



*International Scientific Conference of Communications,
Information, Electronic and Energy Systems*

Accepted papers

November 26 – 29, 2020
Bulgaria



CIEES 2020 Acceptance Rate

The conference programme of this year's edition consists of 5 conference tracks for refereed research papers. The conference attracted submissions from 187 distinct authors from 14 countries spanning four continents. Submissions were rigorously reviewed by an International Scientific Committee (ISC) and external reviewers. A total of 190 reviews were provided, with each paper receiving at least two reviews. During the discussion phase, ISC members and the Programme Committee (PC) members discussed the reviews in detail. The rebuttals from the authors were also seriously considered. For consistency across tracks, final decisions on papers were made at the face-to-face PC meeting between the Organizing Committee chairs and the PC chairs. The decision to accept a paper was entirely based on quality and not its length.

This year's CIEES 2020 conference has received a record high number of submissions, as can be seen from the following statistics:

- 115 abstracts submitted;
- 95 full papers submitted;
- 55 papers accepted for presentation as full papers (57.9% acceptance rate).

We hope that you learn from and enjoy CIEES 2020 and participate actively in this first virtual conference.

Teodor ILIEV
General Conference Chair

Ivaylo STOYANOV
General Conference Chair

Authors Countries

(in alphabetical order)



TOPICS:

Telecommunication Systems

- Next Generation Networks;
- Wireless and Wireline Communications;
- Optical Communications and Networks;
- Multimedia Communications;
- Telecommunication Protocols
- Telecommunication Network Management;
- Global Navigation Satellite Systems;
- Modeling and Simulation;
- Telecommunication Systems, Networking and Evaluation;
- Traffic Modelling, Monitoring, Engineering and Management;
- Emerging Networking, Tracking and Sensing Technologies.

Information Technologies

- Internet of Everything (IoE)
- Internet and New IP Services and Applications;
- Communication Interfaces (M2M, B2M, H2H)
- Mobile Terminal/Handsets and Operating Systems/Platforms;
- Cloud Technologies and Applications;
- Information Processing and Security;
- Network Performances and Quality of Service;
- Software Development and Maintenance;
- Big data;
- ICT Based Methodologies and Algorithms;
- Cryptography and Network Security.

Electronics

- Electronic Materials and Applications;
- Electronic Instrumentation and Measurements;
- Nanotechnology and Nanoelectronics;
- Sensor Devices and Technology;
- Electromechanical Devices and Technology;
- Analog, Digital and Mixed Signal Circuits;
- Electric Vehicles;
- Electromagnetic Compatibility (EMC);
- Modeling and Simulation;
- Robotic Systems;
- Monitoring, Control and Data Analysis

Smart Grid Systems

- Smart Grid Technology;
- Micro grid & Smart grid;
- Distributed Generation and Grid Interconnection;
- Novel Energy Conversion Studies for Smart Grid
- HVDC for Smart Grid
- Power Devices and Driving Circuits for Smart Grid
- Performance Analysis of Smart Grid
- Decision Support Systems for Smart Grid
- Control Techniques for Smart Grid
- Power Systems

Energy and Renewable Sources

- Renewable Energy;
- Alternative Energy Resources & Storage;
- Thermal Design and Optimization;
- Thermodynamic Instrumentation;
- Biomass, Bioenergy & Bio-economy
- Energy Storage Technologies;
- Geothermal Technologies
- Photovoltaics;
- Solar Power – concentrated, heating and cooling;
- Energy Networks
- Wind Energy;
- Hydropower Engineering & Technology;
- Water Resources Management;
- Hybrid Energy Systems
- Solar Desalination

Smart Farming

- Available Technologies for Farming 4.0
- Precision Agriculture;
- Plant and Crop Science for Improved Resource-use;
- Autonomous Tractors;
- Precision Agriculture
- Standardization, Metrology and Quality
- Entrepreneurship in Agriculture
- Environmental Management Systems
- Sensors and Measurements
- Plant Systems and Postharvest Technology

CIEES 2020 ACCEPTED PAPERS

ID	Title	Author(s)
1	Resilient Satellite Navigation Empowers Modern Science, Economy, and Society	Renato Filjar*, M. Chantale Damas**, Teodor Iliev*** *Faculty of Engineering, University of Rijeka, Croatia **Queensborough Community College, USA ***University of Ruse, Bulgaria
3	Modeling of three-phase inverter power supply system in SIMULINK	Vasil Ivanov* *Assen Zlatarov University, Bulgaria
5	A Review on the Methods for Big Data Analysis in Agriculture	Boris Evstatiev*, Katerina Gabrovska-Evstatieva* *University of Ruse, Bulgaria
9	On Numerical Method for Modeling Oil Filtration Problems in Piecewise-Inhomogeneous Porous Medium	Abdugani Nematov*, Elmira Nazirova*, Rustam Sadikov* *Tashkent university of information technologies named after Muhammad al-Khwarizmi, Uzbekistan
10	Studies of Integrated Natural Capillary-Porous Coatings	Alexander Genbach*, David Bondartsev*, Hristo Beloev** *Almaty University of Energy and Communications, Kazakhstan **University of Ruse, Bulgaria
13	Kinematic Model of a Cow Milking Manipulator with Simultaneous Positioning at Four Given Points	Semen Ruzin*, Denis Shilin*, Aleksey Dorokhov*, Dmitriy Pavkin*, Ekaterina Chepurina** *Federal State Budgetary Scientific Institution "Federal Scientific Agroengineering Center VIM", Russian Federation **Russian State Agrarian University - Moscow Timiryazev Agricultural Academy, Russian Federation
15	6LoWPAN Network Analysis Using Simulations and Experiments	Aydan Haka*, Veneta Aleksieva*, Hristo Valchanov* *Technical University of Varna, Bulgaria
16	High-level Model Based Calibration Technique Design for SAR ADC	Maksim Skripnichenko* *National Research University of Electronic Technology (MIET), Russian Federation

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ID	Title	Author(s)
17	Methodology for Assessing the Residual Resource During the Operation of High-Temperature Units	Alexander Nikiforov*, Evgeniy Prikhodko*, Akmaral Kinzhibekova*, Amangeldy Karmanov* <i>*Pavlodar State University named after S. Toraighyrov, Kazakhstan</i>
18	Modeling the Influence of the Characteristics of Renewable Organic Materials on the Energy Performance of the Boiler	Alexander Nikiforov*, Evgeniy Prikhodko*, Akmaral Kinzhibekova*, Sholpan Nurkina* <i>*Pavlodar State University named after S. Toraighyrov, Kazakhstan</i>
20	An Industrial IoT Edge Node for Buffer Level Detection in a Cardboard Production Line	George Avramidis*, Dimitris Karampatzakis* <i>*International Hellenic University, Greece</i>
21	Influence of Buoyancy Forces in Multi-Storey Buildings on the Efficiency of a Regenerative Air Handling Unit with Heat Recovery	Angel Penev*, Lyubomir Tsokov* <i>*Technical University Sofia, Bulgaria</i>
23	Change Point Detection in Recent Hydropower Generation in Romania	Angela Neagoe*, Eliza Isabela TICĂ*, Florica Popa**, Bogdan Popa* <i>*University Politehnica of Bucharest, Romania</i> <i>**University Valahia of Targoviste, Romania</i>
25	Conceptual Framework for Quality Assessment in Human-Centric 6G XR Services	Viktor Stoynov*, Antoni Ivanov*, Dimitriya Mihaylova* <i>*Technical University of Sofia, Bulgaria</i>
26	Modeling the Basis Power in the Systems for Continuous Transport of Fluids and Bulk Materials	Ognyan Dinolov*, Katerina Ilieva* <i>*University of Ruse, Bulgaria</i>
27	Experimental Investigation of the Refrigeration Cycle of Water-to-Water Heat Pump	Zhivko Kolev*, Plamen Mushakov*, Seher Kadirova* <i>*University of Ruse, Bulgaria</i>
28	Energy Detectors Performance Evaluation for Interweave Cognitive Radio Network Scenario in 5G	Antoni Ivanov*, Viktor Stoynov*, Dimitriya Mihaylova*, Vladimir Poulkov* <i>*Technical University of Sofia, Bulgaria</i>
29	Security of the Sensory Data in the Cloud	Filip Tsvetanov*, Martin Pandurski* <i>*South West University, Bulgaria</i>
30	Wind Energy Assessment for Low Complex Terrain Using Reference Meteorological Mast	Angel Terziev*, Yanchko Panteleev*, Martin P. Ivanov* <i>*Technical University of Sofia, Bulgaria</i>

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32	Assessment of the Gross Potential of Local Waste Based on Geoinformation Systems for Bioenergy Production	Sayyora Mamatkulova*, Gulom Uzakov** *Tashkent University of Information Technologies Karshi branch named after Muhammad al-Khwarizmi, Uzbekistan **Karshi Engineering Economics Institute, Uzbekistan
33	Statistical Techniques to Determine of Optimal and Acceptable Noise Levels	Ivelina Balabanova*, Stela Kostadinova**, Valentina Markova**, Stanimir Sadinov*, Georgi Georgiev* *Technical University of Gabrovo, Bulgaria **Technical University of Varna, Bulgaria
35	Voice Control and Management in Smart Home System by Artificial Intelligence	Ivelina Balabanova*, Stela Kostadinova**, Valentina Markova**, Stanimir Sadinov*, Georgi Georgiev* *Technical University of Gabrovo, Bulgaria **Technical University of Varna, Bulgaria
36	Solar Energy Potentials in Different Climatic Zones of Nigeria	Samuel Ogunjo*, Aderonke Obafaye**, Babatunde Rabiou** *Federal University of Technology Akure, Nigeria **Centre for Atmospheric Research, National Space Research and Development Agency, Anyigba, Nigeria
38	Achievement of Maximum Energy Efficiency Through Vector Control of Induction Motor Electric Drive	Svilen Rachev*, Ginka Ivanova** *Technical University of Gabrovo, Bulgaria **Technical University of Varna, Bulgaria
39	Fly Ash Zeolites as a Dual System for Simultaneous CO ₂ Capture and its Utilization in the Production of Synthetic Gas	Denitza Zgureva*, Silvia Boycheva*, Kalin Filipov* *Technical University of Sofia, Bulgaria
40	Studies on the Thermochemical Energy Storage in the Coal Ash Zeolite/Water System	Silvia Boycheva*, Denitza Zgureva*, Ivan Marinov*, Simona Miteva*, Ivan Yankov*, Angel Ivanov*, Asen Asenov* *Technical University of Sofia, Bulgaria
41	Deployment of Mesh Network in an Indoor Scenario for Application in IoT Communications	Krasen Angelov*, Stanimir Sadinov*, Panagiotis Kogias** *Technical University of Gabrovo, Bulgaria **International Hellenic University, Greece

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43	Modelling and Performance Analysis of DWDM Passive Optical Network	Stanimir Sadinov*, Krasen Angelov*, Panagiotis Kogias**, *Technical University of Gabrovo, Bulgaria **International Hellenic University, Greece
46	Analysis of the Energy Recovery Possibilities of Energy from Lavender Straws after a Steam Distillation Process	Daniela Chakyrova*, Nadezhda Doseva* *Technical University of Varna, Bulgaria
47	Bin Weather Data of Varna and their Influence on the Seasonal Efficiency of Heat Pumps with Outdoor Air as Energy Source	Daniela Chakyrova*, Nadezhda Doseva*, Nely Kalcheva* *Technical University of Varna, Bulgaria
48	Development of Innovative Methods of Thermal Waste Processing in Modular Waste Burners with a High Degree Capture of Harmful Emissions	Rakhimzhan Orumbayev*, Andrey Kibarin*, Iliya Iliev**, Abish Torgayev*, Madina Kumargazina* *Almaty University of Power Engineering and Telecommunications, Kazakhstan **University of Ruse, Bulgaria
54	Hydraulic Power Take-Off System for Wave Energy Utilization	Rositsa Velichkova*, Martin Pushkarov*, Radostina Angelova*, Iskra Simova*, Detelin Markov*, Ivan Denev*, Peter Stankov* *Technical University of Sofia, Bulgaria
56	A Study of Thermal Devices with Porous Coatings	Alexander Genbach*, David Bondartsev*, Hristo Beloev** *Almaty University of Energy and Communications, Kazakhstan **University of Ruse, Bulgaria
59	Deployment and Analysis of Bluetooth Low Energy Network	Aydan Haka*, Veneta Aleksieva*, Hristo Valchanov* *Technical University of Varna, Bulgaria
60	Selection of Countermeasures against Propagation of Harmful Information via Internet	Lidia Vitkova*, Aleksei Pronichev*, Elena Doynikova*, Igor Saenko* *St. Petersburg Institute for Informatics and Automation of the Russian Academy of Sciences (SPIIRAS), Russian Federation
61	Storing Data from Sensors Networks	Filip Tsvetanov* *South West University, Bulgaria
63	The Comparison of Five Proton Linac Beams for the Design of a Thermal Neutron Radiography Unit	Iakovos Fantidis*, George Nicolaou**, George Tsakalos*, Anna Thysiadou* *International Hellenic University, Greece **"Democritus" University of Thrace, Greece

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66	Study the influence of Intermodulation Products on Navigation Signals	Teodor Iliev*, Ivaylo Stoyanov*, Grigor Mihaylov**, Elena Ivanova* *University of Ruse, Bulgaria **University of Telecommunications and Post, Bulgaria
68	Analysis of Energy Consumption in the Industrial Sector in the European Union	Nely Georgieva*, Petko Tsankov* *Trakia University, Bulgaria
74	Performance of Free-Space Optical Systems in the Presence of Receiver Imperfections	Goran Djordjevic*, Dejan Milic*, Ivan Radojkovic** *University of Nis, Serbia **Dunav Insurance, Serbia
76	Comparative Analysis of Prototypes for Two Touch Finger Interfaces of Smartwatch	Yuri Dimitrov*, Veneta Aleksieva*, Hristo Valchanov* *Technical university Varna, Bulgaria
77	Information Management and Monitoring System for a Grapes Harvesting Robot	Konstantinos Tziridis*, Alexandros Nikolaou*, Theofanis Kalampokas*, Eleni Vrochidou*, Theodore Pachidis*, George Papakostas*, Vassilis Kaburlasos* *International Hellenic University, Greece
81	Experimental Study and Analysis of Hydraulic Characteristics of Diaphragm (chamber) Gas Flow Meter	Petko Tsankov*, Nely Georgieva*, Sivelina Delcheva* *Trakia University, Bulgaria
85	Technique for Storing and Automated Processing of Weather Station Data in Cloud Platforms	Strahil Sokolov*, Stefan Vlaev*, Mihail Chalashkanov* *University of Telecommunications and Post, Bulgaria
86	Objects Distance Measurement in Augmented Reality for Providing Better User Experience	Nikolay Neshov*, Agata Manolova* *Technical University of Sofia, Bulgaria
87	Evolution of Mobile Networks and Seamless Transition to 5G	Elena Ivanova*, Teodor Iliev*, Ivaylo Stoyanov*, Grigor Mihaylov** *University of Ruse, Bulgaria **University of Telecommunications and Post, Bulgaria
89	Plexiglass Glove Box for Organic Solar Cells	Lorant Szolga*, Cristian Stan* *Technical University of Cluj-Napoca, Romania

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90	Robotic Arm Controlled by Android App Through Bluetooth Connection for Organic Solar Cell Manipulation	Lorant A Szolga*, George Flueraș* <i>*Technical University of Cluj-Napoca, Romania</i>
93	An Overview of Methods to Combat Eavesdropping in NOMA-based Networks through Physical Layer Security	Dimitriya Mihaylova*, Viktor Stoynov*, Antoni Ivanov*, Zlatka Valkova-Jarvis* <i>*Technical University of Sofia, Bulgaria</i>
94	Software-Defined Wireless Urban Network	Oleh V Streltsov*, Yevhen Birka*, Valerii Gnatenko*, Valerii Sytnikov*, Pavel Stupen* <i>*Odessa National Polytechnic University, Ukraine</i>
118	Estimation of Wind Speed and Energy Potential by Atmospheric Model for Day-Ahead Market and Wind Power Plants in Turkey	Mehmet Devrim*, Abdulla Sakalli* <i>*Iskenderun Technical University, Turkey</i>
119	Automatic Detection of Characteristic Segments of a Recorded ECG Signal with Noise Handling Methods	Bojan Glushica*, Bojan Aleksovski*, Andrijana Kuhar* <i>*Ss. Cyril and Methodius University in Skopje, North Macedonia</i>
122	Utilization of the Energy Potential of Waste Meal and Creating of “Green” Workplaces	Metodi Mladenov*, Spaska Yaneva* <i>*University of Chemical Technology and Metallurgy, Bulgaria</i>
123	The Gaps of Renewable Energy Legislation in Bulgaria	Todorka Stankova*, Daniela Toneva* <i>*Technical University of Varna, Bulgaria</i>
125	Impacts of Climate Change and Distribution of Precipitation on Hydroelectric Power Generation in Turkey	Umut Bulut*, Abdulla Sakalli* <i>*Iskenderun Technical University, Turkey</i>