The 19th International Conference on Informatics in Economy (IE 2020)
Education, Research & Business Technologies

Conference Program

Online Conference
Bucharest, Romania
May 21st, 2020
Conference Organizers

Bucharest University of Economic Studies

The West University of Timisoara

Department of Economic Informatics and Cybernetics

INFOREC Association
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Preface

This year, the 19th International Conference on INFORMATICS in ECONOMY (IE 2020), Education, Research & Business Technologies, has been held online in Bucharest, Romania, on 21st May 2020, using Zoom video conference meeting solution. The Conference promoted research results in Business Informatics and related Computer Science topics:

- **IoT, Mobile-Embedded & Multimedia Solutions**
- **E-Society, Enterprise & Business Solutions**
- **Databases & Big Data**
- **Artificial Intelligence, Data-mining & Machine Learning**
- **Quantitative Economics**

The Conference has represented a meeting point for participants from all over the world, both from academia and from industry.

The conference was first organized in 1993 in collaboration with researchers from Institut National des Sciences Appliquées de Lyon (INSa de Lion), France. From 1993 to 2011, the conference has been organized once every two years, publishing in ten editions high quality papers and bringing together specialists from around the world. Starting with 2012, the conference takes place annually, the 11th, 12th, 14th, 15th and 16th edition volumes have been indexed by ISI Thomson Reuters in its ISI Proceedings directory.

Now, the conference proceedings is under evaluation from SCOPUS and will be sent continuously to Clarivate for evaluation and possible indexing.

The International Conference on Informatics in Economy is one of the first scientific events on this subject in Romania and during the last ten years has gained an international scientific recognition. At national level, remains one of the most important scientific events that gather the entire Romanian Economic Informatics community.


A Conference such as this can only succeed as a team effort, so the Editors want to thank the International Scientific Committee and the Reviewers for their excellent work in reviewing the papers as well as their invaluable input and advice.

The Conference Team
# Conference Important Events

**Thursday, May 21st, 2020**

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<td>Registration</td>
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<td>09:15 – 09:45</td>
<td><strong>IE 2020 Opening Ceremony</strong>&lt;br&gt;Prof. Alina Mihaela DIMA&lt;br&gt;Vice-Rector, Scientific Research,&lt;br&gt;Development and Innovation&lt;br&gt;Bucharest University of Economic Studies&lt;br&gt;Prof. Marian DARDALA – Dean of the&lt;br&gt;Faculty of Cybernetics, Statistics and&lt;br&gt;Economic Informatics&lt;br&gt;Prof. Mihaela MUNTEAN – The West&lt;br&gt;University of Timisoara</td>
<td>Online via Zoom</td>
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<tr>
<td>09:45 – 10:30</td>
<td><strong>Challenges of Economy 4.0</strong>&lt;br&gt;Prof. Wojciech CELLARY, Poznan University of Economics, Poland</td>
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<td>10:30 – 11:15</td>
<td><strong>The Birth of The Romanian I&amp;CT Sector; A Tribute to Acad. M. Draganescu</strong>&lt;br&gt;Acad. Florin Gheorghe FILIP, Romanian Academy, Romania</td>
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<td>11:15 – 12:00</td>
<td>Break</td>
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<td>12:00 - 15:00</td>
<td><strong>Paper presentations</strong></td>
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Registered participants will receive customized details regarding accessing Zoom sessions through direct email messages
SECTION 1 Thursday, May 21\textsuperscript{st}, 12:00 - 15:00 – Zoom Conference
Chairmen: Mircea GEORGESCU, Paul POCATILU

1. A NEW EU CHALLENGE: INCREASE SUPPLY CHAIN MANAGEMENT PERFORMANCE BY INTERNET OF THINGS. A STUDY ON ROMANIAN ECONOMY - Mircea GEORGESCU, Roxana IBANESCU

2. THE USAGE OF ADAPTIVE ASSESSMENTS IN THE COMPUTER SCIENCE LEARNING PROCESS: A CASE STUDY FOR JAVA - Bogdan IANCU

3. A.I. NEURAL NETWORKS INFERENCe INTO THE IOT EMBEDDED DEVICES USING TINYML FOR PATTERN DETECTION WITHIN A SECURITY SYSTEM - Cristian TOMA, Marius POPA, Mihai DOINEA

4. ECONOMIC IMPLICATIONS OF SMARTPHONE APPLICATIONS PROMOTING THE PHYSICAL ACTIVITY - Felician ALECU, Paul POCATILU, Sergiu CAPISIZU

5. IOT SECURITY, ASSOCIATED MALWARE TRENDS AND VULNERABILITIES - Ștefan NICULA, Răzvan Daniel ZOTA

6. THE IMPACT OF A MULTIMEDIA MOBILE APPLICATION - Dinu MIHAIL-VĂDUVA

7. ASSESSMENT OF THE EVOLUTION IN QUALITY FOR XAMARIN ANDROID MULTIMEDIA APPLICATIONS - Cosmin TOMOZEI

8. METHODOLOGY FOR EVALUATING IOT SECURITY BASED ON DEVICES BEHAVIOR - Catalin BOJA
Databases & Big Data

SECTION 2 Thursday, May 21st, 12:00 - 15:00 – Zoom Conference
Chairmen: Loredana MOCEAN, Adela BÂRA

1. A MODEL OF DATABASE PLATFORM FOR E-COMMERCE APPLICATIONS IN E-SOCIETY - Loredana MOCEAN, Miranda-Petronella VLAD

2. FROM ELUSIVE TO UBIQUITOUS: UNDERSTANDING SMART CITIES - Maria-Alexandra BARINA, Gabriel BARINA

3. PRACTICAL APPROACH FOR ENERGY MARKET TRADING SIMULATOR - Anda BELCIU (VELICANU)

4. PERFORMANCE INDICATORS FOR ANALYSIS OF THE ACTIVITY ON THE WHOLESALE ELECTRICITY MARKET - Ana Ramona BOLOGA, Anca Ioana ANDREESCU, Dan PREOȚESCU

5. ICT SOLUTIONS FOR LOCAL FLEXIBILITY MARKETS - Jin XIAOLONG, Simona-Vasilica OPREA, Adela BÂRA, Vlad DIACONIȚA, Qiuwei WU

6. ADVANCED DATA ANALYSIS OF SMART GRID CONSUMPTION DATA - Iuliana ȘIMONCA (BOTHA), Alexandra CORBEA (FLOREA)
1. QUESTIONS RANKING METHODS BY DETERMINING THEIR DIFFICULTY - Alin ZAMFIROIU, Ramesh C. SHARMA
2. DO CREATIVE SOCIETIES INNOVATE MORE? EMPIRICAL EVIDENCE FOR 28 EU MEMBERS - Raluca Andreea NERIȘANU, Marian Pompiliu CRISTESCU, Miglena STOYANOVA, Julian Andreev VASILEV
3. THE CYBERNETIC SYSTEM OF THE GLOBAL ECONOMY WITH INFLUENCES OF CLIMATE CHANGE ON THE EVOLUTION OF IT - Emil SCARLAT, Delia BĂLĂCIAN
4. THE IMPACT OF TRADE IN GDP PER CAPITA GROWTH IN 2018 - Ionela-Cătălina ZAMFIR
5. GLOBAL WELL-BEING AND ECONOMIC INEQUALITY - Irina GEORGESCU, Jani KINNUNEN, Armenia ANDRONICEANU, Ane-Mari ANDRONICEANU
6. CONCEPTUAL ALGORITHMIC INTERFACE OF THE INFORMATIONAL MANAGEMENT PRECEDENT TO HUMAN MATERIAL ACTIVITIES - Tudor LEAHU, Sergiu ȘIȘIANU, Alexandr GRECU
7. INVESTMENT AND CONSUMPTION CHANNELS OF NON KEYNESIAN EFFECTS OF MACROECONOMIC POLICIES. SOME EMPIRICAL STUDIES FOR ROMANIA - Ana ANDREI, Angela GALUPA, Sorina GRAMATOVICI, Nora CHIRITA, Ionut NICA
Artificial Intelligence, Data-mining & Machine Learning

SECTION 4 Thursday, May 21st 12:00 - 15:00 – Zoom Conference
Chairman: Jan W. OWSIŃSKI, Constanța-Nicoleta BODEA

1. INFORMATICS METHODS TO INCLUDE LIMIT CONDITIONS INTO AUTOMATED CAPITAL INVESTMENT SOFTWARE SYSTEMS - Cristian PĂUNA, Ion LUNGU

2. REDUCING TYPE II ERRORS IN CREDIT CARD FRAUD DETECTION USING XGBOOST CLASSIFIER - Elena-Adriana MINASTIREANU, Gabriela MESNITA

3. A STUDY OF ARTIFICIAL NEURAL NETWORKS HYPERPARAMETER TUNING FOR DATA DRIVEN DECISION SYSTEMS - Adrian-Nicolae BUTURACHE, Stelian STANCU

4. FINTECH, BIGTECH AND DIGITIZATION IMPACT EVALUATION IN BUSINESS MODELS OF THE BANKS - Oona VOICAN

5. RISK MANAGEMENT METHODS FOR COMMERCIAL CREDITS - Claudia ANTAL-VAIDA

6. WORD EMBEDDINGS IN ROMANIAN FOR THE RETAIL BANKING DOMAIN - Irina RAICU, Nicolas BOITOUT, Razvan BOLOGA, Mihai George STURZA

7. MACHINE LEARNING RISK FACTORS ON THE ROMANIAN STOCK MARKET - Dan Gabriel ANGHEL

8. MOBILISING STUDENTS TO FORWARD THINKING OF THEIR STUDIES – PRELIMINARY RESULTS OF A CROWDSOURCING EFFORT - Jan W. OWSIŃSKI, Cristian CIUREA, Florin Gheorghe FILIP

9. HIERARCHICAL TEMPORAL MEMORIES IN SECURITY INFORMATION AND EVENTS MANAGEMENT SYSTEMS - Mihail CAZACU, Constanța-Nicoleta BODEA
SECTION 5 Thursday, May 21\textsuperscript{st}, 12:00 - 15:00 – Zoom Conference  
Chairman: Mihaela MUNTEAN, Doina DĂNĂIAŢĂ

1. PERCEPTION OVER E-LEARNING TOOLS IN HIGHER EDUCATION: COMPARATIVE STUDY ROMANIA AND MOLDOVA  
   - Octavian DOSPINESCU, Nicoleta DOSPINESCU

2. SELF-SERVICE BUSINESS ANALYTICS AND DATA GOVERNANCE  
   - Mihaela MUNTEAN, Constantin Viorel NEGRUŢ, Florin MILITARU

3. HOW ROMANIAN IT COMPANIES ADOPTED AGILE PRACTICES AND WHICH ARE THE GENERATED BENEFITS  
   - Maria Daniela LICA

4. CLOUD COMPUTING ASPECTS ON KNOWLEDGE MANAGEMENT AND SUPPLY CHAIN  
   - Ovidiu Alin DOBRICAN

5. WALLET KEY MANAGEMENT IN BLOCKCHAIN TECHNOLOGY  
   - Dominic BUCERZAN, Crina Anina BEJAN

6. E-DEMOCRACY AND E-VOTING USING EMERGING TECHNOLOGIES  
   - Marian STOICA, Bogdan GHILIC-MICU

7. ARTIFICIAL INTELLIGENCE POWERS THE DIGITAL TRANSFORMATION FOR ORGANIZATIONS  
   - Lavinia-Andreea GRUIA, Nicolae BIBU, Alexandru ROJA

8. THE IMPACT OF INFORMATION TECHNOLOGY ON ENTREPRENEURSHIP  
   - Amalia FURDUI, Eduard-Victor EDELHAUSER, Elena-Izabela POPA

9. PRELIMINARY INDICATIONS TRIGGERING OPTIMIZATION OF INTERNAL PROCESSES  
   - Radu-Eleonor SAMOILĂ

10. EXPLORING STUDENTS’ SATISFACTION WITH AN ACADEMIC PROGRAM. THE CASE OF BUSINESS INFORMATION SYSTEMS SPECIALIZATION  
    - Doina DĂNĂIAŢĂ, Vasile Daniel PĂVĂLOAIA, Luminiţa HURBEAN, Doina FOTACHE
11. DETERMINING THE EFFECTIVENESS OF USING INTELLECTUAL POTENTIAL IN THE REGIONS OF KAZAKHSTAN - Aziza ZHUPAROVA, Rimma SAGIYEVA