2020 IEEE International Conference on Intelligence and Security **Informatics (ISI 2020)**

Arlington, Virginia, USA 9 - 10 November 2020



IEEE Catalog Number: CFP20ITI-POD ISBN:

978-1-7281-8801-0

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:
 CFP20ITI-POD

 ISBN (Print-On-Demand):
 978-1-7281-8801-0

 ISBN (Online):
 978-1-7281-8800-3

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

Adversarial Machine Learning	
Automated Adversary Emulation for Cyber-Physical Systems via Reinforcement Learning Arnab Bhattacharya, Thiagarajan Ramachandran, Sandeep Banik, Chase Dowling and Shaunak Bopardikar	1
Detecting Cyber-Adversarial Videos in Traditional Social media	7
Evaluating Effectiveness of Adversarial Examples on state of art License Plate Recognition Models	10
Assessing GAN-based approaches for generative modeling of crime text reports	13
COVID-19's Impact on Cybersecurity	
Characterizing the Landscape of COVID-19 Themed Cyberattacks and Defenses Mir Mehedi Ahsan Pritom, Kristin Schweitzer, Raymond Bateman, Min Xu and Shouhuai Xu	19
Data-Driven Characterization and Detection of COVID-19 Themed Malicious Websites Mir Mehedi Ahsan Pritom, Kristin Schweitzer, Raymond Bateman, Min Xu and Shouhuai Xu	25
Analyzing the Evolutionary Characteristics of the Cluster of COVID-19 under Anti-contagion Policies	31
The Four-Stages Strategies on Social Media to Cope with "Infodemic" and Repair Public Trust: Covid-19 Disinformation and Effectiveness of Government Intervention in China Yonghan Zhu and Yuqiao Jiang	37
Cyber Threat Intelligence	
Malware Family Fingerprinting Through Behavioral Analysis	42
Knowledge Enrichment by Fusing Representations for Malware Threat Intelligence and Behavior	47
Aritran Piplai, Sudip Mittal, Mahmoud Abdelsalam, Maanak Gupta, Anupam Joshi and Tim Finin	
Multi-Dimensional Anomalous Entity Detection via Poisson Tensor Factorization	53
Detection of Malicious Domains Using Passive DNS with XGBoost	59

Cybersecurity Threat Intelligence Augmentation and Embedding Improvement - A Healthcare Usecase
Scalable Malware Clustering using Multi-Stage Tree Parallelization
A KG-based Enhancement Framework for Fact Checking Using Category Information 74 Shuai Wang, Lei Wang and Wenji Mao
XGBoosted Misuse Detection in LAN-Internal Traffic Dataset
Cybersecurity for Cyberinfrastructure
Identifying Vulnerable GitHub Repositories and Users in Scientific Cyberinfrastructure: An Unsupervised Graph Embedding Approach
APIN: Automatic Attack Path Identification in Computer Networks
Fraud Prevention Within the Brazilian Governmental Public-Key Infrastructure
Adaptive and Predictive SDN Control During DDoS Attacks
Efficient and Secure Implementation of BLS Multisignature Scheme on TPM
Performance Analysis of Secure Real-time Transport Protocol Using Elliptic Curves 116 Nilanjan Sen, Ram Dantu and Mark Thompson
A Comparative Study on Contemporary Intrusion Detection Datasets for Machine Learning Research
Effective Voice Fuzzing Method for Finding Vulnerabilities in AI Speech Recognition Devices
Smart Vulnerability Assessment for Scientific Cyberinfrastructure: An Unsupervised Graph Embedding Approach
Discerning User Activity in Extended Reality Through Side-Channel Accelerometer Observations
Dark Woh Analytics

Labeling Hacker Exploits for Proactive Cyber Threat Intelligence: A Deep Transfer Learning Approach
Benjamin Ampel, Sagar Samtani, Hongyi Zhu, Steven Ullman and Hsinchun Chen
An Expert System for Classifying Harmful Content on the Dark Web
Identifying Proficient Cybercriminals Through Text and Network Analysis
Deep Self-Supervised Clustering of the Dark Web for Cyber Threat Intelligence
A Generative Adversarial Learning Framework for Breaking Text-Based CAPTCHA in the Dark Web
Ning Zhang, Mohammadreza Ebrahimi, Weifeng Li and Hsinchun Chen
Improving the Data Quality for Credit Card Fraud Detection
Identifying, Collecting, and Monitoring Personally Identifiable Information: From the Dark Web to the Surface Web
Deep Learning Applications for Cybersecurity
Sentimental LIAR: Extended Corpus and Deep Learning Models for Fake Claim Classification
Political Fake Statement Detection via Multistage Feature-assisted Neural Modeling 196 Fund Mire Hassan and Mark Lee
DeepGuard: Deep Generative User-behavior Analytics for Ransomware Detection
A virtual simulation environment using deep learning for autonomous vehicles obstacle avoidance
From Word Embedding to Cyber-Phrase Embedding: Comparison of Processing Cybersecurity Texts
Weaponizing Unicodes with Deep Learning - Identifying Homoglyphs with Weakly Labeled Data
Perry Deng, Cooper Linsky and Matthew Wright

Phishcasting: Deep Learning for Time Series Forecasting of Phishing Attacks		
Socio-technical Perspectives of Cybersecurity		
Is the user identity perception influenced by the blockchain technology?		
Conceptual Models for Counter-Terrorism and Intelligence Knowledge Bases		
An Ordinal Approach to Modeling and Visualizing Phishing Susceptibility		
A Bootstrapped Model to Detect Abuse and Intent in White Supremacist Corpora 242 David Skillicorn and Benjemin Simons		
A Proxy-Based Encrypted Online Social Network With Fine-Grained Access		
A Survey of Real-Time Social-Based Traffic Detection		
Twitter Bot Detection with Reduced Feature Set		
Towards a Story Scheme Ontology of Terrorist MOs		
A Human-Network-Security-Interface for an Average Joe		
Heuristic Phishing Detection and URL Checking Methodology Based on Scraping and Web Crawling		
Social Emotion Cause Extraction from Online Texts		