# 2024 8th Cyber Security in **Networking Conference** (CSNet 2024)

Paris, France **4-6 December 2024** 



**IEEE Catalog Number: CFP24M97-POD ISBN**:

979-8-3315-3411-0

## Copyright © 2024 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:
 CFP24M97-POD

 ISBN (Print-On-Demand):
 979-8-3315-3411-0

 ISBN (Online):
 979-8-3315-3410-3

ISSN: 2768-0010

#### **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



### The 8th Cyber Security in Networking Conference

AI for Cybersecurity

December 04-06, 2024 Paris, France



### **Table of Content**

• A Robust Anonymous Authentication Scheme for Securing IoT-Enabled Healthcare Services

Authors: Sana Ullah, Akhtar Badshah, Muhammad Waqas, Shanshan Tu

Page: 1

• Optimising Intrusion Detection in Cyber-Physical Systems

Authors: Henry C Ukwuoma, Gilles Dusserre, Gouenou Coatrieux, Johanne Vincent, Nasir

Baba Ahmed

Page: 7

• Advanced Anomaly Detection in Energy Control Systems Using Machine Learning and Feature Engineering

Authors: Zaid El Allal, Hassan Noura, Ola Salman, Ali Chehab

Page: 15

• Dynamic Defense Framework: A Unified Approach for Intrusion Detection and Mitigation in SDN

Authors: Walid El Gadal, Sudhakar Ganti

*Page*: 22

• Introspective Intrusion Detection System Through Explainable AI

Authors: Betül Güvenç Paltun, Ramin Fuladi

Page: 28

• Lightweight Machine Learning-Based IDS for IoT Environments

Authors: Zakaria M Alomari, Adetokunbo Makanju, Zhida Li

Page: 33

• Effective Anomaly Detection in 5G Networks via Transformer-Based Models and Contrastive Learning

Authors: Saeid Sheikhi, Panos Kostakos, Susanna Pirttikangas

## • Blockchain-Enabled Digital Product Passports for Enhancing Security and Lifecycle Management in Healthcare Devices

Authors: Fatemeh Stodt

Page: 44

### • Blockchain-Enhanced E-Ticket Distribution System to Effective Transactions, Validation, and Audits

Authors: Adrian Guayasamin, Walter Fuertes, Nahir Carrera, Luis Tello-Oquendo, Valeria

Suango *Page:* 52

### • Blockchain-Enabled Collaborative Forged Message Detection in RSU-Based VANETs

Authors: Ali Jalooli, Huzaif Khan, Lokesh Purohit

*Page*: 60

#### • SDN-API-Sec: A Conflict-Free BC-Based Authorization for Cross-Domain SDNs

Authors: Majd Latah, Kubra Kalkan

*Page*: 68

### • Keystroke Dynamics Authentication with MLP, CNN, and LSTM on a Fixed-Text Data Set

Authors: Halvor N Risto, Olaf Hallan Graven, Steven Bos

*Page*: 76

### • Detecting DNS Tunnelling and Data Exfiltration Using Dynamic Time Warping

Authors: Stefan Machmeier, Vincent Heuveline

*Page*: 83

## • Chat or Trap? Detecting Scams in Messaging Applications with Large Language Models

Authors: Yuan-Chen Chang, Esma Aimeur

*Page*: 92

#### • Ransomwise: A Transaction-Based Dataset for Ransomware Bitcoin Wallet Detection

Authors: Ioannis Arakas, Nikolaos Myrtakis, Thomas Marchioro, Evangelos Markatos

Page: 100

#### • VishGuard: Defending Against Vishing

Authors: Zi Heng Phang, Wei Ming Tan, Joshua Sheng Xiong Choo, Zhi Kang Ong, Weng

Hong Isaac Tan, Huaqun Guo

Page: 108

## • Spam No More: A Cross-Model Analysis of Machine Learning Techniques and Large Language Model Efficacies

Authors: Robin Chataut, Aadesh Upadhyay, Yusuf Usman, Prashnna K Gyawali, Mary

Nankya *Page:* 116

## • Predicting User Activities and Device Interactions Using Adversarial Sensor Data: A Machine Learning Approach

Authors: Umair Mujtaba Qureshi, Rizwan Ahmed Kango, Mehak Fatima Qureshi, Wai-Yiu

Keung, Zuneera Umair, Ho Chuen Kam

Page: 123

## • Anticipating Cyber Threats: Deep Learning Approaches for DDoS Attacks Forecasting

Authors: Dhia Ben Ali, Mohamed Belaoued, Samir Dawaliby

*Page*: 128

### • Identifying APT Attack Stages Using Anomaly Score Calibration

Authors: Ornella Lucresse Soh, Issa Traore, Isaac Woungang, Wei Lu, Marcelo Luiz

Brocardo *Page:* 133

### • Convergence of AI for Secure Software Development

Authors: Roberto Andrade, Jenny Torres, Pamela Flores, Erick Cabezas, Jorge Luis Segovia

Page: 138

## • A Multi-Level Network Traffic Classification in Combating Cyberattacks Using Stack Deep Learning Models

Authors: Believe Ayodele, Victor Buttigieg

*Page*: 143

## • Password Classification Using Machine Learning and Natural Language Processing Techniques: Methods and Evaluations

Authors: Binh Le Thanh Thai, Tsubasa Takii, Hidema Tanaka

Page: 147

### • Detecting Spam Emails Using Machine Learning and Lemmatization Vs Traditional Methods

Authors: Derick Jun Peng Kwok, Huaqun Guo

*Page*: 151

### • A Machine Learning Approach of Predicting Ransomware Addresses in BlockChain Networks

Authors: Raqeebir Rab, Anika Maisha Tasnim, Md Maraj Rashid, Nafis Shahriar,

Abderrahmane Leshob, Amrin Hassan Heya

Page: 153

## • Towards an Unsupervised Reward Function for a Deep Reinforcement Learning Based Intrusion Detection System

Authors: Bilel Saghrouchni, Frédéric Le Mouël, Bogdan Szanto

Page: 157

#### • A New Generation of Security for the 6G

Authors: Guy Pujolle, Pascal Urien

#### • AsIf: Asset Interface Analysis of Industrial Automation Devices

Authors: Thomas Rosenstatter, Christian Schäfer, Olaf Saßnick, Stefan Huber

Page: 165

## • An Efficient Explainable Artificial Intelligence (XAI)-Based Framework for a Robust and Explainable IDS

Authors: Beny Nugraha, Abhishek Venkatesh Jnanashree, Thomas Bauschert

Page: 173

## • FASIL: A Challenge-Based Framework for Secure and Privacy-Preserving Federated Learning

Authors: Ferhat Karakoç, Betül Güvenç Paltun, Leyli Karaçay, Ömer Faruk Tuna, Ramin

Fuladi, Utku Gülen

Page: 182

### • APT Warfare: Technical Arsenal and Target Profiles of Linux Malware in Advanced Persistent Threats

Authors: Jayanthi Ramamoorthy, Cihan Varol, Narasimha Karpoor Shashidhar

Page: 190

## • Security and Privacy-Preserving for Machine Learning Models: Attacks, Countermeasures, and Future Directions

Authors: Fatema El Husseini, Flavien Vernier, Hassan Noura

Page: 197

### • DID U Misbehave? A New Dataset for In-Depth Understanding of Inconspicuous Software

Authors: Antonin Verdier, Romain Laborde, Abir Laraba, Abdelmalek Benzekri

*Page*: 205

### • Towards Identification of Network Applications in Encrypted Traffic

Authors: Ivana Burgetová, Ondrei Rysavy, Petr Matoušek

Page: 213

#### • An Autonomic Chess Bot Detection and Defeat System

Authors: Andrew Bengtson, Christopher Rouff, Ali Tekeoglu

Page: 222

### • A Hybrid Machine Learning - Fuzzy Cognitive Map Approach for Fast, Reliable DDoS Attack Detection

Authors: Prathibha Keshavamurthy, Sarvesh Kulkarni

Page: 228

### • Kubernetes-Driven Network Security for Distributed ACL Management

Authors: Tushar Gupta

## • Towards the Removal of Identification and Authentication Authority from IM Systems

Authors: David A. Cordova Morales, Ahmad Samer Wazan, Romain Laborde, Muhammad

Imran Taj, Adib Habbal, Gina Gallegos-Garcia

Page: 243

### • Pirates of the MQTT: Raiding HoT Systems with a Rogue Client

Authors: Wael Alsabbagh, Samuel Amogbonjaye, Chaerin Kim, Peter Langendoerfer

*Page*: 248

### • A New Similarity-Based Classification Scheme of Drone Network Attacks

Authors: Salah Dine Maham, Guy Pujolle, Atiq Ahmed, Dominique Gaïti

Page: 254

### • Blockchain and Biometric Systems Integration for IoMT Security

Authors: Ilham Laabab, Abdellatif Ezzouhairi, Nour El Madhoun, Muhammad Haris Khan

*Page*: 259

### • Regulatory Compliance Verification: A Privacy Preserving Approach

Authors: Massimo Morello, Petri Sainio, Mohammed B. M. Kamel

Page: 263

### • Interdisciplinary Research Project 'AI Shield'

Authors: Evgeni Moyakine, Trix Mulder, Thijs van Ede

*Page*: 268

### • Adaptive Optimization of TLS Overhead for Wireless Communication in Critical Infrastructure

Authors: Jörn Bodenhausen, Laurenz Grote, Michael Rademacher, Martin Henze

*Page*: 272

### • A Situational Assessment Module for CCAM Applications

Authors: Enes Begecarslan, Burcu Ozbay

*Page*: 276

### • Mobbing: AI-Powered Cyberthreat Behavior Analysis and Modeling

Authors: Patricio Zambrano, Jenny Torres, Carlos Anchundia, Johan Illicachi

*Page*: 278

### • Cross ML for Io(H)T Network Traffic Classification: A New Approach Towards Standardization

Authors: Emmanuel Song Shombot, Gilles Dusserre, Robert Bestak, Nasir Baba Ahmed

*Page:* 282

#### • Advanced Smart Contract Vulnerability Detection Using Large Language Models

Authors: Fatemeh Erfan, Mohammad Yahyatabar, Martine Bellaïche, Talal Halabi

### • Advanced Machine Learning Approaches for Zero-Day Attack Detection: A Review

Authors: Fatema El Husseini, Hassan Noura, Ola Salman, Ali Chehab

Page: 297

# • AI Security: Cyber Threats and Threat-Informed Defense *Authors:* Kamal Singh, Rohit Saxena, Brijesh Kumar