2024 IEEE International Conference on Cloud Computing Technology and Science (CloudCom 2024)

Abu Dhabi, United Arab Emirates 9-11 December 2024



IEEE Catalog Number: CFP24CLU-POD ISBN:

979-8-3315-0759-6

Copyright © 2024 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:
 CFP24CLU-POD

 ISBN (Print-On-Demand):
 979-8-3315-0759-6

 ISBN (Online):
 979-8-3315-0758-9

ISSN: 2330-2194

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



2024 IEEE International Conference on Cloud Computing Technology and Science (CloudCom) CloudCom 2024

Table of Contents

Message from the General Chairs	
CloudCom2024 Organizing Committee CloudCom2024 Steering Committee CloudCom2024 Program Committee	xiii xiv
Additional Reviewers Keynotes Sponsors	xvii xviii
CloudCom 2024 Conference Papers	
Enhancing Security in EV Charging Systems: A Hybrid Detection and Mitigation App Huiyao Dong (ITMO University) and Igor Kotenko (St. Petersburg Federal Research Center of the Russian Academy of Sciences)	oroach 1
Lightweight SPIFFE Verifiable Identity Document (LSVID): A Nested Token Approach Enhanced Security and Flexibility in SPIFFE	
SW Forecaster: An Intelligent Data-Driven Approach for Water Usage Demand Ford Ayesha Ubaid (University of Technology, Sydney, Australia), Xiaojie Lin (University of Technology, Sydney, Australia), and Farookh Khadeer Hussain (University of Technology, Sydney, Australia)	ecasting 17

	25
Muhammad Sharshar (Khalifa University, United Arab Emirates), Kareem Elzeky (Mohamed bin Zayed University of Artificial Intelligence (MBZUAI), United Arab Emirates), Menna Othman (Egypt Japan University of Science & Technology (E-JUST), Egypt), Seifaldin Khaled (Egypt Japan University of Science & Technology (E-JUST), Egypt), Hosam Moubarak (Egypt Japan University of Science & Technology (E-JUST), Egypt), and Walid Gomaa (Egypt Japan University of Science & Technology (E-JUST), Egypt)	
Software-Defined Approach to Enabling Network Controllers for Smart Environment Digital wins	33
Chih-Chun Wu (National Tsing Hua University), Cheng-Chia Lai (National Tsing Hua University), Nalini Venkatasubramanian (University of California Irvine), and Cheng-Hsin Hsu (National Tsing Hua University)	33
taru: A Lightweight VMM+Runtime for Low Latency Serverless Functions	41
Quantization in Distributed Learning for Privacy Preserving: A Systematic Literature	40
Leview	49
ecuring Confidential VMs in Public Clouds	55
n Efficient State-Saving Mechanism for Out-of-band Container Migration	63
Multi-target Risk Score Aggregation for Security Evaluation of Network Environments	71
Automating FinOps in Cloud Computing: An Integrated Solution for Efficient Data Collection with Dynamic Scraper Generation	79
potKube: Cost-Optimal Microservices Deployment with Cluster Autoscaling and Spot Pricing Dasith Edirisinghe (University of Moratuwa, Sri Lanka), Kavinda Rajapakse (University of Moratuwa, Sri Lanka), Pasindu Abeysinghe (University of Moratuwa, Sri Lanka), and Sunimal Rathnayake (University of Moratuwa, Sri Lanka)	87

Policy Gradient-based MADDRL Approach for Computation Offloading in NTN-empowered MEC . 95
Nida Fatima (BITS Pilani, India), Paresh Saxena (BITS Pilani, India), and Giovanni Giambene (University of Siena, Italy)
A greedy data-anchored placement of microservices in federated clouds
Deep Learning Based Image Transcoding for efficient and high-performance cloud platforms 11° Avinash Kharbanda (Adobe Inc), Mayank Pesswani (Adobe Inc), Manan Hingorani (Adobe Inc), and Nikhil Handa (Adobe Inc)
S-ORCA: A social-based consolidation approach to reduce Cloud infrastructures energy consumption
SmartEdge: Smart Healthcare End-to-End Integrated Edge and Cloud Computing System for Diabetes Prediction Enabled by Ensemble Machine Learning
Evaluating Fine-tuned BERT-based Language Models for Web API Recommendation
CloudCom 2024 Poster Papers
Optimal Distribution of ML Models over Edge for Applications with High Input Frequency143 Truong Thanh Le (University of Oslo), Amir Taherkordi (University of Oslo), Frank Eliassen (University of Oslo), and Peiyuan Guan (University of Oslo)
Towards Abstraction of Heterogeneous Accelerators for HPC/AI Tasks in the Cloud
Sampling in Cloud Benchmarking: A Critical Review and Methodological Guidelines

tBPF: Testing Berkeley Packet Filter Programs Using User Mode Linux	168
Cost-Effective Cloud Resource Provisioning Using Linear Regression	176
Enhancing Machine Learning Performance in Dynamic Cloud Environments with Auto-Adap Models	
Author Index	193