



RIGA TECHNICAL  
UNIVERSITY

*ISSN 2255-8683 print*  
*ISSN 2255-8691 online*

# Applied Computer Systems

2019/24(1-2)

Scientific Journal of  
Riga Technical University

Co-Editors-in-Chief  
Janis Grundspenkis,  
Oksana Nikiforova

RTU PRESS  
RIGA 2019

## TABLE OF CONTENTS

<i>Kristaps Babris (Latvia), Oksana Nikiforova (Latvia), Uldis Sukovskis (Latvia)</i> .....	1
Brief Overview of Modelling Methods, Life-Cycle and Application Domains of Cyber-Physical Systems	
<i>Tariq Rahim Soomro (Pakistan), Mumtaz Hussain Soomro (Pakistan)</i> .....	9
Social Media-Related Cybercrimes and Techniques for Their Prevention	
<i>Lyudmila Onokoy (Russia), Jurijs Lavendels (Latvia)</i> .....	18
Modern Approaches to Building Recommender Systems for Online Stores	
<i>Diana Zagulova (Latvia), Viktorija Boltunova (Latvia), Sabina Kataņņikova (Latvia), Natalya Prokofyeva (Latvia), Kateryna Synytsya (Ukraine)</i> .....	25
Personalized E-Learning: Relation Between Felder–Silverman Model and Academic Performance	
<i>Larisa Zaitseva (Latvia)</i> .....	32
e-CF Competences in Software Engineering Course	
<i>Esingbemi Princewill Ebietomere (Nigeria), Godspower Osaretin Ekuobase (Nigeria)</i> .....	38
A Semantic Retrieval System for Case Law	
<i>Mesbaholdin Salami (Iran), Farzad Movahedi Sobhani (Iran), Mohammad Sadegh Ghazizadeh (Iran)</i> .....	49
Shared Subscribe Hyper Simulation Optimization (SUBHSO) Algorithm for Clustering Big Data – Using Big Databases of Iran Electricity Market	
<i>Vadim Romanuke (Poland)</i> .....	61
An Improvement of the VDSR Network for Single Image Super-Resolution by Truncation and Adjustment of the Learning Rate Parameters	
<i>Vladimir Vasilevich Kulba (Russia), Sergey Konstantinovich Somov (Russia), Yuri Merkurjev (Latvia)</i> .....	69
Placement of Data Array Replicas in a Distributed System With Unreliable Communication Channels	
<i>Olga Filipova (Latvia), Oksana Nikiforova (Latvia)</i> .....	75
Definition of the Criteria for Layout of the UML Use Case Diagrams	
<i>Mahdi Khazaiepoor (Iran), Amid Khatibi Bardsiri (Iran), Farshid Keynia (Iran)</i> .....	82
A Dataset-Independent Model for Estimating Software Development Effort Using Soft Computing Techniques	
<i>Erika Nazaruka (Latvia), Jānis Osis (Latvia), Viktorija Gribermane (Latvia)</i> .....	94
Extracting TFM Core Elements from Use Case Scenarios by Processing Structure and Text in Natural Language	
<i>Duygu Sinanc Terzi (Turkey), Seref Sagiroglu (Turkey)</i> .....	104
A New Big Data Model Using Distributed Cluster-Based Resampling for Class-Imbalance Problem	
<i>Uldis Zandbergs (Latvia), Jānis Grundspenķis (Latvia), Jānis Judrups (Latvia), Signe Briķe (Latvia)</i> .....	111
Development of Ontology Based Competence Management Model for Non-Formal Education Services	
<i>Tariq Ali (Pakistan), Asif Nawaz (Pakistan), Hafiza Ayesha Sadia (Pakistan)</i> .....	119
Genetic Algorithm Based Feature Selection Technique for Electroencephalography Data	
<i>Masivi Muhindo Osee (Zambia)</i> .....	128
Fuzzy Expert System Generalised Model for Medical Applications	
<i>Glorija Baliniskite (Latvia), Mara Pudane (Latvia), Egons Lavendelis (Latvia)</i> .....	134
Affective State Based Anomaly Detection in Crowd	
<i>Laima Leimane (Latvia), Oksana Nikiforova (Latvia)</i> .....	141
Results From Expert Survey on System Analysis Process Activities	
<i>Vadim Romanuke (Poland)</i> .....	150
Minimal Total Weighted Tardiness in Tight-Tardy Single Machine Preemptive Idling-Free Scheduling	
<i>Imants Gorbāns (Latvia), Aleksejs Jurenoks (Latvia)</i> .....	161
Some Aspects of Good Practice for Safe Use of Wi-Fi, Based on Experiments and Standards	