# 2020 28th International Symposium on Modeling, Analysis, and Simulation of Computer and **Telecommunication Systems (MASCOTS 2020)**

Nice, France 17 – 19 November 2020



**IEEE Catalog Number: ISBN**:

**CFP20010-POD** 978-1-7281-9239-0

# 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:
 CFP20010-POD

 ISBN (Print-On-Demand):
 978-1-7281-9239-0

 ISBN (Online):
 978-1-7281-9238-3

ISSN: 1526-7539

#### Additional Copies of This Publication Are Available From:

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA Phone: (845) 758 044

Phone: (845) 758-0400 Fax: (845) 758-2633

E-mail: curran@proceedings.com Web: www.proceedings.com



# 2020 IEEE 28th International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems

# **MASCOTS 2020**

#### **Table of Contents**

Foreword	viii
Organizing Committee	X
Program Committee	xi
Additional Reviewers	xii
Sponsors	xiii
Traffic and Network Modelling	
Adversarial attacks in a deep reinforcement learning based cluster scheduler	1
Incentive mechanism for collective coordination in an urban intelligent transportation system using G-networks	9
A Priority-based Dynamic Link Scheduling Algorithm Using Multi-criteria Decision Making in Wireless Body Area Networks	17
Hardware Optimization	
Symbolic Execution for Network Functions with Time-Driven Logic	25
Reliable Reverse Engineering of Intel DRAM Addressing Using Performance Counters  Christian Helm, Soramichi Akiyama and Kenjiro Taura	33
A NUMA-aware NVM File System Design for Manycore Server Applications	41

## Performance Optimization

New Centrality Measures in Networks and their Applications to the International Trade and Migration Networks
Fuad Aleskerov, Anna Rezyapova, Alina Roman and Vyacheslav Yakuba
Optimum Checkpoints for Time and Energy
Erol Gelenbe, Pawel Boryszko, Miltiadis Siavvas and Joanna Domanska
TrimTuner: Efficient Optimization of Machine Learning Jobs in the Cloud via
Sub-Sampling
Mobile Network Traffic Forecasting Using Artificial Neural Networks
Session Data Driven Systems
Towards a common environment for learning scheduling algorithms
Fabsim-X: A simulation Framework for the Analysis of Large-Scale Topologies and Congestion Control Protocols in Data Center Networks
Effective Elastic Scaling of Deep Learning Workloads
Merkle Hash Grids Instead of Merkle Trees
Jehan-Francois Paris and Thomas Schwarz
Hardware and Storage
$\mu$ Cache: a mutable cache for SMR translation layer
Symbiotic HW Cache and SW DTLB Prefetching for DRAM/NVM Hybrid Memory111 Onkar Patil, Frank Mueller, Latchesar Ionkov, Jason Lee and Michael Lang
Improving NAND flash performance with read heat separation
A Smart Background Scheduler for Storage Systems

### Performance Evaluation

Investigating Genome Analysis Pipeline Performance on GATK with Cloud Object	_
Storage	Э
Self-adaptive Threshold-based Policy for Microservices Elasticity	3
COCOA: Cold Start Aware Capacity Planning for Function-as-a-Service Platforms 15  Alim Ul Gias and Giuliano Casale	1
Evaluating the Performance of a State-of-the-Art Group-oriented Encryption Scheme for Dynamic Groups in an IoT Scenario	9
Performance Prediction for Data-driven Workflows on Apache Spark	7
Cloud and Fog Computing	
Voilà: Tail-Latency-Aware Fog Application Replicas Autoscaler	8
Baloo: Measuring and Modeling the Performance Configurations of Distributed DBMS17 Johannes Grohmann, Daniel Seybold, Simon Eismann, Mark Leznik, Samuel Kounev and Jörg Domaschka	6
Instability in Geo-Distributed Kubernetes Federation: Causes and Mitigation	4
Security-Performance Trade-offs of Kubernetes Container Runtimes	2
Infrastructure-Aware TensorFlow for Heterogeneous Datacenters	6
Performance Modelling	
Model-Aided Learning for URLLC Transmission in Unlicensed Spectrum	4
Statistical Learning of Markov Chains of Programs	2
Age of Information in an Overtake-Free Network of Quasi-Reversible Queues	0
Energy Packet Networks with general service time distribution	6

Concept Drift and Avoiding its Negative Effects in Predictive Modeling in Power Plants	234
Marek Moleda, Alina Momot and Dariusz Mrozek	
Non-Asymptotic Performance Analysis of Size-Based Routing Policies	241
Eitan Bachmat and Josu Doncel	