

2020 International Conference on Cyber Warfare and Security (ICCWS 2020)

**Islamabad, Pakistan
20 – 21 October 2020**



**IEEE Catalog Number: CFP20V89-POD
ISBN: 978-1-7281-6841-8**

**Copyright © 2020 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: | CFP20V89-POD |
| ISBN (Print-On-Demand): | 978-1-7281-6841-8 |
| ISBN (Online): | 978-1-7281-6840-1 |

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
Web: www.proceedings.com

TABLE OF CONTENTS

| | |
|--|-----------|
| Byte-Level Object Identification For Forensic Investigation of Digital Images | 1 |
| <i>Abdul Rehman Javed, Zunera Jalil</i> | |
| Robust Early Stage Botnet Detection Using Machine Learning | 5 |
| <i>Ali Muhammad, Muhammad Asad, Abdul Rehman Javed</i> | |
| Design and Analysis of Secure RoF Based Communication in 5G Fronthaul. | 11 |
| <i>Arsalan Ali, Hassan Naveed, Farhan Qamar, Romana Shahzadi, Mudassar Ali, Nouman Qamar, Rizwana Shahzadi</i> | |
| Analysis of Fileless Malware and its Evasive Behavior | 17 |
| <i>Asad Afreen, Moosa Aslam, Saad Ahmed</i> | |
| Hardware-Assisted Isolation Technologies: Security Architecture and Vulnerability Analysis | 26 |
| <i>Fatima Khalid, Ammar Masood</i> | |
| A key Transport Protocol for Advance Metering Infrastructure (AMI) Based on Public Key Cryptography | 34 |
| <i>Hira Naseer, Muhammad Nasir Mumtaz Bhutta, Mohammad Ali Alojail</i> | |
| Cyber Threat Detection Using Machine Learning Techniques: A Performance Evaluation Prospective. | 39 |
| <i>Kamran Shaukat, Suhuai Luo, Shan Chen, Dongxi Liu</i> | |
| Nondeterministic Secure LSB Steganography for Digital Images | 45 |
| <i>Khan Farhan Rafat</i> | |
| Malware Classification Framework Using Convolutional Neural Network | 51 |
| <i>Mamoona Khan, Duaa Baig, Usman Shahid Khan, Ahmad Karim</i> | |
| An Enhanced and Secure Multiserver-Based User Authentication Protocol..... | 58 |
| <i>Mehmood Hassan, Aiman Sultan, Ali Afzal Awan, Shahzaib Tahir, Imran Ihsan</i> | |
| Detection of Slow Port Scanning Attacks..... | 63 |
| <i>Mehr u Nisa, Kashif Kifayat</i> | |
| Elixir: A 128-bit Stream Cipher Protocol for Lightweight IoT Devices..... | 70 |
| <i>Muhammad Umair Tariq, Danial Gohar, Talal Hassan, Ali Afzal Awan</i> | |
| Automatic YARA Rule Generation..... | 76 |
| <i>Myra Khalid, Maliha Ismail, Mureed Hussain, Muhammad Hanif Durad</i> | |
| Secure Mobile Sensor Data Transfer using Asymmetric Cryptography Algorithms | 81 |
| <i>Nouman Kabir, Shaharyar Kamal</i> | |
| An Efficient Forensic Approach for Copy-move Forgery Detection via Discrete Wavelet Transform | 87 |
| <i>Rehan Ashraf, Muhammad Sheraz Mehmood, Toqueer Mahmood, Junaid Rashid, Muhammad Wasif Nisar, Mohsin Shah</i> | |
| Improving Discrimination Accuracy Rate of DDoS Attacks and Flash Events..... | 93 |
| <i>Sahareesh Agha, Osama Rehman</i> | |
| Web Server Attack Detection Using Machine Learning..... | 99 |
| <i>Saima Saleem, Muhammad Sheeraz, Dr. Muhammad Hanif, Dr. Umar Farooq</i> | |

| | |
|--|------------|
| Role of User and Entity Behavior Analytics in Detecting Insider Attacks | 106 |
| <i>Salman Khaliq, Zain ul Abideen Tariq, Ammar Masood</i> | |
| An Enhanced SIP Authentication Protocol for Preserving User Privacy | 112 |
| <i>Sara Naveed, Aiman Sultan, Khawaja Mansoor</i> | |
| Cluster Analysis and Statistical Modeling: A Unified Approach for Packet Inspection | 118 |
| <i>Sheikh Muhammad Farjad, Arfeen</i> | |
| Vulnerabilities and Digital Violations in Software Products: Logistic Regression Analysis | 126 |
| <i>Shahid Anjum, Effah Wafiyah binti Awang Mohd. Hanafi</i> | |
| Lightweight Encryption Algorithm Implementation for Internet of Things Application | 132 |
| <i>Syed Jahanzeb Hussain Pirzada, Tongge Xu, Liu Jianwei</i> | |
| Identifying Mirai-Exploitable Vulnerabilities in IoT Firmware Through Static Analysis | 138 |
| <i>Zafeer Ahmed, Ibrahim Nadir, Haroon Mahmood, Ali Hamid Akbar, Ghalib Asadullah Shah</i> | |
| Author Index | 143 |