

# **2019 International Conference on Software Security and Assurance (ICSSA 2019)**

**St. Polten, Austria  
25 – 26 July 2019**



**IEEE Catalog Number: CFP19D72-POD  
ISBN: 978-1-7281-5913-3**

**Copyright © 2019 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:	CFP19D72-POD
ISBN (Print-On-Demand):	978-1-7281-5913-3
ISBN (Online):	978-1-7281-5912-6

**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

# 2019 International Conference on Software Security and Assurance (ICSSA) ICSSA 2019

## Table of Contents

<b>Message from the General Chairs</b> .vii.....	
<b>Program Committee</b> .viii.....	
<b>Keynotes</b> .ix.....	
Securing PKES: Integrating Artificial Intelligence Into PKES Forcefield For Anomaly Detection .10.....	
<i>Syed Rizvi (Pennsylvania State University), Jarrett Imler (Pennsylvania State University), Luke Ritchey (Pennsylvania State University), and Michael Tokar (Pennsylvania State University)</i>	
Fingerprinting using Database Steganography .16.....	
<i>Peter Kieseberg (Josef Ressel Center BLOCKCHAINS, St. Pölten UAS), Sebastian Schrittwieser (Josef Ressel Center TARGET, St. Pölten UAS), and Edgar Weippl (SBA Research &amp; University of Vienna)</i>	
Change Point Problem in Security Vulnerability Discovery Model .21.....	
<i>Ankur Shukla (Norwegian University of Science and Technology) and Basel Katt (Norwegian University of Science and Technology)</i>	
Anomaly Detection Support Using Process Classification .27.....	
<i>Sebastian Eresheim (Josef Ressel Center for Unified Threat Intelligence on Targeted Attacks, St. Pölten University of Applied Sciences), Lukas Daniel Klausner (St. Pölten University of Applied Sciences), and Patrick Kochberger (St. Pölten University of Applied Sciences)</i>	
Revisiting the Challenges of Input Parsing for Robust and Secure Software .41.....	
<i>Thomas Pipek (St.Pölten University of Applied Sciences) and Martin Pirker (St.Pölten University of Applied Sciences)</i>	
Analysis of the Internals of MySQL/InnoDB B+ Tree Index Navigation from a Forensic Perspective .46.....	
<i>Peter Kieseberg (Josef Ressel Center BLOCKCHAINS, St. Pölten UAS), Sebastian Schrittwieser (Josef Ressel Center TARGET, St. Pölten UAS), Peter Frühwirth (Vienna University of Technology), and Edgar Weippl (SBA Research &amp; University of Vienna)</i>	
Computing Security Scores for IoT Device Vulnerabilities .52.....	
<i>Syed Rizvi (Pennsylvania State University), Nicholas McIntyre (Pennsylvania State University), and Jungwoo Ryoo (Pennsylvania State University)</i>	

Assessment of the Transparency of the Windows Subsystem for Linux (WSL) .60.....  
*Patrick Kochberger (University of Applied Sciences St. Pölten),  
Alexander Tauber (University of Applied Sciences St. Pölten), and  
Sebastian Schrittwieser (Josef Ressel Center for Unified Threat  
Intelligence on Targeted Attacks (TARGET), University of Applied  
Sciences St. Pölten)*

Acceptance of Virtual Health Avatars .70.....  
*Heimo Müller (Medical University of Graz), Martina Lang (Technical  
University of Graz), Bernhard Wieser (Technical University of Graz),  
Robert Reihls (Medical University of Graz), Birgit Pohn (Medical  
University of Graz), Andreas Holzinger (Medical University of Graz,  
Technical University of Graz), and Kurt Zatloukal (Medical University  
of Graz)*

A Hybrid Framework for Detecting Repackaged Applications on the Android Market .76.....  
*Syed Rizvi (Pennsylvania State University), Kieran Alden (Pennsylvania  
State University), and Shakir Campbell (Pennsylvania State University)*

**Author Index 83** .....