Contents

**Keynote Paper**

On or Off the Blockchain? Insights on Off-Chaining Computation and Data .................................................. 3

*Jacob Eberhardt and Stefan Tai*

**Microservices and Containers**

Microservices Identification Through Interface Analysis ............... 19

*Luciano Baresi, Martin Garriga, and Alan De Renzis*

A Performance Survey of Lightweight Virtualization Techniques .......... 34

*Max Plauth, Lena Feinbube, and Andreas Polze*

Low-Level Exploitation Mitigation by Diverse Microservices ............. 49

*Christian Otterstad and Tetiana Yarygina*

**Security**

A Formal Approach for the Verification of AWS IAM Access Control Policies .................................................. 59

*Ehtesham Zahoor, Zubaria Asma, and Olivier Perrin*

Foundations for Designing, Defining, Validating and Executing Access Control Policies in Cloud Environments ....................... 75

*Simeon Veloudis, Iraklis Paraskakis, and Christos Petsos*

Secure and Scalable Remote Access Tunnels for the IIoT: An Assessment of openVPN and IPsec Performance ................. 83

*Frederic Pohl and Hans Dieter Schotten*

**Cloud Resources**

Two Are Better Than One: An Algorithm Portfolio Approach to Cloud Resource Management ........................................... 93

*Zoltán Ádám Mann*

A Fuzzy Load Balancer for Adaptive Fault Tolerance Management in Cloud Platforms .............................................. 109

*Hamid Arabnejad, Claus Pahl, Giovani Estrada, Areeg Samir, and Frank Fowley*
## Contents

Data Preparation as a Service Based on Apache Spark.  
*Nivethika Mahasivam, Nikolay Nikolov, Dina Sukhobok, and Dumitru Roman*  
125

### Services

Human-in-the-Loop Simulation of Cloud Services  
*Nikolaos Bezirgiannis, Frank de Boer, and Stijn de Gouw*  
143

Toward Automatic Semantic API Descriptions to Support Services Composition  
*Marco Cremaschi and Flavio De Paoli*  
159

On Abstraction-Based Deadlock-Analysis in Service-Oriented Systems with Recursion  
*Mandy Weißbach and Wolf Zimmermann*  
168

### Internet of Things and Data Streams

IoT-Based Compliance Checking of Multi-party Business Processes Modeled with Commitments  
*Marco Montali and Pierluigi Plebani*  
179

Empowering Low-Latency Applications Through a Serverless Edge Computing Architecture  
*Luciano Baresi, Danilo Filgueira Mendonça, and Martin Garriga*  
196

### Industrial Applications of Service and Cloud Computing

uStorage - A Storage Architecture to Provide Block-Level Storage Through Object-Based Storage  
*Felipe Oliveira Gutierrez, Vinicius Cardoso Garcia, Jose Fernando S. Cardoso, Thiago Jamir, Josino R. Neto, Rodrigo Assad, and Marcos Barreto*  
213

Heart Disorder Detection with Menard Algorithm on Apache Spark  
*Lorenzo Carnevale, Antonio Celesti, Maria Fazio, Placido Bramanti, and Massimo Villari*  
229

**Author Index**  
239