
Lecture Notes in Networks and Systems 616
Rajiv Misra · Muttukrishnan Rajarajan ·
Bharadwaj Veeravalli ·
Nishtha Kesswani · Ashok Patel Editors
Internet of Things (IoT): Key Digital Trends Shaping the Future
Proceedings of 7th International Conference on Internet of Things and Connected Technologies (ICIoTCT 2022)
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Editors
Rajiv Misra
Department of Computer Science
and Engineering
Indian Institute of Technology Patna
Bihta, Bihar, India

Computer Science, Central University
of Rajasthan
Kishangarh (Ajmer), India

Bharadwaj Veeravalli
Department of Electrical and Computer
Engineering
National University of Singapore
Singapore, Singapore

Ashok Patel
Department of Computer Science
Florida Polytechnic University
Lakeland, FL, USA

Muttukrishnan Rajarajan
City University of London
London, UK

Nishtha Kesswani
Department of Computer Science
Central University of Rajasthan
Ajmer, Rajasthan, India

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Deepali Virmani, Vivekananda Institute of Professional Studies–Technical Campus, Delhi, India
Vishal Khand
Sumit Sar
Sonakshi Vij

Preface

The 7th International Conference on Internet of Things and Connected Technologies (ICIoTCT) 2022 presents key ingredients for the 5th Generation Revolution. The recent adoption of a variety of enabling Wireless communication technologies such as RFID tags, BLE, ZigBee, etc. and embedded sensor and actuator nodes, and various protocols such as CoAP, MQTT, DNS etc. have made IoT step out of its infancy. The ICIOTCT 2022 was organized on Sept 29–30, 2022 by the Indian Institute of Technology, Patna, VKONEX (India) in collaboration with the International Association of Academicians (IAASSE) USA and it provided a platform to discuss advances in the Internet of Things (IoT) and connected technologies (various protocols, standards etc.).

Bihta, India — Rajiv Misra
London, UK — Muttukrishnan Rajarajan
Singapore, Singapore — Bharadwaj Veeravalli
Ajmer, India — Nishtha Kesswani
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Editors and Contributors

About the Editors

Rajiv Misra is an Associate Professor of Computer Science and Engineering at the Indian Institute of Technology Patna, India. His research focuses in distributed systems, cloud computing, big data computing, consensus in blockchain, cloud IoT-edge computing, ad hoc networks, and sensor networks. He has contributed significantly to these research areas of distributed and cloud computing and published more than 80 papers in reputed journals and conferences, with an impact of 999 citations and an h-index of 14.

Muttukrishnan Rajarajan is currently the Director of the Institute for Cyber Security at City University of London and carries out research in the areas of privacy preserving data management, Internet of Things privacy, network intrusion detection, cloud security and identity management using blockchain. Raj has received funding from EPSRC, Royal Academy of Engineering, European Commission, Innovate UK, British Council and industry to carry out research in cyber security. He has supervised several Ph.Ds. jointly with British Telecommunications, UK in the area of data analytics for cyber security and network intrusion detection.

Bharadwaj Veeravalli is currently with the Department of Electrical and Computer Engineering, Communications and Information Engineering (CIE) division, at The National University of Singapore, Singapore. His main stream research interests include cloud/grid/cluster computing (big data processing, analytics and resource allocation), scheduling in parallel and distributed systems, Cybersecurity, and multimedia computing. He is one of the earliest researchers in the field of Divisible Load Theory (DLT). He did Ph.D. degree from the Indian Institute of Science, Bangalore, India. He received gold medals for his bachelor degree overall performance and for an outstanding Ph.D. thesis (IISc, Bangalore India) in the years 1987 and 1994, respectively.

Nishtha Kesswani has received prestigious awards, including the UGC Raman Post-doctoral Fellowship tenable in USA and the Young Teacher Award. She received the M.Tech. degree from the Malaviya National Institute of Technology (MNIT). She has a vivid teaching experience at several reputed universities, including California State University at San Bernardino and the University of Ljubljana, Slovenia. She has visited more than 15 countries and delivered invited talks at several conferences and workshops. She is currently with the Central University of Rajasthan, India.

Ashok Patel is a faculty at computer and information science, at UMass Dartmouth USA. Before joining UMass, he taught at the Department of Computer Science of Florida Polytechnic University, USA. He primarily teaches cybersecurity courses and is researching an improved efficient fingerprint recognition algorithm and web usage mining. He's particularly interested in personalizing the web experience for users and individuals using IoT. He has nearly 30 years of teaching experience. Before immigrating to the United States, he was a professor in the Department of Computer Science at North Gujarat University in India.

Contributors

Rashi Aggarwal Maharaja Agrasen Institute of Management Studies, Delhi, India; Department of CSE, Manav Rachna University, Gurugram, India

Garvita Ahuja Vivekananda Institute of Professional Studies-Technical Campus, Delhi, India

Akanksha Akanksha Computer Science, National Institute of Technology, Kurukshetra, Haryana, India

Nazneen Alam Department of Mathematics, School of Basic Sciences and Research, Sharda University, Greater Noida, India

M. Aneerudh Department of Computer Science and Engineering, Thiagarajar College of Engineering, Madurai, India

Utkarsh Asari Dhirubhai Ambani Institue of Information & Communication Technology, Gandhinagar, Gujarat, India

G. Balasubramanian School of Electrical & Electronics Engineering, SASTRA Deemed University, Thanjavur, Tamil Nadu, India

Sivaji Bandyopadhyay NIT Silchar, Silchar, Assam, India

Uday Kumar Banerjee Dr. B. C. Roy Engineering College/MCA/ECE, Durgapur, India

Vansh Bhandari Vivekananda Institute of Professional Studies—Technical Campus, New Delhi, India

Aaryan Bhatia Technical Campus, Vivekananda Institute of Professional Studies, Delhi, India

Aditi Bhole Department of Computer Engineering, Fr. C. Rodrigues Institute of Technology, Vashi, Maharashtra, India

Dushyant Bodkhey Sinhgad Institute of Management, Pune, India

Harish Chandra Department of Mathematics and Scientific Computing, Madan Mohan Malaviya University of Technology, Gorakhpur, UP, India

Radhika Chawla Technical Campus, Vivekananda Institute of Professional Studies, Delhi, India

Kavitha Chekuri Department of Computer Science and Engineering, Raghu Engineering College, Visakhapatnam, Andhra Pradesh, India

J. Paul Choudhury Kalyani Government Engineering College, Kalyani, Narula Institute of Technology, Kolkata, India

Madhab Paul Choudhury NIT Jamshedpur, Jamshedpur, Jharkhand, India

Anup Kumar Das Dr. B. C. Roy Engineering College/MCA/ECE, Durgapur, India

Gerard Deepak Department of Computer Science Engineering, National Institute of Technology, Tiruchirappalli, India

S. Deivalakshmi Department of Electronics and Communication Engineering, National Institute of Technology Tiruchirappalli, Tiruchirappalli, India

Raj Desai Dhirubhai Ambani Institue of Information & Communication Technology, Gandhinagar, Gujarat, India

B. Dey NIT Silchar, Silchar, Assam, India

R. Dhanvardini Healthcare Informatics Division, Optum UnitedHealth Groups, Hyderabad, India

Pallav Dutta Electrical Engineering Department, Aliah University, Kolkata, India

Goldie Gabrani Vivekananda Institute of Professional Studies, New Delhi, India

Lokavya Gabrani Department of Computer Science and Engineering, Shiv Nadar University, Noida, India

Milind Godase Sinhgad Institute of Management, Pune, India

Daya Sagar Gupta School of Management, Indian Institute of Technology Mandi, Kamand, Mandi, Himachal Pradesh, India

Mukesh Kumar Gupta Suresh Gyan Vihar University, Jaipur, India

Sunil Gupta School of Computer Science, UPES, Dehradun, Uttarakhand, India

Suhas Harbola Computer Vision and Image Processing lab, University School of Information, Communication and Technology (USICT), Guru Gobind Singh Indraprastha University, Dwarka, Delhi, India;
National Informatics Centre, New Delhi, India

Mohammad Equebal Hussain Suresh Gyan Vihar University, Jaipur, India

Rashid Hussain Moti Babu Institute of Technology, Bihar, India

Anshika Jain Vivekananda Institute of Professional Studies—Technical Campus, New Delhi, India

Bhumika Jain Vivekananda Institute of Professional Studies—Technical Campus, New Delhi, India

Preeti Jawla IIMT College of Engineering, Greater Noida, India

Rahul Johari SWINGER : Security, Wireless, IoT Network Group of Engineering and Research, University School of Information, Communication and Technology (USICT), Guru Gobind Singh Indraprastha University, Dwarka, Delhi, India

Anshuta Kakuste Department of Computer Engineering, Fr. C. Rodrigues Institute of Technology, Vashi, Maharashtra, India

Rakhi Kalantri Department of Computer Engineering, Fr. Conceicao Rodrigues Institute of Technology, Vashi, Navi Mumbai, Maharashtra, India

Dheeraj Kallakuri Department of Computer Engineering, Fr. C. Rodrigues Institute of Technology, Vashi, Navi Mumbai, India

Manpreet Kaur Department of CSE, Manav Rachna University, Gurugram, India

Rachit Khandelwal Department of Electronics and Communication Engineering, National Institute of Technology Tiruchirappalli, Tiruchirappalli, India

Simran Khanna Vivekananda Institute of Professional Studies—Technical Campus, New Delhi, India

Aditya Khazanchi Technical Campus, Vivekananda Institute of Professional Studies, Delhi, India

Sunil Khilari Sinhgad Institute of Management, Pune, India

Chandan Koner Dr. B. C. Roy Engineering College/ECE/CSE, Durgapur, India

Anchal Koshta ABCROB Technologies Pvt Ltd, Jabalpur, M.P, India

Vinayak Kurup Department of Computer Engineering, Fr. C. Rodrigues Institute of Technology, Vashi, Navi Mumbai, India

Sharon Laurance Department of Computer Engineering, Fr. C. Rodrigues Institute of Technology, Vashi, Navi Mumbai, India

Nikhil Londhe Department of Computer Engineering, Fr. C. Rodrigues Institute of Technology, Vashi, Navi Mumbai, India

Pratiksha Mahamine Sinhgad Institute of Management, Pune, India

Kumudini Manwar Sinhgad Institute of Management, Pune, India

Udit Meena Dhirubhai Ambani Institue of Information & Communication Technology, Gandhinagar, Gujarat, India

Tanmay Mishra Vivekananda Institute of Professional Studies—Technical Campus, New Delhi, India

Girish Mogalgiddikar GM Soft Pvt Limited, Pune, India

Ashim Mondal Electrical Engineering Department, Aliah University, Kolkata, India

Subhodeep Mukherjee Department of Management, GITAM (Deemed to Be University), Visakhapatnam, Andhra Pradesh, India;
Department of Operations, GITAM SCHOOL OF BUSINESS, GITAM (Deemed to be University), Visakhapatnam, Andhra Pradesh, India

Sudiksha Mullick Department of Computer Engineering, Fr. C. Rodrigues Institute of Technology, Vashi, Maharashtra, India

Sukumar Nandi IIT Guwahati, North Guwahati, Assam, India

Surya Kant Pal Department of Mathematics, School of Basic Sciences and Research, Sharda University, Greater Noida, India

Rutu Parekh Dhirubhai Ambani Institue of Information & Communication Technology, Gandhinagar, Gujarat, India

Ketan Parikh Department of Computer Science Engineering, Bhagwan Parshuram Institute of Technology, New Delhi, India

J. Sheeba Priyadarshini Department of Data Science, Manipal Institute of Technology Bengaluru, Bengaluru, India;
Department of Data Science, Manipal Academy of Higher Education, Manipal, India; CHRIST (Deemed to Be University), Bangalore, India

Priyal Technical Campus, Vivekananda Institute of Professional Studies, Delhi, India

Shagufta Rajguru Department of Computer Engineering, Fr. C. Rodrigues Institute of Technology, Vashi, Maharashtra, India

T. Ramya School of Electrical & Electronics Engineering, SASTRA Deemed University, Thanjavur, Tamil Nadu, India

Rowthu Lakshmana Rao Department of Computer Science and Engineering, Centurion University of Technology and Management, Vizianagaram, Andhra Pradesh, India

Aaryan Rastogi Department of Computer Engineering, Fr Conceicao Rodrigues Institute of Technology, Vashi Navi, Mumbai, India

Rajdeep Ray Dr. B. C. Roy Engineering College/ECE/CSE, Durgapur, India

S. Shane Rex Department of Computer Science and Engineering, Thiagarajar College of Engineering, Madurai, India

Rita Roy Department of Computer Science and Engineering, GITAM Institute of Technology, GITAM (Deemed to be University), Visakhapatnam, Andhra Pradesh, India

Rumpa Saha Electrical Engineering Department, Aliah University, Kolkata, India

A. Santhanavijayan Department of Computer Science Engineering, National Institute of Technology, Tiruchirappalli, India

R. Shagufta Department of Computer Engineering, Fr Conceicao Rodrigues Institute of Technology, Vashi Navi, Mumbai, India

Routhu Shanmukh Department of Computer Science and Engineering, Centurion University of Technology and Management, Vizianagaram, Andhra Pradesh, India

Ishan Sharma Technical Campus, Vivekananda Institute of Professional Studies, Delhi, India

Maanik Sharma Vivekananda Institute of Professional Studies-Technical Campus, Delhi, India

Shivansh Sharma Vivekananda Institute of Professional Studies-Technical Campus, Delhi, India

Yash Shrivastav Yashas Bajaj Vivekananda Institute of Professional Studies—Technical Campus, New Delhi, India

Nidhi Shrivastav Department of Computer Engineering, Fr Conceicao Rodrigues Institute of Technology, Vashi Navi, Mumbai, India

Arohi Singhal Vivekananda Institute of Professional Studies—Technical Campus, New Delhi, India

Chandrani Singh Sinhgad Institute of Management, Pune, India

Rajeev Kumar Singh Department of Computer Science and Engineering, Shiv Nadar University, Noida, India

Srishti Singh Technical Campus, Vivekananda Institute of Professional Studies, Delhi, India

Lacchita Soni Department of Mathematics and Scientific Computing, Madan Mohan Malaviya University of Technology, Gorakhpur, UP, India

S. Sri Sankar School of Electrical & Electronics Engineering, SASTRA Deemed University, Thanjavur, Tamil Nadu, India

Atharva Suryavanshi Department of Computer Engineering, Fr Conceicao Rodrigues Institute of Technology, Vashi Navi, Mumbai, India

Akshay Tanpure Sinhgad Institute of Management, Pune, India

K. C. Tripathi Department of IT, Maharaja Agrasen Institute of Technology, Delhi, India

Ananya Tyagi Technical Campus, Vivekananda Institute of Professional Studies, Delhi, India

Ekta Verma National Informatics Centre, New Delhi, India

Deo Prakash Vidyarthi School of Computer and Systems Sciences, Parallel and Distributed System Lab JNU, Delhi, India

M. Vijayalakshmi Department of Computer Science and Engineering, Thiagarajar College of Engineering, Madurai, India

Deepali Virmani School of Engineering & Technology, Vivekananda Institute of Professional Studies-Technical Campus, New Delhi, India

M. Vishal Department of Computer Science and Engineering, R.V. College of Engineering, Bengaluru, Karnataka, India

H. Vishalakshi Prabhu Department of Computer Science and Engineering, R.V. College of Engineering, Bengaluru, Karnataka, India

S. Viswesh School of Electrical & Electronics Engineering, SASTRA Deemed University, Thanjavur, Tamil Nadu, India

Sonali Vyas School of Computer Science, UPES, Dehradun, Uttarakhand, India

Palak Wadhwa Department of Computer Engineering, Fr Conceicao Rodrigues Institute of Technology, Vashi Navi, Mumbai, India

Jyotsna Yadav Computer Vision and Image Processing lab, University School of Information, Communication and Technology (USICT), Guru Gobind Singh Indraprastha University, Dwarka, Delhi, India

P. V. Yeswanth Department of Electronics and Communication Engineering, National Institute of Technology Tiruchirappalli, Tiruchirappalli, India

Secure Encryption Using Bit Shuffling

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Uday Kumar Banerjee, Anup Kumar Das, Rajdeep Ray & Chandan Koner

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Abstract

Information transfer over the Internet has historically been problematic due to security issues. After and during the pandemic, it was noticed that since there were many more digital transactions, there were also many more intrusions or hacks. Consequently, there is a

greater requirement for secure transactions. In this paper, a bit shuffle technique and cryptographic approach for image encryption and decryption have been proposed. Various tools for performance analysis were also used such as the number of pixel change rate (NPCR), the unified average changing intensity (UACI), the entropy analysis, which is a feature of an encryption scheme that demonstrates the randomness of the image and the correlation coefficient to assess the encryption's quality and determine whether it met the target standard. These findings demonstrate how secure the suggested cryptographic algorithm is.

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Author information

Authors and Affiliations

Dr. B. C. Roy Engineering College/MCA/ECE, Durgapur, India
Uday Kumar Banerjee & Anup Kumar Das

Dr. B. C. Roy Engineering College/ECE/CSE, Durgapur, India
Rajdeep Ray & Chandan Koner

Corresponding author

Correspondence to Anup Kumar Das .

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