

2020 25th International Conference on Engineering of Complex Computer Systems (ICECCS 2020)

**Singapore
4-6 March 2021**



**IEEE Catalog Number: CFP20077-POD
ISBN: 978-1-7281-8559-0**

**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:	CFP20077-POD
ISBN (Print-On-Demand):	978-1-7281-8559-0
ISBN (Online):	978-1-7281-8558-3

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

CURRAN ASSOCIATES INC.
proceedings
.com

2020 25th International Conference on Engineering of Complex Computer Systems (ICECCS) **ICECCS 2020**

Table of Contents

Message from the Program Chairs	ix
Organizing Committee	x
External Reviewers	xii

Formal Methods I

Visual Counterexample Explanation for Model Checking with Oeritte	1
<i>Polina Ovsianikova (Aalto University, ITMO University), Igor Buzhinsky (Aalto University, ITMO University), Antti Pakonen (VTT Technical Research Centre of Finland Ltd.), and Valeriy Vyatkin (Aalto University, ITMO University, Lulea Tekniska Universitet)</i>	
CTL Model Checking of Self Modifying Code	11
<i>Tayssir Touili (CNRS, France) and Xin Ye (LIPN, France)</i>	
Formal Verification of Access Control Model for My Health Record System	21
<i>Victor Rivera (Australian National University)</i>	

Formal Methods II

RL: a Language for Formal Engineering	31
<i>Hadrien Bride (Griffith University, Australia), Jin Song Dong (National University of Singapore, Singapore), Zhé Hóu (Griffith University, Australia), Brendan Mahony (Defence Science and Technology, Australia), and Jim McCarthy (Defence Science and Technology, Australia)</i>	
Parametric Non-Interference in Timed Automata	37
<i>Étienne André (Université de Lorraine, CNRS, Inria, LORIA, Nancy, France) and Aleksander Kryukov (Université de Lorraine, CNRS, Inria, LORIA, Nancy, France)</i>	

Automatic Verification of Multi-Threaded Programs by Inference of Rely-Guarantee Specifications 43.....

Xuan-Bach Le (School of Computer Science and Engineering, Nanyang Technological University, Singapore), David Sanán (School of Computer Science and Engineering, Nanyang Technological University, Singapore), Sun Jun (School of Information Systems, Singapore Management University, Singapore), and Shang-Wei Lin (School of Computer Science and Engineering, Nanyang Technological University, Singapore)

Deep Learning

Deep Learning Application in Broadcast Tennis Video Annotation 53.....

Kan Jiang (National University of Singapore, Singapore), Masoumeh Izadi (Television Content Analytics Pte Ltd, Singapore), Zhaoyu Liu (Television Content Analytics Pte Ltd, Singapore), and Jin Song Dong (National University of Singapore, Singapore, and, Griffith University, Australia)

SeqMobile: An Efficient Sequence-Based Malware Detection System Using RNN on Mobile Devices 63.....

Ruitao Feng (Nanyang Technological University), Jing Qiang Lim (Nanyang Technological University), Sen Chen (Nanyang Technological University; Tianjin University), Shang-Wei Lin (Nanyang Technological University), and Yang Liu (Nanyang Technological University)

An Empirical Study on Correlation between Coverage and Robustness for Deep Neural Networks 73

Yizhen Dong (Tianjin University, China), Peixin Zhang (Zhejiang University, China), Jingyi Wang (National University of Singapore, Singapore), Shuang Liu (Tianjin University, China), Jun Sun (Singapore Management University, Singapore), Jianye Hao (Tianjin University, China and Noah's Ark Lab, Huawei), Xinyu Wang (Zhejiang University, China), Li Wang (Tianjin University, China), Jin Song Dong (National University of Singapore, Singapore), and Ting Dai (Huawei International Pte.Ltd., Singapore)

Robotics and Autonomous Systems

Safety Controller Synthesis for Collaborative Robots 83.....

Mario Gleirscher (University of York, United Kingdom) and Radu Calinescu (University of York, United Kingdom)

Achieving Weight Coverage for an Autonomous Driving System with Search-Based Test Generation 93.....

Thomas Laurent (University College Dublin, Ireland), Paolo Arcaini (National Institute of Informatics, Japan), Fuyuki Ishikawa (National Institute of Informatics, Japan), and Anthony Ventresque (University College Dublin, Ireland)

Formal Synthesis of Trajectories for Unmanned Aerial Vehicles to Perform Resilient Surveillance of Critical Power Transmission Lines .103.....	
	<i>Mohammad Ashiqur Rahman (Florida International University, USA), Rahat Masum (Tennessee Tech University, USA), Matthew Anderson (Air Force Research Laboratory Information Directorate, USA), and Steven L. Drager (Air Force Research Laboratory Information Directorate, USA)</i>
Towards Deductive Verification of Control Algorithms for Autonomous Marine Vehicles .113.....	
	<i>Simon Foster (University of York, UK), Mario Gleirscher (University of York, UK), and Radu Calinescu (University of York, UK)</i>

Blockchain and Security

The Burn-to-Claim Cross-Blockchain Asset Transfer Protocol .119.....	
	<i>Babu Pillai (Griffith University), Kamanashis Biswas (Australian Catholic University), Zhé Hóu (Griffith University), and Vallipuram Muthukkumarasamy (Griffith University)</i>
DEPOSafe: Demystifying the Fake Deposit Vulnerability in Ethereum Smart Contracts .125.....	
	<i>Ru Ji (Beijing University of Posts and Telecommunications, China), Ningyu He (Peking University, China), Lei Wu (Zhejiang University, China), Haoyu Wang (Beijing University of Posts and Telecommunications, China), Guangdong Bai (The University of Queensland, Australia), and Yao Guo (Peking University, China)</i>
Foggy: A New Anonymous Communication Architecture Based on Microservices .135.....	
	<i>Hanlin Wei (School of Information Technology and Electrical Engineering, University of Queensland), Guangdong Bai (School of Information Technology and Electrical Engineering, University of Queensland), and Zongwei Luo (BNU-UIC Institute of Artificial Intelligence and Future Networks, Beijing Normal University (BNU Zhuhai))</i>

Software Development

Gathering GitHub OSS Requirements from Q&A Community: an Empirical Study .145.....	
	<i>Hao Huang (National University of Defense Technology, China), Yao Lu (National University of Defense Technology, China), and Xinjun Mao (National University of Defense Technology, China)</i>
iFix: Fixing Concurrency Bugs While They Are Introduced .155.....	
	<i>Zan Wang (College of Intelligence and Computing, Tianjin University), Haichi Wang (College of Intelligence and Computing, Tianjin University), Shuang Liu (College of Intelligence and Computing, Tianjin University), Jun Sun (School of Information Systems, Singapore Management University), Haoyu Wang (College of Intelligence and Computing, Tianjin University), and Junjie Chen (College of Intelligence and Computing, Tianjin University)</i>
A Fault Localization Approach Derived from Testing-Based Formal Verification .165.....	
	<i>Rong Wang (Hosei University), Shaoying Liu (Hiroshima University), and Yuji Sato (Hosei University)</i>

Infrastructures

- The Semantic Spreadsheet .171.....
Behzad Farokhi (University of Auckland), Katharina Dost (University of Auckland), Gerald Weber (University of Auckland), Jing Sun (University of Auckland), and Christof Lutteroth (University of Bath)
- ReoFS: A Read-Efficient and Write-Optimized File System for Persistent Memory .177.....
Yan Yan (Shanghai Jiaotong University, China), Kaixin Huang (Shanghai Jiaotong University, China), Shengan Zheng (Tsinghua University, China), Dongliang Xue (Shanghai Jiaotong University, China), and Linpeng Huang (Shanghai Jiaotong University, China)
- ROS-FM: Fast Monitoring for the Robotic Operating System(ROS) .187.....
Sean Rivera (University of Luxembourg), Antonio Ken Iannillo (University of Luxembourg), Sofiane Lagraa (University of Luxembourg), Clément Joly (Télécom Nancy), and Radu State (University of Luxembourg)

Planning and Optimization

- Optimizing Communication Strategies in Contested and Dynamic Environments .197.....
Claudia Szabo (University of Adelaide), Vanja Radenovic (Defence Science Technology Group), Gregory Judd (Defence Science Technology Group), Dustin Craggs (University of Adelaide), Kin Leong Lee (University of Adelaide), Xiaoshan Chen (University of Adelaide), and Kevin Chan (Army Research Lab)
- An Anytime Algorithm for Large-Scale Heterogeneous Task Allocation .206.....
Qinyuan Li (Engineering and Technology Swinburne University of Technology), Minyi Li (School of Science RMIT University), Bao Quoc Vo (Engineering and Technology Swinburne University of Technology), and Ryszard Kowalczyk (Engineering and Technology Swinburne University of Technology, Systems Research Institute Polish Academy of Sciences)
- Automated Planning for Software Architectural Migration .216.....
Nacha Chondamrongkul (University of Auckland), Jing Sun (University of Auckland), and Ian Warren (University of Auckland)

- Author Index 225**