16th Conference on Computer Science and Intelligence Systems (FedCSIS 2021)

CONFERENCE REPORT

The 16th edition of the Conference on Computer Science and Intelligence Systems (FedCSIS 2021; www.fedcsis.org) was to be held in Sofia, Bulgaria, on September 2-5, 2021. Unfortunately, again, due to the COVID-19 pandemic, it had to be transformed into an online conference.

Before proceeding further, let us share a very important information. In June 2021 FedCSIS conference series has been ranked B in the CORE ranking system. This constitutes a major achievement for the series. This is particularly valuable achievement since the series was not ranked before. We would like to thank prof. Paweł Sitek for leading our efforts and preparing the necessary documentation.

Let us also note a name adjustment. The FedCSIS conference series is evolving with the world. This evolution is based on recognizing changes around us. One of them is the raise of artificial intelligence, machine learning and data analytics. As a result, it is our belief that "information systems" of the old are becoming "intelligence infused systems" of today. As a matter of fact, it becomes difficult to point to information systems that do not contain components realizing some form of, broadly understood, artificial intelligence. Hence, we have decided that from this year on the name of the conference series will become "Conference on Computer Science and Intelligence Systems (FedCSIS)". As can be seen, we are the same FedCSIS (acronym stays unchanged and our goals remain the same), but adjusted to the world of 2020th and beyond.

FedCSIS 2021 was organized by the Institute of Information and Communication Technologies (IICT) of the Bulgarian Academy of Sciences, with support from the Polish

Information Processing Society (Mazovia Chapter), IEEE Poland Section Computer Society Chapter (C-16), Systems Research Institute Polish Academy of Sciences, Warsaw University of Technology and Wrocław University of Economics and Business.

Technical co-sponsors of the FedCSIS 2021 conference included: IEEE Poland Section, IEEE Bulgaria Section, IEEE Czechoslovakia Section Computer Society Chapter, IEEE Poland Section Systems, Man, and Cybernetics Society Chapter, IEEE Poland Section Control System Society Chapter, IEEE Poland Section Computational Intelligence Society Chapter, Bulgarian Section of SIAM, Committee of Computer Science of Polish Academy of Sciences, Eastern Cluster ICT Poland, Mazovia Cluster ICT.

As in the past year, FedCSIS 2021 consisted of five **Tracks** divided into **Technical Sessions**.

- **Track 1: Advanced Artificial Intelligence in Applications (16th Symposium AAIA'21)**
  - o Computational Optimization (14th Workshop WCO'21)
- **Track 2: Computer Science & Systems (CSS'21)**
  - o Computer Aspects of Numerical Algorithms (14th Workshop CANA'21)
  - o Multimedia Applications and Processing (14th International Symposium MMAP'21)
- **Track 3: Network Systems and Applications (NSA'21)**
  - o Internet of Things - Enablers, Challenges and Applications (5th Workshop IoT-ECAW'21)
  - o Cyber Security, Privacy and Trust (2nd International Forum NEMESIS'21)
- **Track 4: Advances in Information Systems and Technologies (AIST'21)**
  - o Data Science in Health, Ecology and Commerce (3rd Special Session DSH'21)
  - o Information Systems Management (16th Conference ISM'21)
  - o Knowledge Acquisition and Management (27th Conference KAM'21)
- **Track 5: Software, System and Service Engineering (S3E'21)**
  - o Cyber-Physical Systems (8th Workshop IWCPS-8)
  - o Software Engineering (41st IEEE Workshop SEW-41)
- **Artificial Intelligence and Cybersecurity (1st Young Researchers Workshop YRW'21)**

During the FedCSIS'2021, the keynote lectures were delivered by (slides and videos of presentations are available at: https://fedcsis.org/2021/keynotes):
- David Bader, Distinguished Professor, New Jersey Institute of Technology: "*Solving Global Grand Challenges with High Performance Data Analytics*"

- Rajkumar Buyya, Director, Cloud Computing and Distributed Systems (CLOUDS) Lab, The University of Melbourne, Australia and CEO, Manjrasoft Pvt Ltd, Melbourne, Australia: "*Neoteric Frontiers in Cloud and Edge Computing*"
- Hristo Djidjev, Los Alamos National Laboratory: "*Using quantum annealing for discrete optimization*"
- Moshe Y. Vardi, Professor, Rice University: *"Lessons from COVID-19: Efficiency vs Resilience"*

FedCSIS 2021 was Chaired by prof. Stefka Fidanova, while Dr. Nina Dobrinkova acted as the Chair of the Organizing Committee.

During FedCSIS 2021, for the first time, the Professor Zdzisław Pawlak award was elevated from the AAIA Track award to the award presented to the best papers across the whole conference. It was done to further integrate the conference, following the fact that scientific achievements of Professor Pawlak had gone far beyond artificial intelligence. This year the following awards have been given:
- In the category **Best paper** – Anh Nguyen Mac, Hung Son Nguyen for the paper entitled "*Rotation Variance in Graph Convolutional Networks*"
- In the category **Young Researcher** – Christian Leyh, Konstanze Köppel, Sarah Neuschl, Milan Pentrack for the paper entitled "*Critical Success Factors for Digitalization Projects*"
- In the category **Industry cooperation** – Lov Kumar, Mukesh Kumar, Lalita Bhanu Murthy, Sanjay Misra, Vipul Kocher, Srinivas Padmanabhuni for the paper entitled "*An Empirical Study on Application of Word Embedding Techniques for Prediction of Software Defect Severity Level*"
- In the category **International Cooperation** – Arman Ferdowsi, Alireza Khanteymoori for the paper entitled "*Discovering Communities in Networks: A Linear Programming Approach Using Max-Min Modularit*y"

Awards for the winners were sponsored by QED Software, Strategic Partner of the Conference, and the Mazovia Chapter of the Polish Information Processing Society.

English was the exclusive conference language. In 2021, the FedCSIS conference attracted 129 submissions. Out of submitted contributions, after obtaining at least two reviews for each paper, 32 articles were accepted as regular full papers (acceptance rate of 24.8%), 30 articles were accepted as regular short papers. Conference Proceedings include also 5 invited contributions from current and past FedCSIS keynote speakers. The second volume consists of 5 position papers, and 20 communication papers. The latter include 6 contributions from the 1st Young Researcher Workshop. Accepted contributions represented more than 30 countries.

Conference materials were initially published on the conference WWW site (as Preprints). After the conference, full and short papers have been indexed in the IEEE

Moreover, Proceedings, Position Papers and Communication Papers of the FedCSIS 2021 Conference (in their final version) were posted at the conference WWW site – available through the Archive section of the www.fedcsis.org web-site (alongside publications from **all** past conferences). It should be stressed that **only** papers presented in the conference were published in either form (the FedCSIS conference series strictly adheres to the "IEEE No-show Policy").

Respectfully submitted by the FedCSIS Conference Series Chairs,

Maria Ganzha,
Leszek Maciaszek,
Marcin Paprzycki,
Dominik Ślęzak