2020 IEEE 25th Pacific Rim **International Symposium** on Dependable Computing (PRDC 2020)

Perth, Australia 1-4 December 2020



IEEE Catalog Number: CFP20245-POD ISBN:

978-1-7281-8004-5

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:
 CFP20245-POD

 ISBN (Print-On-Demand):
 978-1-7281-8004-5

 ISBN (Online):
 978-1-7281-8003-8

ISSN: 1555-094X

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



2020 IEEE 25th Pacific Rim International Symposium on Dependable Computing (PRDC)

PRDC 2020

Table of Contents

Message from the Organizing Committee Chairs viii Organizing Committee ix Program Committee x Steering Committee xi Reviewers xii Sponsor and Supporters xiii
Session 1: Distributed System
Topology Aware Leader Election Algorithm for Dynamic Networks .1. Arnaud Favier (Sorbonne University), Nicolas Guittonneau (Sorbonne University), Luciana Arantes (Sorbonne University), Anne Fladenmuller (Sorbonne University), Jonathan Lejeune (Sorbonne University), and Pierre Sens (Sorbonne University)
Fengyi: Trusted Data Sharing in VANETs with Blockchain .11
Introducing Novel Crossover and Mutation Operators into Data Replication Strategies for Distributed Systems 21. Syed Mohtashim Abbas Bokhari (University of Oldenburg) and Oliver Theel (University of Oldenburg)
PLEXUS: A Pattern-Oriented Runtime System Architecture for Resilient Extreme-Scale High-Performance Computing Systems .31
Session 2: Security
A PSD-Based Fingerprinting Approach to Detect IoT Device Spoofing 40

Security and Availability Modeling of VM Migration as Moving Target Defense .50
Using Attack Injection to Evaluate Intrusion Detection Effectiveness in Container-Based Systems .60 José Flora (University of Coimbra), Paulo Gonçalves (University of Coimbra), and Nuno Antunes (University of Coimbra)
Generative Deep Learning for Internet of Things Network Traffic Generation .70. Mustafizur R. Shahid (Télécom SudParis, Institut Polytechnique de Paris), Gregory Blanc (Télécom SudParis, Institut Polytechnique de Paris), Houda Jmila (Télécom SudParis, Institut Polytechnique de Paris), Zonghua Zhang (IMT Lille-Douai, Institut Mines-Télécom), and Hervé Debar (Télécom SudParis, Institut Polytechnique de Paris)
Session 3: Machine Learning
Data Poisoning Attacks on Regression Learning and Corresponding Defenses .80
Model Compression on Faulty Array-Based Neural Network Accelerator .90
Dataset Fault Tree Analysis for Systematic Evaluation of Machine Learning Systems .100
Organization of Machine Learning Based Product Development as Per ISO 26262 and ISO/PAS 21448 .110 Krystian Radlak (exida, Silesian University of Technology), Michał Szczepankiewicz (exida), Tim Jones (exida), and Piotr Serwa (exida)
Session 4: System Safety
Dynamic Reconfiguration of Safety-Critical Production Systems .120
Using Metamodels to Improve Model-Based Testing of Service Orchestrations .130
Safe Online Reconfiguration of Mixed-Criticality Real-Time Systems .140. Thawra Kadeed (TU Braunschweig), Borislav Nikolic (TU Braunschweig), and Rolf Ernst (TU Braunschweig)

Trading Dependability and Energy Consumption in Critical Infrastructures: Focus on the Rail Switch Heating System .150.
Silvano Chiaradonna (ISTI-CNR), Felicita Di Giandomenico (ISTI-CNR), and Giulio Masetti (ISTI-CNR)
Session 5: Software Reliability
GTFuzz: Guard Token Directed Grey-Box Fuzzing 160
Risk-Aware Leak Detection at Binary Level 17.1. Yuta Koizumi (Tokyo Institute of Technology) and Yoshitaka Arahori (Tokyo Institute of Technology)
Author Index 181