



# RECI 2020

## Program of the International Workshop on Reliability Engineering and Computational Intelligence

October 27-29, 2020  
Žilina, Slovakia

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 A@SYRI

 SRDA

## RECI 2020. Time Schedule

**Start of workshop is 09:00 CET (UTC+2) or 14:00 ALMT (UTC+6)**

	<b>Tuesday, October 27, 2020</b>	<b>Wednesday, October 28, 2020</b>	<b>Thursday, October 29, 2020</b>
09:00-09:45	Open workshop	Miroslav Kvassay	Jan Rabcan
09:45-10:00	<b>Coffee/tea</b>		
10:00-10:45	Coen van Gulijk	Vyacheslav Kharchenko	Antoine Rauzy
10:45-11:00	<b>Coffee/tea</b>		
11:00-11:45	Nicolae Brinzei	Frank P.A. Coolen	Working Section W3
11:45-12:30	<b>Dinner</b>		
12:30-14:00	Working Section W1	Working Section W2	Working Section W4
	Poster Section		

# Detailed Schedule

**Tuesday, October 27, 2020**

## *Opening of the Workshop RECI*

<b>09:00-09:45</b>	<i>The Workshop Opening</i>	Prof. Coen van Gulijk
	<i>Welcome words from the ESRA/IEEE Chapter</i>	Dr. Miroslav Kvassay
	<i>Welcome words from the ACeSYRI project</i>	Dr. Martin Lukac
	<i>Welcome words of the Vice Dean of the Faculty</i>	Dr. Peter Marton

## *The First Plenary Section* Moderator: Prof. Coen van Gulijk

10:00-10:45	<b>Prof. Coen van Gulijk</b> , University of Huddersfield, UK Making Reliability Engineering SMARTER with Computational Intelligence
11:00-11:45	<b>Dr. Nicolae Brinzei</b> , University of Lorraine, France System reliability analysis and assessment by means of graph models issued from Hasse diagram

## *The First Workshop Section* Moderator: Dr. Nicolae Brinzei

1. Andriy Luntovskyy and Bohdan Shubyn, Energy Efficiency for IoT
2. Oleksandr Chemerys, Oleksandr Bushma, Oksana Lytvyn, Alexei Belotserkovsky and Pavel Lukashevich, Network of autonomous units for the complex technological objects reliable monitoring
3. Stefan Bracke, Alicia Puls and Lars Grams, COVID-19 pandemic risk analytics: Data mining with reliability engineering methods for analyzing lockdown strategies
4. Stefan Bracke and Alicia Puls, Assessment of upraising risks within product fleets in use: The influence and interdependencies of the Weibull threshold parameter
5. Kirill Yakunin, Sanzhar Murzakhmetov, Yan Kuchin, Ravil Muhamediev and Rustam Musabayev, Classifying socially significant news using topic modelling
6. Rustam Mussabayev, Nenad Mladenovic and Alexander Krassovitskiy, High Performance Computing for Big Data Clustering
7. Iskander Akhmetov and Rustam Mussabayev, Topic-wise sentiment analysis of Kazakhstani news articles

## Wednesday, October 28, 2020

### *The Second Plenary Section*

*Moderator: Prof. Ravil Mukhamedyev*

09:00-09:45	<b>Dr. Miroslav Kvassay</b> , University of Zilina, Slovakia Methods of reliability analysis based on logic differential calculus
10:00-10:45	<b>Prof. Vyacheslav Kharchenko</b> , National Aerospace University "KhAI", Ukraine Big Accidents and Markov's Chains Based Assessment of Safety Critical IT-Systems
11:00-11:45	<b>Prof. Frank P.A. Coolen</b> , Durham University, UK Quantification of system reliability using the survival signature

### *The Second Workshop Section*

*Moderator: Dr. Miroslav Kvassay*

1. Akylbek Zhumabayev, Research Topics in eCommerce Fraud Detection
2. Artem Andreiev, Hybrid approach to classification of remote sensing data
3. Darya Filatova and Charles El Nouty, Waterproofing membranes reliability analysis by embedded and high-throughput deep-learning algorithm
4. Roman Čerešňák and Karol Matiasko, Using replication method to increase reliability in distributed information systems
5. *Maryam Ospanova* and Marina Yelis, Real-time object detection using Yolo
6. Ravil Mukhamediev, Yan Kuchin, *Ilyas Assanov*, Kirill Yakunin, Sanzhar Murzakhmetov, Maryam Ospanova and Marina Yelis, Path Planning the flock of UAVs for precise agriculture
7. Martin Lukac and Kamila Abdiyeva, Impact of Neural Network Optimization on Accuracy and Safety of Processing



## Thursday, October 29, 2020

### *The Third Plenary Section*

*Moderator: Dr. Martin Lukac*

09:00-09:45	<b>Dr. Jan Rabcan, University of Žilina, Slovakia</b> Generation of Structure Function Based on Uncertain Data by Fuzzy Decision Tree
10:00-10:45	<b>Prof. Antoine Rauzy, University of Science and Technology, Norway</b> New Challenges and Opportunities in Reliability Engineering of Complex Technical Systems

### *The Third Workshop Section*

*Moderator: Dr. Jan Rabcan*

1. Vladimir Sklyar and Vyacheslav Kharchenko, Development of Structured Arguments for Assurance Case
2. Heorhii Zemlianko and Kyrylo Leichenko, "Smart City" technology: conception, security issues and cases
3. Sergey Stankevich, Nick Lubskyi, Iryna Piestova and Artur Lysenko, Knowledge-based multispectral remote sensing imagery superresolution
4. Mykhailo Popov, Oleksandr Zaitsev, Ruslana Stambirska, Oleksandr Kondratov and Sofia Alpert, A correlative method to ranking sensors via information reliability criterion: interval-valued numbers case
5. Viktoria Sorokina and Sergey Ablameyko, Neural Network Training Acceleration by Weight Standardization in Segmentation of Electronic Commerce Images

### *The Fourth Workshop Section*

*Moderator: Dr. Patrik Rusnak*

1. Sergey Stankevich, Iryna Piestova and Artur Lysenko, Radar data product superresolution under parameter variation
2. Patrik Rusnak and Michal Mrena, Time dependent reliability analysis of the data storage system based on the structure function and logic differential calculus
3. Peter Sedlacek, Software reliability model based on syntax tree
4. Iliyas Asylgali and Oksana Nass, Development of control technology for an interactive robot Meccanoid
5. Sergey Tyurin, Ocean of the Redundancy for the Hyper Reliable FPGAs

## *The Poster Section*

1. Igor Ruban, Heorhii Kuchuk, Andriy Kovalenko, Nataliia Lukova-Chuiko, Vitalii Martovytskyi, Method for determining the structural reliability of a network based on a hyper-converged architecture
2. Radim Briš and Pavel Jahoda, Unavailability Optimization of a System Undergoing a Real Ageing Process under Failure Based PM
3. Ravil Mukhamedyev and Marina Yelis, Geospatial Intelligence (GeoAI) and Explainable Machine Learning (EML) for Healthcare decision-making support
4. Alibek Abdurazakov, Development of a data collection system for further analysis and forecasting of a student's personal learning track
5. Aleksandr Cariow and Galina Cariowa, Minimal Filtering Algorithms for Convolutional Neural Networks
6. Nicolae Brinzei, Jean-François Aubry, Miroslav Kvassay and Elena Zaitseva, Systems reliability analysis and assessment by means of logical differential calculus and Hasse diagram
7. Yan Kuchin, Ravil Muhkamediev and Kirill Yakunin, Assessment of filtration properties of host rocks of uranium deposits in Kazakhstan using machine learning methods
8. Irina Pugacheva and Oxana Nass, Development of a Complex of Practical Works on Programming Technology in the Android Studio Environment
9. Vladimir Kulikov and Saduakas Baizhumanov, A gamified system programming
10. Evgeniya Kukharenko and Anna Shaporeva, Development of an automated system for assessing the quality of the provision and organization of the educational process with distance learning technology
11. Eugenia Kuharenko and Gulmira Ospanova, The Regulatory Framework, as a Set of Documents, United by the Sign of The Processes Provision in the System
12. Vladimir Kulikov and Elnar Utyubaev, Algorithm and structural and functional organization of the decision support system in state youth policy based on the theory of clubs
13. Alyoshin D.V, Solodovnik A.A. and Demianenko A.V., Digital methods for processing images of noctilucent cloud fields to determine the structural and temporal parameters of the polar vortex
14. Valentina Kulikova and Ainagul Kabdirova, IT information system in management of teachers' in-service education in the aspect of reducing the gap between the best and the lagging school

15. Vladimir Kulikov, Valentina Kulikova and Gulnur Yerkebulan, Information entropy in the system for identifying patterns of multilingual texts
16. Kim G.A. and Demianenko A.V., Modeling and Control of Plant Growth Productivity Based on Experimental Data Under Conditions of Hydroponic Systems
17. Nurlan Kulmurzaev and Abylaikhan Tobashev, Methodology for teaching students programming by creating computer games
18. Mukhamedyar Ulpan and Akerke Mukhamedyar, Perspectives of robotics
19. Saule Akimova, Development of an Information Training System Based on Cross-Platform Technologies
20. Shopan Bahytova and Gaukhar Kamalova, Development of service-oriented applications in technology .NET and JAVA
21. Bauyrzhan Berlikozha and Azamat Zhamanov, Development of IoT solution for collecting disposable plastic bottles in private Kazakhstani university
22. Ainura Gumarova and Gaukhar Kamalova, OLAP technology in the enterprise information structure
23. Sayagul Zhakezhan, Analysis of the effectiveness of using the space of cognitive modelling in historiography