Gwalior, India), and Prasenjit Chanak (IIT (BHU), Varanasi, India)</i>
An Energy Optimized Routing Algorithm for IoT-Enabled WSN .308.....	<i>Sacchit D. Sheth (IIT (BHU), Varanasi, India), Yash Verma (IIT (BHU), Varanasi, India), Gagandeep Kaur (ABV-IIITM, Gwalior, India), and Prasenjit Chanak (IIT (BHU), Varanasi, India)</i>
Computer Vision based Prototype Model of Face Gesture Controlled Vehicle .313.....	<i>Rajat Mehta (BMIET, Sonapat, India) and Vishal Jain (BMIET, Sonapat, India)</i>
Fog Assisted-IoT Based Health Monitoring System .318.....	<i>Jyotsna Seth (Sharda University, Greater Noida, India) and Parma Nand (Sharda University, Greater Noida, India)</i>
Futuristic Analysis of Machine Learning Based Routing Protocols in Wireless Ad Hoc Networks .324.....	<i>Sheetal Kaushik (Amity School of Engineering and Technology, Haryana, India), Khushboo Tripathi (Amity School of Engineering and Technology, Haryana, India), Rashmi Gupta (Amity School of Engineering and Technology, Haryana, India), and Prerna Mahajan (IITM Janakpuri, India)</i>



Industry Monitoring System .330.....	
	<i>Rajesh P. Deshmukh (Yeshwantrao Chavan College of Engineering, Nagpur, India), Mugdha Avadhut (Yeshwantrao Chavan College of Engineering, Nagpur, India), Tanvi Vairagade (Yeshwantrao Chavan College of Engineering, Nagpur, India), Shreya Kolhe (Yeshwantrao Chavan College of Engineering, Nagpur, India), and Shweta Dehankar (Yeshwantrao Chavan College of Engineering, Nagpur, India)</i>
Intelligent Swimming-Pool Design with Embedded Drown Alerting, Preventing and Autonomous Rescue System .335.....	
	<i>Pillalamarri Laxman (Lovely Professional University, India) and Anuj Jain (Lovely Professional University, India)</i>
Internet of Things in Public Administration .343.....	
	<i>Zdzislaw Polkowski (The Karkonosze State University of Applied Sciences, Jelenia Gora, Poland) and Marcin Jozwiak (Jan Wyzykowski University, Polkowice, Poland)</i>
Stree Aatmanirbharta Jacket - An IOT Based Women Safety System .350.....	
	<i>Gauri Bhadula (Manav Rachna International Institute of Research &amp; Studies, Faridabad, India), Achsa Benjamin (Manav Rachna International Institute of Research &amp; Studies, Faridabad, India), and Prerna Kakkar (Manav Rachna International Institute of Research &amp; Studies, Faridabad, India)</i>

## Software Engineering and Cloud Computing

A Critical Review of Workflow Scheduling Algorithms in Cloud Computing Environment .355.	
	<i>Rupali Sharma (Maharishi Markandeshwar Deemed to be University, India) and Neeraj Mangla (Maharishi Markandeshwar Deemed to be University, India)</i>
A Holistic Review on Optimization Strategies for C & K Metrics in Object Oriented Testing .362	
	<i>Rekha Jangra (Guru Jambheshwar University Science and Technology, Hisar, India), Om Parkash Sangwan (Guru Jambheshwar University Science and Technology, Hisar, India), and Deepak Nandal (Guru Jambheshwar University Science and Technology, Hisar, India)</i>
Application Measurement and Software Quality Testing using Machine Learning Performance Techniques .372.....	
	<i>Munidhanalakshmi Kumbakonam (Bharathiar University, Tamilnadu, India) and R. Mahammad Shafi (Mizan-Tepi University, Ethiopia)</i>
Artificial Intelligence For Software Testing-Perspectives And Practices .377.....	
	<i>Nisha Jha (J.C. Bose University of Science and Technology, YMCA, India) and Rashmi Popli (J.C. Bose University of Science and Technology, YMCA, India)</i>
Deadline based Energy Efficient Scheduling Algorithm in Cloud Computing Environment .383	
	<i>Sanjiv Kumar Grewal (MMDU, Mullana, Ambala, India) and Neeraj Mangla (MMDU, Mullana, Ambala, India)</i>
Literature Review of Finding Duplicate Bugs in Open Source Systems .389.....	
	<i>Kulbhushan Bansal (Ch. Devi Lal University, India) and Harish Rohil (Ch. Devi Lal University, India)</i>

Strengthening of Homomorphic Encryption Scheme for Cloud Environment Using Particle Optimization Algorithm	397
<i>Mohd Atif Kaleem (Aligarh Muslim University, India), Parvez Mahmood Khan (Aligarh Muslim University, India), and Usman Ali Khan (King Abdulaziz University, KSA)</i>	
Validation of Object-Oriented Static and Dynamic Metrics	406
<i>Manju Duhan (Guru Jambheshwar University of Science &amp; Technology, India) and Pradeep Kumar Bhatia (Guru Jambheshwar University of Science &amp; Technology, India)</i>	
<b>Author Index</b>	<b>413</b>